2015 PHYSICAL FITNESS REPORT OF
Macao SAR Residents

Sports Bureau, Macao SAR

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Preface

Dr. Chui Sai On, Chief Executive of the Macao SAR Government

Issues related to quality of life, physical fitness and health have increasingly become the focus of public interest. The Macao SAR Government has been striving to provide a healthy city and since Macao's return to the Motherland, three physical fitness studies have been conducted with the support of the General Administration of Sport of China.

The research and studies on physical fitness implemented by the Macao SAR Government are aimed to determine the fitness status of the population and to enrich the related database. The results of the study are important for encouraging the residents to participate in sports activities to improve their physical fitness.

The *2015 Physical Fitness Report of Macao SAR Residents* provides scientific references for the government to develop relevant policies on areas related to sports, medical care, education and social welfare, and moreover, to deepen future research on physical fitness. The results of the study will be used by the Macao SAR Government to continuously promote public sports activities, and to collaborate with all sectors of society to improve the physical fitness and health of the population.

July 2016

Preface

Alexis Tam Chon Weng
Secretary for Social Affairs and Culture, Macao SAR Government

With an aim of keeping abreast of the status quo and changing trends on the physical conditions of Macao residents, the Macao Special Administrative Region Government has been implementing the physical fitness study on a regular basis. The study facilitates our knowledge on physical fitness and encourages our residents to participate in health-enhancing physical activities.

Following the two physical fitness studies conducted by the Macao SAR Government respectively in 2005 and 2010, the third physical fitness study was carried out for residents aged 3~69 in 2015. The first physical fitness study portrayed the basic status of Macao residents' physical fitness. The second study compared the dynamic changes of data, and the third study reflected a more comprehensive development trends. Results of these studies will serve as valuable references for the Macao SAR Government in related policy making.

To allow the general public's understanding of the third physical fitness study results, the Sports Bureau published the *2015 Physical Fitness Report of Macao SAR Residents*. Through the publication, we hope to further promote the development of sports for all and other diverse physical activities. It will also provide the necessary guide to the public to exercise and improve their fitness through effective workout and training.

July 2016

Preface

Zhang Liang
Director of China Institute of Sports Science, General Administration of Sport of China

Physical fitness and health are significant aspects of human well-being, and they are also crucial foundation for social productivity. With fundamental changes in people's lifestyle due to the advancement of society and economy, countries and regions around the globe are giving unprecedentedly great awareness to physical fitness and health. Physical activity is a dominant factor for healthy lifestyle and healthy behaviors. Advancing into the 21st century, the Mainland Government actively promotes sports by prioritizing nationwide fitness as a national strategy to achieve the goals of "sporting superpower" and "healthy China". In conjunction with its great efforts in developing social economy, the Macao SAR Government also proactively facilitates sports development through exchanges with Mainland China and other countries to synchronize the development of sports for all and competitive sports.

The physical fitness study of Macao residents is an achievement through collaboration between the Sports Bureau of Macao SAR Government and the General Administration of Sport of China. In 2005, the quinquennial "Physical Fitness Study of Macao SAR Residents" was launched. A monitoring system consistent with that of Mainland China was established. Study results were released on a regular basis, laying a solid foundation for observing and comparing physical fitness status of Macao residents with neighboring regions on a dynamic basis. It also provided significant scientific references for the Macao SAR Government to develop relevant policies, and encouraged its residents to participate in physical activities. Today, the *2015 Physical Fitness Report of Macao SAR Residents*, which comprises the results of the third physical fitness study, is officially published. I hereby sincerely extend my heartfelt congratulations.

Data from the study reflect the physical fitness status quo of Macao residents. The results show that the physical fitness statuses of the general public and their desire to participate in physical activity have improved when compared with 2010. The successful release of the *2015 Physical Fitness Report of Macao SAR Residents* is another fruitful accomplishment between China Institute of Sport Science and the Sports Bureau of Macao SAR Government. I hope that more achievements will be made in the future to enhance physical fitness and health through sports by further collaboration among both parties.

July 2016

Prologue

Since 2005, the Macao SAR Government had been conducting physical fitness study for Macao residents over a five-year cycle and released study results periodically. The study enabled Macao residents to keep abreast of their physical conditions and their changing patterns, educated the public to exercise in a scientific manner, and thereby improved their physical fitness.

In 2005, with technical support from China Institute of Sport Science under General Administration of Sport of China, the Macao SAR Government conducted the first physical fitness study of Macao residents and proceeded at the same pace with the national physical fitness study. In this Study, the Macao SAR Government obtained basic data on physical status of the general public and established the "physical fitness database of Macao residents". In addition, the Macao SAR Government developed the Physical Fitness Measurement Standards for Macao Residents and gradually built a monitoring system on physical fitness. Through the second physical fitness study implemented in 2010, the Macao SAR Government further improved the monitoring system and raised the awareness of the public on fitness and health.

The third physical fitness study for Macao residents was successfully completed in 2015 and it focused on Macao residents aged 3-69. Four age groups were categorized including young children (aged 3-6), children and adolescents (students) (aged 6-22), adults (aged 20-59) and seniors (aged 60-69). 10,235 valid samples were collected. Now the *2015 Physical Fitness Report of Macao SAR Residents* has been composed through which all details of the study will be published to all sectors of the society.

On behalf of the Sports Bureau of Macao SAR Government, I hereby express sincere gratitude to China Institute of Sport Science of General Administration of Sport of China, Department of Health, Education and Youth Affairs Bureau, Social Welfare Bureau, Tertiary Education Services Office, Macao Polytechnic Institute, individuals and relevant institutions who engaged in the physical fitness study. The support and engagement of all social sectors are crucial to the smooth completion of this physical fitness study. Let's strive persistently in the future to continuously improve the physical fitness and health of our residents.

Pun Weng Kun
President of Sports Bureau of Macao SAR Government
July 2016

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Part I
-
Physical Fitness Study and Implementation

I. Basic Social Development of Macao in 2015

Since the transfer of sovereignty of Macao in December 1999, with support from Central People's Government and concerted efforts from the Macao SAR Government and its public, Macao had achieved remarkable economic growth with diverse industries. The gross domestic product (GDP) of Macao was MOP50.27 billion in 1999 and reached MOP 413.47 billion in 2013, with an average annual growth rate of 16.2%. Total government revenue of Macao was MOP 16.94 billion in 1999 and reached MOP 175.95 billion in 2013, with an average annual growth rate of 18.2%. The GDP per capita of Macao increased by 4.8 times from USD 15,000 in 1999 to USD 87,000, ranking second in Asia and fourth in the world in terms of GDP per capita. The unemployment rate of Macao dropped from 6.3% in 1999 to 1.7% today, thus full employment was basically achieved. The average monthly income per person increased from MOP 4,920 in 1999 to MOP 15,000 today, and the life expectancy of Macao residents increased from 80.7 years old in 1999 to 85 years old today.

With the gaining prosperity of economy, the Macao SAR Government had focused on "tourism and gaming as the principle industry, service industry as the mainstay to lead the development of other industries". While sound and orderly development of the gaming industry was kept, a number of service industries such as business and trade, convention and exhibition, cultural and creative industries, retail industry as well as emerging industries had evolved progressively. Notably, Macao had transformed economically in 15 years since the handover, practicing the principles of "one country, two systems", "Macao people administering Macao" , high degree of autonomy, and in-depth partnership with the Mainland, had all contributed to a win-win situation escalating the national identity and national pride of the Macao residents.

As a result of the fast growing economy, the Macao SAR Government and the public had given more attention to sports development. Relevant sports personnel were actively involved, the level of competitive sports was enhanced, and stadiums and gymnasiums were flourished in accordance with international standard. In recent years, the Decree-Law no 67/93/M, December 20 Regulations on Sports Activity in Macao issued by the Macao SAR Government stipulated the following basic physical education policies: the Macao SAR Government shall focus, prioritize and promote physical education, shall particularly focus on Sports for All, and ensure that all residents have proper access to physical activity so as to promote their overall development; the Macao SAR Government shall also provide resources for residents to participate in international sport events and provide training for athletes, so that they can ultimately bring glory to Macao.

While striving to develop social economy since its handover, the Macao SAR Government had emphasized extensively in physical education, and actively coordinated with the Mainland and international community to focus on physical fitness surveillance. From 2001 to 2002, Macao Sport Development Board and China Institute of Sport Science (China Physical Fitness Surveillance Center) implemented a physical fitness study on adults aged 20~59 together with Health Bureau and Macao Polytechnic Institute. In 2005, with joint efforts from both Macao SAR Government and Mainland China, the physical fitness study of Macao residents (aged 3~69) achieved synchronization with the Mainland for the first time, thus perfecting the national surveillance system of physical fitness. In 2010, the second physical fitness study for Macao residents was completed on all ages. Through this Study, the data on physical conditions were compiled more extensively, and reference data were provided to formulate policies associated with public health activities, future sports and medical care. In addition, it helped to change the health perspective of the public, assisted them in fostering good habits in physical activity, and integrated healthy concepts in their daily lives constantly.

The objectives of the physical fitness study were to keep abreast of the current status of physical fitness, improve database, establish a good foundation for dynamic observation and study on the changing patterns of the physical fitness status of Macao residents, as well as provide important scientific basis for government departments to formulate social development policies and promote physical activities. To achieve the objectives, the Sports Bureau of Macao SAR Government (formerly Macao Sport Development Board, hereinafter referred to as "Macao Sports Bureau") conducted the third physical fitness study for its residents at all ages in 2015 together with Health Bureau, Education and Youth Affairs Bureau, Social Welfare Bureau, Tertiary Education Service Office and Macao Polytechnic Institute.

II. Subjects and Methods

(I) Subjects

Subjects were Macao residents aged 3~69 and were categorized into four age groups: young children (aged 3~6), children and adolescents (students, aged 6~22), adults (aged 20~59) and seniors (aged 60~69). Young children referred to those who have lived in Macao for at least 3 years. Students, adults and seniors meant for those who have lived in Macao for at least five years.

Qualified subjects should meet the following criteria: healthy and physically well developed without congenital or hereditary diseases such as heart disease, cerebral palsy, deaf-mutism, dementia, mental disorder, dysplasia, and other acute or chronic diseases such as rheumatic heart disease, hypertension, etc. The subjects must be endowed with self-caring ability, acceptable verbal skills, thinking and reception ability, as well as ability to perform basic physical activities.

(II) Sampling Methods

1. Principles

Samples were picked by the stratified random and cluster sampling methods. In order to achieve longitudinal comparative study, the sampling sites were selected based on the previous selected organizations in 2010, and the method for supplementing sampling sites was the same as that used in 2010.

2. Methods

(1) Young Children

Based on kindergartens (or schools) in Macao, subjects were categorized according to their locations in the parish and were divided into the following areas: 1) Nossa Senhora de Fátima (north area), mainly industrial and residential, densely populated and mostly consisted of new immigrants, 2) Santo António and S. Lázaro (central area), commercial and residential regions with comparatively dense population, 3) S. Lourenço, Sé Catedral, Nossa Senhora do Carmo and São Francisco Xavier (south area and island area), tourism and gaming regions in Macao, where Sé Catedral is the central commercial district with comparatively small population. Two kindergartens were selected randomly from each area. Young children of the same class were grouped as a unit from which the samples were drawn to obtain the appropriate age. If the two kindergartens did not provide enough valid subjects, subjects would be randomly picked from the third randomly selected kindergarten.

(2) Children and Adolescents (Students)

Primary and secondary school students: based on schools in Macao, subjects were categorized according to their locations in the parish and were divided into the following areas: 1) Nossa Senhora de Fátima (north area), mainly industrial and residential, densely populated and mostly consisted of new immigrants, 2) Santo António and S. Lázaro (central area), commercial and residential regions with comparatively dense population, 3) S. Lourenço, Sé Catedral, Nossa Senhora do Carmo and São Francisco Xavier (south area and island area), tourism and gaming regions in Macao, where Sé Catedral is the central commercial district with comparatively small population. Two schools were selected randomly from each area. Students of the same class were grouped as a unit from which the samples were drawn to obtain the appropriate age. If the two schools did not provide enough valid subjects, subjects would be randomly picked from the third randomly selected school.

University students: based on universities and colleges in Macao, the entire department was selected randomly for sampling. Any tertiary educational institution or its department with special physical requirements shall not be included.

(3) Adults

Adults were divided into labor intensive and non-labor intensive workers. Based on government agencies and some private institutions in Macao, N sampling sites were selected randomly. Adults of the same department were grouped as a unit from which the samples were drawn to obtain the appropriate age.

(4) Seniors

Based on senior agencies in Macao, subjects were categorized according to their locations in the parish and were divided into the following areas: 1) Nossa Senhora de Fátima (north area), mainly industrial and residential, densely populated and mostly consisted of new immigrants, 2) Santo António and S. Lázaro (central area), commercial and residential regions with comparatively dense population, 3) S. Lourenço, Sé Catedral, Nossa Senhora do Carmo and São Francisco Xavier (south area and island area), tourism and gaming regions in Macao, where Sé Catedral is the central commercial district with comparatively small population. Two senior agencies were selected from each area from which the samples were drawn to obtain the appropriate age. If the two senior agencies did not provide enough valid subjects, subjects would be randomly picked from the third randomly selected senior agency.

3. Grouping and Sample Size

(1) Young Children

Young children were grouped into two categories: male and female. Each age group differed by half a year, giving rise to 16 groups in total. 55 samples were picked from each age group, with a total sample size of 880 subjects.

(2) Children and Adolescents (Students)

Primary and secondary school students were grouped into two categories: male and female. Each age group differed by one year, giving rise to 26 groups in total. 55 samples were picked from each age group, with a total sample size of 4,290 subjects.

University students were grouped into two categories: male and female. Each age group differed by one year, giving rise to 8 groups in total. 105 samples were picked from each age group, with a total sample size of 840 subjects.

(3) Adults

Adults were divided into two groups: labor intensive and non-labor intensive workers, each then grouped into four categories according to gender. They were also classified by age. Each age group differed by five years (i.e. aged 20~24, 25~29, ... 55~59), four categories giving rise to 32 groups in total. 105 samples were picked from each age group, with a total sample size of 3,360 subjects.

(4) Seniors

Seniors were grouped into two categories: male and female. Each age group differed by five years (i.e. aged 60~64, 65~69), giving rise to 4 groups in total. 105 samples were picked from each age group, with a total sample size of 420 subjects.

The total number of subjects was 9,790.

4. Calculation of Age

The age of subjects was calculated as follows:

(1) Aged 3~6 (Young Children)

Birthday has passed for more than 6 months at the time of study:

Age = 2015 − birth year + 0.5

Birthday has passed but less than 6 month at the time of study:

Age = 2015 – birth year

Birthday will be coming in less than 6 months at the time of study:

Age = 2015 – birth year – 0.5

Birthday will be coming in more than 6 months at the time of study:

Age = 2015 – birth year – 1

(2) Aged 6~69

Birthday has passed at the time of study: Age = 2015 – birth year

Birthday has not passed at the time of study: Age = 2015 – birth year – 1

5. Principles of Sample Selection

(1) Equal portion of the samples from different groups (gender, age and work categories) should be selected from all areas.

(2) Samples should be evenly distributed in each adult and senior age group, so as to avoid deviation on age distribution from affecting the representativeness of samples. For example, the total number of samples in 20~24 age groups was 105; the number of samples from ages 20, 21, 22, 23 or 24 should each be about 20.

(3) Distinction of adult work categories. Labor intensive workers generally included customer service personnel, salesmen and personnel with similar work nature, skilled agricultural and fishery workers, craftsmen and artisans, machine operators, drivers and assemblers, and non-technicians etc. Non-labor intensive workers generally included legislative officers, public administration officers, community leaders and managers, professionals, technicians, and office clerks etc *(Refer to "Occupational Classification" in Appendix 2 of Part IV)*.

(III) Examined Variables

This study was composed of physique examination and questionnaire. Physique examination included anthropometric measurements, functional and physical fitness indicators. For young children, dental decay was included. For students, dental decay, eyesight, color vision were also examined. Information on the demographic characteristics, physical exercise and lifestyle of the subjects were obtained from completing a questionnaire *(Refer to Appendix 2 to Part IV)*.

1. Indicators of Inquiry

Indicators of inquiry were mainly performed by questionnaires which included:

I.Young Children (aged 3~6)

▲ Personal Information of Young Child

1 · Birth place

2 · Parish of residence

3 · Birth weight (kg)

4 · Birth length (cm)

5 · Gestational age

6 · Feeding patterns within four months after birth

7 · Number of siblings

8 · Birth order among siblings

9 · Frequency of flu or fever within the past year

10 · Diseases diagnosed by doctors

11 · Diseases suffered *(in order of precedence, at most three diseases)*

12 · Average cumulative sleeping hours per day *(including naps)*

13 · Kindergarten attendance

14 · Caretaker at home

15 · Extracurricular hobby *(interest)* classes *(in order of precedence, at most threes items)*

16 · Average cumulative time spent on outdoor activities per day *(including activities in and out of kindergarten)*

17 · Average cumulative time spent on watching TV, video and playing video games per day

18 · Physical exercises frequently participated *(in order of precedence, at most three items)*

19 · Do you brush your teeth every day?

20 · Do you use dental floss in addition to tooth-brushing every day?

21 · Did you go to a dental clinic for dental examination within the past 12 months?

22 · Do you have any decayed tooth?

23 · If yes, have you visited a dental clinic for treatment?

24 · How many days per week on an average do you have breakfast?

25 · How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at a fast food restaurant?

26 · How many times per week on an average do you take the following foods or drinks? *(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastries, ice cream, fish balls, instant noodles, soda / packaged juice/sweet drinks)*

▲ Paternal and Maternal Personal Information

1 · Date of birth

2 · Birth place

3 · Years of residence in Macao

4 · Height (cm)

5 · Weight (kg)

6 · Education level

7 · Current occupation

8 · Frequency of physical exercise per week

9 · Physical exercises frequently participated *(in order of precedence, at most threes items)*

10 · Average duration of physical exercise per time

II.Children and Adolescents (students, aged 6~22)

1 · Birth place

2 · Parish of residence

3 · Diseases diagnosed by doctors within the past 5 years

4 · Diseases suffered *(in order of precedence, at most three Diseases)*

5 · Number of siblings

6 · Birth order among siblings

7 · School attendance

8 · Major transportation means to school

9 · Total time spent commuting to and from school per day

10 · Frequency of physical education (PE) class per week

11 · Number of sessions used in PE class each time

12 · Self-perception during PE class

13 · Average cumulative out-of-school time spent on outdoor activities per day

14 · Average cumulative time spent on watching TV, video and playing video games per day

15 · Extracurricular hobby *(interest)* classes attended *(in order of precedence, at most threes items)*

16 · Frequency of extracurricular physical exercise per week

17 · Extracurricular physical exercises frequently participated *(in order of precedence, at most three items)*

18 · Ball games frequently participated

19 · Average duration of physical exercise each time

20 · Self-perception after physical exercise

21 · Average cumulative time spent on homework and studying lessons per day

22 · Average cumulative sleeping hours per day *(including naps)*

23 · Do you brush your teeth every day?

24 · Do you use dental floss in addition to tooth-brushing every day?

25 · Did you go to a dental clinic for dental examination within the past 12 months?

26 · Do you have any decayed tooth?

27 · If yes, have you visited a dental clinic for treatment?

28 · How many days per week on an average do you have breakfast?

29 · How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at fast food restaurants?

30 · How many times per week on an average do you take the following foods or drinks? *(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastries, ice cream, fish balls, instant noodles, soda / packaged juice / sweet drinks)*

III. Adults (aged 20~59)

1 · Birth place

2 · Parish of residence

3 · Education level

4 · Current occupation

5 · Working environment

6 · Diseases diagnosed by doctors within the past 5 years

7 · Diseases suffered *(in order of precedence, at most three Diseases)*

8 · Average working hours per week

9 · Average cumulative sleeping hours per day *(including naps)*

10 · Quality of sleep

11 · Average cumulative walking hours per day

12 · Average cumulative sitting time per day

13 · Cigarette consumption

14 · Duration of smoking

15 · Alcohol consumption

16 · Frequency of alcohol drinking

17 · Types of alcohol frequently consumed

18 · Activities frequently participated during leisure time *(in order of precedence, at most three items)*

19 · Sport events frequently watched *(in order of precedence, at most three items)*

20 · Average frequency of physical exercise per week

21 · Average duration of physical exercise each time

22 · Duration of persistent exercising

23 · Purposes of physical exercise *(in order of precedence, at most three items)*

24 · Physical exercises frequently participated (in order of precedence, at most three items)

25 · Ball games frequently participated *(in order of precedence, at most three items)*

26 · Locations of physical exercise *(in order of precedence, at most three items)*

27 · Self-perception after physical exercise

28 · Main obstacles for participating in physical exercise *(in order of precedence, at most three items)*

29 · Have you ever heard of the "Physical Fitness Study" ?

30 · Have you ever participated in the "Physical Fitness Study" ?

31 · What is your understanding of the "Physical Fitness Study" ? *(in order of precedence, at most three items)*

32 · How many days per week on an average do you have breakfast ?

33 · How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at fast food restaurants?

34 · How many times per week on an average do you take the following foods or drinks? *(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastries, ice cream, fish balls, instant noodles, soda / packaged juice / sweet drinks)*

IV. Seniors (aged 60~69)

1 · Birth place

2 · Parish of residence

3 · Education level

4 · Retirement status

5 · Occupation before retirement /current occupation

6 · Occupation category before retirement /current occupation category

7 · Working environment before retirement/current working environment

8 · Diseases diagnosed by doctors within the past 5 years

9 · Diseases suffered *(in order of precedence, at most three Diseases)*

10 · Average working hours per week

11 · Average cumulative sleeping hours per day *(including naps)*

12 · Quality of sleep

13 · Average cumulative walking hours per day

14 · Average cumulative sitting time per day

15 · Cigarette consumption

16 · Duration of smoking

17 · Alcohol consumption

18 · Frequency of alcohol drinking

19 · Types of alcohol frequently consumed

20 · Activities frequently participated during leisure time *(in order of precedence, at most three items)*

21 · Sport events frequently watched *(in order of precedence, at most three items)*

22 · Average frequency of physical exercise per week

23 · Average duration of physical exercise each time

24 · Duration of persistent exercising

25 · Purposes of physical exercise *(in order of precedence, at most three items)*

26 · Physical exercises frequently participated *(in order of precedence, at most three items)*

27 · Locations of physical exercise *(in order of precedence, at most three items)*

28 · Self-perception after physical exercise

29 · Main obstacles for participating in physical exercise *(in order of precedence, at most three items)*

30 · Have you ever heard of the "Physical Fitness Study"?

31 · Have you ever participated in the "Physical Fitness Study" ?

32 · What is your understanding of the "Physical Fitness Study" ? *(in order of precedence, at most three items)*

33 · How many days per week on an average do you have breakfast?

34 · How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at fast food restaurants?

35 · How many times per week on an average do you take the following foods or drinks? *(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastries, ice cream, fish balls, instant noodles, soda / packaged juice / sweet drinks)*

2. Study Indicators

The study indicators were:

Table 1-1 Study Indicators in 2015 Physical Fitness Study of Macao Residents

Types	Study indicators	Young Children Aged 3~6	Children and adolescents (students) Aged 6~12	Aged 13~18	Aged 19~22	Adults Aged 20~39	Aged 40~59	Seniors Aged 60~69
Anthropometric measurements	Height	●	●	●	●	●	●	●
	Sitting height	●	●	●	●	●	●	●
	Weight	●	●	●	●	●	●	●
	Chest circumference	●	●	●	●	●	●	●
	Waist circumference	●	●	●	●	●	●	●
	Hip circumference	●	●	●	●	●	●	●
	Skinfold thickness (Upper arm, inferior angle scapula and abdomen)	●	●	●	●	●	●	●
	Shoulder width	●	●	●	●	●	●	●
	Pelvis width	●	●	●	●	●	●	●
	Foot length	●	●	●	●	●	●	●
Physiological function	Pulse (heart rate)	●	●	●	●	●	●	●
	Blood pressure		●	●	●	●	●	●
	Vital capacity		●	●	●	●	●	●
	Step test					●	●	
Physical fitness	10m shuttle run	●						
	50m run		●	●	●			
	50m × 8 shuttle run		●					
	800m run (female)			●	●			
	1,000m run (male)			●	●			
	Standing long jump	●	●	●	●			
	Walking on balance beam	●						
	Successive jumps with both feet	●						
	Inclined pull-ups(male)		●					
	Pull-ups (male)			●	●			
	Vertical jump		●	●	●	●		
	Grip strength		●	●	●	●	●	●
	Back strength		●	●	●	●		
	Tennis ball distance throw	●						
	Sit and reach	●	●	●	●	●	●	●
	Standing on one foot with eyes closed		●	●	●	●	●	●
	Choice reaction time		●	●	●	●	●	●
	Push-ups (male)					●		
	One-minute sit-ups (female)		●	●	●	●		
Health	Dental decay	●	●	●				
	Eyesight		●	●	●			
	Color vision		●	●	●			

Note: "●" represents that the indicator was measured in that age group

(IV) Testing Apparatus

Testing apparatus utilized in this study were purchased from Jianmin - II of Beijing Xindong Titan Sports Equipment Co., Ltd. Specific models were as follows:

Table 1-2 Testing apparatus

No.	Products /Models	No.	Products /Models
1	(Adults) Stadiometer	10	DJZL-I electronic balance monitor
2	RCS-160 electronic digital scale	11	Skinfold caliper
3	FCS-1000 digital electronic spirometer	12	(Children) Stadiometer
4	TJY-I digital heart rate monitor, stopwatch (stand-by)	13	(Children) Electronic sit-and-reach measuring apparatus
5	WCS-1000 digital grip dynamometer	14	Electronic push-up counter
6	Digital back dynamometer	15	Electronic sit-up counter
7	Digital sit-and-reach measuring apparatus	16	Balance beam
8	Vertical jump test mat	17	Soft pack
9	FYS-I electronic reaction time measuring apparatus	18	Electronic standing long jump mat

Other apparatus:

Anthropometric measuring tape, sphygmomanometer, visual chart (eye chart illuminance was about 500 lux), color vision examination chart (People Health Publishing House, edited by Wang Kechang, 2nd Edition in 2004), tennis balls, stopwatches, starting flags and whistles, horizontal bars.

(V) Testing Methods

Testing methods included two parts: questionnaire and physique indicator testing (**refer to Appendix 2 and Appendix 3 in Part IV**).

(VI) Scheduling

To guarantee smooth operation of the study, Macao Sports Bureau and China Institute of Sport Science started the preparatory work in 2014. The 2015 Physical Fitness Study was set into three phases which included the preparatory phase in 2014, the testing phase in the first half year of 2015, and the result analysis phase in the second half of year 2015 to 2016.

Table 1-3 Procedures of 2015 Physical Fitness Study of Macao Residents

Phases	Time	Work Contents
Preparatory phase	July to August, 2014	1 · Worked out study scheme 2 · Developed work manual 3 · Purchased testing apparatus
	September to December, 2014	1 · Trained recruited staff on essential skills 2 · Compiled work cards 3 · Developed entry software 4 · Determined sampling units and numbers
Testing phase	January to May, 2015	1 · Examined recruited staff on skills 2 · Verified sampling units 3 · Checked testing quality 4 · Performed data entry 5 · Checked data entry 6 · Calculated statistics
Data analysis phase	June 2015 to June 2016	1 · Composed study report (in Chinese) 2 · Composed survey report for students (by three school age groups) (in Chinese) 3 · Composed physical fitness survey report for aged 13 ~ 29 (in Chinese) 4 · Input new data into the Macao residents physical fitness database 5 · Updated Macao residents physical fitness measurement criteria
	June 2016 to December 2017	Composed research report (in Chinese)

III. Organization and Implementation

(I) Work Preparation

1. Establishment of Organizational Network and Leadership

Physical fitness study was a large-scale social survey activity. To ensure smooth implementation of the study, a leading group was established under the leadership of Macao Sports Bureau and coordination from relevant departments. Based on the platform established in 2010, an organizational network comprising a Physical Fitness Monitoring Centre for Macao Residents based in the Sports Medicine Centre of Macao Sports Bureau, and study sites was established. The study sites were set at the randomly-selected kindergartens, schools, work units and senior agencies. The respective responsibilities and tasks were as follows:

(1) Responsibilities of the leading group: coordinated with relevant departments of the Macao SAR Government; led, organized and formulated implementation scheme; and made important decisions during the physical fitness study of Macao Residents.

(2) Tasks of Physical Fitness Monitoring Centre for Macao Residents: coordinated with China Institute of Sport Science to prepare the scheme and detailed procedures for 2015 Physical Fitness Study of Macao Residents; confirmed testing apparatus necessary for the study; prepared data register, work manual and data entry software; trained staff and examiners; established study teams; organized and coordinated samples; checked, accepted, collected and calculated data; studied, analyzed and completed the Physical Fitness Report of Macao Residents and research report etc.

Research group and study teams were established under the Physical Fitness Monitoring Centre for Macao

Residents. The research group was composed of technicians from China Institute of Sport Science and Sports Medicine Centre of Macao Sports Bureau.

(3) Functions of study sites: coordinated with the Physical Fitness Monitoring Centre for Macao Residents in sampling and testing; specifically organized subjects, implemented study scheme, as well as organized and managed study sites.

2. Revision of 2015 Physical Fitness Study Scheme of Macao Residents

Macao Sports Bureau together with China Institute of Sport Science took the 2010 physical fitness study as a basis to continuously survey on the physical exercise behavior of subjects. Dental health behavior and eating habits of young children, children and adolescents were added; alcohol consumption of adults and seniors were revised, and questionnaire on eating habits was added in the survey. Study indicators were kept unchanged to ensure continuity and comparability of the physical fitness indicators.

(1) Determination of Sample Size and Establishment of Study Sites

The Physical Fitness Monitoring Centre for Macao Residents determined the number of subjects and study sites. According to scientific statistics in large-scale studies and comparative historical data, the sample size and sampling methods shall be in accordance with that of 2010 physical fitness study.

Slight changes in study sites were mainly as follows: 1) for the subjects aged 6 to 22, Chan Sui Ki Perpetual Help College previously selected did not participate in the study, and 3 new study sites [No.321- Colegio Dom Bosco (Yuet Wah) Chinese Section, No.322- Yuet Wah College (Chinese Section), No.323- Sacred Heart Canossian College] were selected; 2) for the subjects aged 20 to 59 (adults), three study sites (Estrela do Mar School, Macao Youth Volunteers Association and Wing Hang Bank) were cancelled, and 8 new study sites (No.341-Sheraton Grand Macao Hotel, Cotai Central, No.342- SJM Holdings Limited, No.343- Macau Gaming Industry Labourers Association, No.344- Institute for Tourism Studies, No.345- Macau University of Science and Technology, No.346- Sacred Heart Canossian College, No.347- Associação dos Escriturários and No.348- Macao Sports Press Association) were selected; 3) for the subjects aged 60 to 69 (seniors), 9 study sites (Asilo de Betânia, Centro de Convívio Fai Chi Kei, Centro de Convívio "Kei Hong Lok Yuen" do Centro Pastoral da Areia Preta, Centro de Convívio "Clube de Terceira Idade", Casa para Anciãos da Paróquia de Santo António, Centro de Convívio da Associação de Mútuo Auxílio dos Moradores do Bairro de San Kio, Centro de Convívio Casa dos "Pinheiros", Centro de Dia do Porto Interior, União Geral das Associações dos Idosos de Macau and Centro de Dia da Praia do Manduco) were cancelled, and 5 new study sites (No.371-Centrode Convívio da Associação de Mútuo Auxílio dos Moradores de Mong-Há, No.372- Centro de Convívio da Associação de Mútuo Auxílio dos Moradores do Sam Pá Mun, No.373- Centro de Lazer e Recreação das Associações dos Moradores da Zona Sul de Macau, No.374- Centro de Convívio da Obra das Mães and No. 375- Tung Sin Tong Charitable Society Senior Activity Center) were selected. **Refer to Appendix 4 of Part IV.**

(2) Revision of Indicators and Determination of Testing Apparatus

In consideration of the changing physical exercise pattern of the Macao residents, and of the continuum of the study, the Physical Fitness Monitoring Centre for Macao Residents together with China Institute of Sport Science made minor changes on the questionnaires based on the 2010 physical fitness study. The changes in the questionnaire included dental health questions such as "Do you brush your teeth every day?", "Do you use dental floss in addition to tooth-brushing every day?", "Did you go to a dental clinic for dental examination within the past 12 months?", "Do you have any decayed tooth?", "If yes, have you visited a dental clinic for treatment?", as well as adding eating habit questions to young children, children and adolescents (students), adults and seniors groups. Questions included "How many days per week on an average do you have breakfast?", "How many meals per week on an average (breakfast, lunch or dinner) do you eat out or eat at fast food restaurants?", "How many times per week on an average do you take the following food or drinks? (Potato chips/shrimp chips, french fries, chocolate/candies, cookies/sweet pastries, ice cream, fish balls, instant noodles, soda /packed juice/sweet drinks)". In the adults and seniors groups, alcohol beverages were better defined.

Testing apparatus was an important carrier in obtaining the physical fitness study data. Since physical fitness study strongly emphasized continuity, in order to better explore the changing patterns of the public's physical fitness, the consistency of testing apparatus should be guaranteed. Therefore, the 2015 physical fitness study adopted compatible testing apparatus used in 2010 from Beijing Xindong Titan Sports Equipment Co., Ltd. - physical testing equipment of Jianmin– II.

3. Establishment of Study Teams

Macao Sports Bureau organized three study teams according to needs. To ensure quality, the examiners were trained by Macao Sports Bureau and China Institute of Sport Science. The examiners must pass an examination after two rounds of training before issuing an Examiner Training Certificate and participating in the of 2015 Physical Fitness Study of Macao Residents. Every study team member should fill out a registration form (Table 1-4).

Table 1-4 "2015 Physical Fitness Study of Macao Residents" study team member registration form

Study team:

Name	Gender	Age	Work Unit	Academic Background	Major	Study Indicator / Study Content	Remark

Work of study teams was divided into three parts based on the "three-fixing principle", namely: study indicator, apparatus, and study examiner. Detailed requirement and division of work were as follows:

(1) Every study team was divided into five professional groups, namely: questionnaire, anthropometric measurements, physiological function measurements, physical fitness measurements and health examination.

(2) Every team consisted of 1 team leader and at least 25 team members. Notably, the team should have at least 4 females, 3 questionnaire investigators, 2 in charge of checking data and 1 medical professional.

(3) Tasks: The team leader was in charge of organizing, coordinating and providing technical supervision to the team to assure quality of the study. The professional groups were responsible for completing the tests. Weight, waist circumference and skinfold thickness were tested by team members of the same gender. The checking team was in charge of quality assurance at the study site inspecting, sorting and filing of the data books. The medical personnel were in charge of all medical services at the study site and timely handling of issues in case of emergency.

4. Preparation of Testing Apparatus

Macao Sports Bureau supplemented and maintained physical testing equipment of Jianmin - II of Beijing Xindong Titan Sports Equipment Co., Ltd. According to sample size, 12,000 "Data Register of 2015 Physical Fitness Report of Macao SAR Residents" and 400 work manuals were prepared. The Bureau also provided relevant souvenirs and fitness pedometers for subjects to improve their participation enthusiasm.

(II) Technical Training

Before the study, the team members were trained by Macao Sports Bureau and China Institute of Sport Science. In the second half of 2014, Macao Sports Bureau was responsible for organizing programmes and scheduling personnel, whereas China Institute of Sport Science was responsible for compiling training handbook as well as teaching of theories and technical skills.

The training included lecture, technical operation and Q&A. It was focused on "understanding the work scheme, questionnaires, physical study procedures, measuring methods of physical indicators and quality control" etc. Finally, an "on-site examination" was implemented. Examiners were only qualified to participate in the study after two rounds of training, passed the examination on technical skills and been issued a training certificate.

(III) Data Acquisition

The inauguration ceremony of 2015 Physical Study of Macao Residents was held on January 22, 2015. Pilot data acquisition was performed from January 17 to January 18. Official on-site data acquisition started on January 19, and ended in late April 2015. Three study teams were established to collect data for the study. During the on-site data acquisition, the study teams conducted the tests in strict accordance with the physical fitness study procedures and methods. The Physical Fitness Monitoring Centre for Macao Residents dispatched key supporting technicians to provide on-site supervision and technical guidance. The study teams followed precise standards to implement the tests, checked apparatus and reassessed data to ensure validity of scientific data.

(IV) Data Summarization

In order to guarantee the quality of data summarization, China Institute of Sport Science and Macao Sports Bureau established "data verification and entry checking standards", "data cleaning and checking procedures", "data entry software validations for 2015 Physical Fitness Study of Macao Residents" and "logic checking of data".

From early May 2015 to mid June 2015, data verification, data entry and entry result checking were completed. All data registers were 100% reviewed for clarity and completion of the classification codes; any overlooked problems and logic errors were corrected according to the content order of registers, and any missing indicators were checked. The review process laid a solid foundation for improving data entry efficiency. Double data entry method and "individual responsibility system" were adopted. Each person was responsible for data entry of one sampling unit and should complete the entry promptly.

By June 15, 2015, a total of 10,235 valid data registers were completed after going through a two-stage quality control management system, namely an on-site data acquisition and data summarization by the Physical Fitness Monitoring Centre for Macao Residents.

IV. Quality Control

Quality control assured valid study data. The 2015 physical fitness study quality control was divided into four phases, namely, work preparation, data acquisition, data summarization and data cleaning; and ran through two-stage management system (study sites–study team – Physical Fitness Monitoring Centre for Macao Residents). Re-examination card, re-examination error table, apparatus checking and maintenance form, and two-times verification procedure were utilized during the whole quality control process.

(I) Quality Control of Pre-study Preparation

The 2015 Physical Fitness Study of Macao Residents was a well designed and organized system project. Active and prudent preparations before the study were the foundation of success. Thus, quality control was performed strictly for every routine before data acquisition.

1. Establishment of Organizational Network and Leadership

The organizational network system established in 2010 was continuously adopted in 2015. The network was led by Macao Sports Bureau with coordination from relevant departments. The technical network composed of the Physical Fitness Monitoring Centre for Macao Residents, selected kindergartens, schools, work units and senior agencies; whereas China Institute of Sport Science provided technical support.

2. Revision of 2015 Physical Fitness Study Scheme

Questionnaire indicators were revised in 2015 Physical Fitness Study of Macao Residents. Dental health behavior survey on young children, children and adolescents was added, and survey on their eating habits was also added. Alcohol types and degrees of concentration were further specified, and survey on eating habits was added to adults and seniors. As a result, the data collected reflected the dental health behaviors of young children, children and adolescents; and relationships between dental caries and dental health behaviors were examined. Study indicators remained unchanged to ensure continuity and comparability.

3. Establishment of Study Teams

In order to guarantee quality of the study, China Institute of Sport Science provided detailed guidance for the establishment of the study teams. Three study teams were established for the study. The members were mainly university students from physical education departments of the University of Macau and Macao Polytechnic Institute. These examiners with strong cultural background and physical health laid a solid foundation for the successful completion of this study.

4. Preparation of Testing Apparatus

Based on continuity and comparability of study indicators, Macao Sports Bureau decided to continue using the testing apparatus(Beijing Xindong Titan Sports Equipment Co., Ltd. - physical testing equipment of Jianmin - II) used in 2010 physical fitness study. At the same time, "Data Register of 2015 Physical Fitness Report of Macao Residents" and "Work Manual of 2015 Physical Fitness Report of Macao Residents" were developed according to the sample size. Fitness pedometers were distributed to the subjects to motivate their initiatives.

5. Technical Training

The technical training for 2015 Physical Fitness Study of Macao Residents was performed on-site, and 155 persons were trained.

Key points on quality control and on-site data acquisition were integrated into the technical training course. Theoretical knowledge and practical operation were conducted interactively to make examiners keep abreast of training knowledge. Finally, "on-site examination on technical skills" was performed. The examiners could not participate in the study until they had passed the examination and obtained the 2015 Physical Fitness Study of Macao Residents training certificate.

Training material was the "Work Manual of 2015 Physical Fitness Report of Macao Residents", prepared by China Institute of Sport Science and Macao Sports Bureau.

(II) Quality Control of Data Acquisition

During the whole data acquisition process, quality control was performed before, during and after data acquisition.

1. Preparation before Data Acquisition

Before data acquisition, apparatus and study sites should be prepared.

(1) Determination of Study Procedures

Study procedures would be one of the major factors affecting study quality. Therefore, all study teams should follow the study procedures strictly.

Study procedures were carried out as follows:

Questionnaire ▶ Physiological function (and health) ▶ Anthropometric measurements ▶ Physical fitness"

(see Figure 1-1)

The study procedures on health, anthropometric measurements and physical fitness could be carried out interchangeably, but the examination of heart rate (pulse) must be performed first.

In principle, headcount of each study team should not exceed 200 subjects per working day.

The study team members should collect the data registers and checked the contents.

(2) Preparation of Apparatus
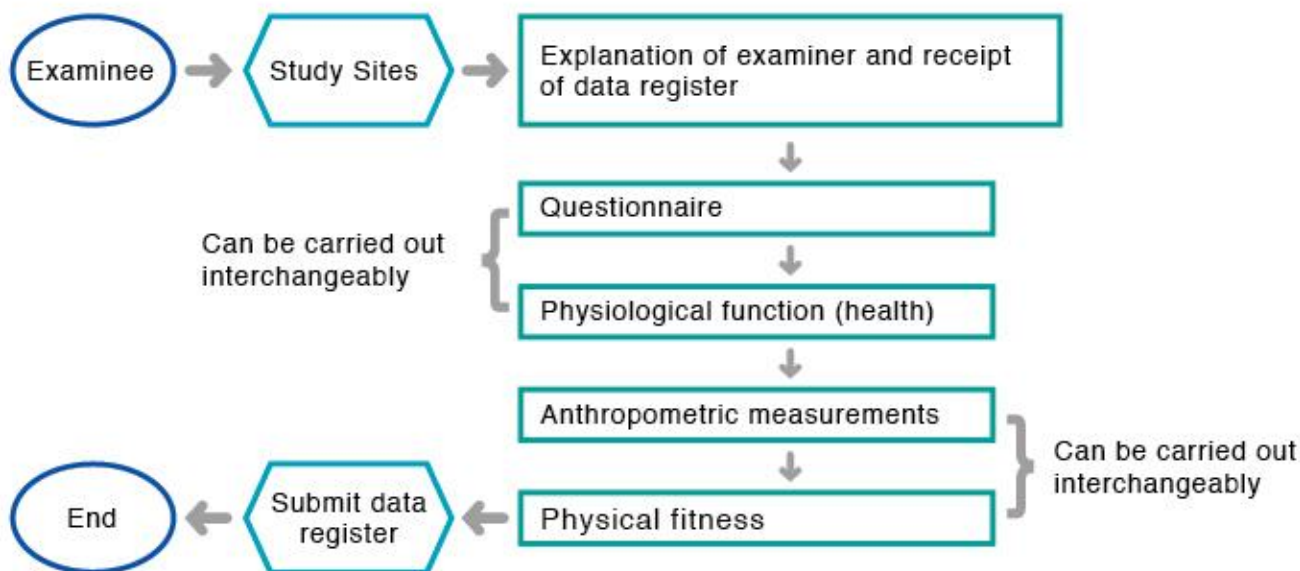
Figure 1-1 Workflow of the study process

① The 2015 physical fitness study adopted compatible testing apparatus used in the national physical fitness study at the Mainland.

② Before the study, apparatus should be prepared, installed, commissioned and tested.

③ A sufficient number of consumables (e.g. disposable mouthpieces and alcohol) should be prepared in advance.

Refer to **(IV) Testing Apparatus in II. Subjects and Methods of Part I** for apparatus required in this study.

(3) Calibration of Apparatus

① Stadiometer

Study team members checked the stadiometer by using a standard 150cm steel ruler. First, they placed the "0" point of the steel ruler at the bottom of the stadiometer and placed the steel ruler against the stadiometer. The measure board was then slid down to the top of the steel ruler. The value of the stadiometer and the reading of the steel ruler were compared; a value below 0.1 cm was considered a pass.

② Electronic Digital Scale

Study team members switched on the scale. A 10kg, 20kg and 30kg standard weight or equivalent object was put onto the scale for calibration. If the value shown on the screen of the scale was the same as the weight, it meant that the apparatus was precise. Afterwards, a 100g standard weight was put on the scale for calibration. If the figure shown on the screen increased by 0.1kg, it meant that the sensitivity of the scale met the requirement.

③ Measuring Tape

The measuring tape was compared with a standard steel ruler, if the error per meter was less than 0.2 cm, the measuring tape met the requirement.

④ Bare L-square

The two angles should meet at the "0" mark. A standard steel ruler was used to check the mark and the error should be less than 0.1 cm.

⑤ Electronic Spirometer

Study team members turned on the spirometer and waited for it to be in the working state. Then, the spirometer was checked with a 2000ml gas-measuring tube. The plunger was pulled to the maximum mark, and was then connected with the spirometer. It was pushed slowly for the gas to enter the spirometer (Figure 1-2). If the value of the spirometer was within ± 40ml range of 2000ml (between 1960ml and 2040ml), the spirometer met the requirement.

Figure 1-2 Calibration of electronic spirometer

⑥ Stopwatch

The stopwatch was checked according to Beijing Time. If the stopwatch value was within 0.2 second per minute, the stopwatch was precise and met the requirement.

⑦ *Sphygmomanometer*

The rubber ball, rubber hose and rotary knobs of gas valve were checked to ensure normal operation.

⑧ *Skinfold Caliper*

Zero adjustment: The upper and lower parts of the gauge were squeezed and checked if the index pointed at the "0" mark. If not, the dial was turned slightly to align it to the "0" mark.

Pressure calibration: Hung a 200g standard weight on the small hole at the lower part of the caliper. The lower and upper parts of the caliper were leveled for balance. If the pressure was within the range of 15mm ~ 25mm (red area), then the pressure of the caliper met the requirement and there was no need for adjustment. If the pressure was above 25mm, then the pressure was slightly too low. To adjust this, removed the standard weight and turned the dial to the left. If the index pointed below 15mm, then the pressure was slightly too high. To adjust this, removed the weight and turned the dial to the right, aimed between the 15mm and 25mm range (Figure 1-3).

Figure 1-3 Calibration of skinfold caliper

(4) Site Preparation

Before testing, study teams should arrange a site in advance. Indoor study site could be composed of several rooms and total area should not be less than 150m^2. Indoor study site shall be flat, large and bright enough to facilitate arrangement of testing apparatus as well as controlling the flows of personnel. Function indicators should be tested in a quiet venue (or room). Weight, circumference and skinfold thickness indicators shall be separately measured according to sex.

Students need outdoor site for the study, preferably 400m or 200m standard ground track field.

2. Quality Control during Data Acquisition

Quality control during data acquisition was to manage examiners, examinees, testing methods and results in an accurate and scientific manner.

(1) Requirement for Examiners

- Entered the study site 30 minutes in advance to do preparation work, such as checking and calibrating the apparatus.

- Explained the test requirements to the examinee before testing.

- Timely reviewed the results in case a re-test was needed.

- Strictly followed all the requirements of the study and should not intentionally amend the contents, methods or quality of the study.

(2) Requirements for Examinees

- Avoided strenuous exercise and heavy labor work within 12 hours before the study.

- Kept the study site quiet.

- Earnestly completed the test according to requirements.

- Dress code: sportswear and sports shoes. During anthropometric measuring, examinees should wear shorts and tank top or short-sleeve shirt for the female examinees.

- Stretched and warmed up before and after the examination to prevent injury.

- In principle, every examinee should complete the entire examination in one day. Even under special circumstances, all tests should be completed within one week.

(3) Verifying Data Entry

Each study team appointed 2 professional members to be responsible for checking the results of the examination. The checkers should be diligent and familiar with the project.

- *Primary On-site Examination*

① After the examination, checkers needed to check the classification code, the recording of questionnaire and indicators in the data registers for legibility. If any noncompliance was found, checkers needed to point out immediately to the examiner and corrected it at the site. During the whole study process, 967 pieces of missing, wrong or suspicious data were found. A make-up examination or re-examination was carried out to make sure that the value was complete, correct and reliable.

② All study results needed to be checked according to the Re-examination Reference Table (Tables 1-5 to 1-10). Anthropometric and physiological function results were found over the range in 186 data registers. If the results were not marked with "re-examination" or with other explanations, they would be regarded as suspicious and would be re-examined by the original examiner at the site. At the end, 62 pieces of incorrect data were corrected.

③ Physical fitness indicators in 60 data registers were beyond the Re-examination Reference Table references and were checked according to other relevant indicators to rule out doubts and prevent incorrect recordings. 4 undetermined data registers were rejected.

Table 1-5 "Re-examination Reference Table" for young children

Indicator	Age 3	Age 4	Age 5	Age 6
Male				
Resting heart rate (bpm)	70~120	70~120	70~120	70~120
Height (cm)	85~125	90~135	95~140	108~145
Sitting height (cm)	45~70	50~75	53~80	55~85
Weight (kg)	10~25	11~27	13~34	15~40
Chest circumference (cm)	48~60	49~65	51~75	52~80
Upper arm skinfold thickness (mm)	2~30	2~30	2~30	2~30
Subscapula skinfold thickness (mm)	2~30	2~30	2~30	2~30
Abdominal skinfold thickness (mm)	2~30	2~30	2~30	2~30
Sit and reach (cm)	-5~20	-5~20	-5~20	-5~20
10 m shuttle run (sec)	7.0~20.0	6.0~18.0	6.0~15.0	5.0~12.0
Standing long jump (cm)	20~100	30~130	40~150	50~160
Tennis ball distance throw(m)	1.0~8.0	1.0~10.0	2.0~13.0	2.5~16.0
Successive jumps with both feet (sec)	5.0~38.0	4.0~20.0	3.0~15.0	3.0~13.0
Walking on Balance Beam (sec)	5.0~80.0	3.0~70.0	3.0~50.0	2.0~30.0
Female				
Resting heart rate (bpm)	72~130	70~130	70~120	70~120
Height (cm)	85~120	90~130	95~140	108~145
Sitting height (cm)	45~70	50~79	53~80	55~85
Weight (kg)	10~25	12~28	13~35	15~40
Chest circumference (cm)	40~65	42~70	45~75	48~80
Upper arm skinfold thickness (mm)	2~30	2~30	2~30	2~30
Subscapula skinfold thickness (mm)	2~30	2~30	2~30	2~30
Abdominal skinfold thickness (mm)	2~30	2~30	2~30	2~30
Sit and reach (cm)	-5~20	-5~21	-5~22	-5~22
10 m shuttle run (sec)	7.0~20.0	6.0~18.0	6.0~15.0	5.0~12.0
Standing long jump (cm)	20~100	30~120	40~130	50~140
Tennis ball distance throw(m)	1.0~6.0	2.0~10.0	2.0~12.0	2.0~16.0
Successive jumps with both feet (sec)	5.0~35.0	5.0~20.0	4.0~15.0	4.0~13.0
Walking on Balance Beam (sec)	5.0~100.0	4.0~70.0	3.0~50.0	2.0~30.0

Table 1-6 "Re-examination Reference Table" of physical fitness indicator for children and adolescents (students)

Indicator / Age (yr)	50 meters (sec)	Inclined pull-ups/ Pull-ups (times)	Sit-ups (times/ min)	Sit and reach (cm)	Standing long jump (cm)	50 meters×8 shuttle run (sec)	800 meters (sec)	1,000 meters (sec)
Male								
7-9	14.0~7.7	0~52		-10~24	70~200	160~80		
10-12	12.0~7.1	0~60		-12~26	80~230	140~80		
13-15	11.0~7.0	0~35		-15~28	90~270			360~170
16-18	10.5~6.5	0~35		-12~38	100~290			330~160
19-22	10.0~6.3	0~40		-15~38	110~320			330~150
Female								
7-9	15.0~8.0		4~55	-5~27	65~190	170~85		
10-12	13.0~7.3		6~60	-6~29	75~220	150~80		
13-15	12.0~6.2		8~60	-10~32	85~250		330~150	
16-18	12.0~6.9		2~60	-10~34	95~280		330~140	
19-22	12.0~7.0		2~60	-10~34	100~300		330~140	

Table 1-7 "Re-examination Reference Table" of pulse and blood pressure for children and adolescents (students)

Age (yr)	Male			Female		
	Pulse (times/ min)	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)	Pulse (times/ min)	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
7	72-104	86-112	50-80	72-106	85-112	50-81
8	72-102	87-114	51-81	72-104	86-112	50-81
9	70-100	88-118	51-82	72-104	88-119	51-82
10	68-100	90-120	52-82	72-102	89-121	51-82
11	68-100	88-121	52-82	70-100	90-122	53-82
12	68-98	90-122	54-82	70-100	91-125	56-85
13	66-98	91-126	55-82	70-100	91-126	57-84
14	66-96	92-130	58-86	68-98	91-128	58-85
15	64-96	96-134	60-89	68-98	94-129	57-86
16	64-96	99-137	60-90	66-98	95-130	60-87
17	62-96	100-140	61-91	66-98	95-131	60-87
18	62-96	100-140	61-91	66-96	92-130	60-89
19 ~ 22	60-92	100-140	61-91	62-94	92-134	60-90

Table 1-8 "Re-examination Reference Table" of vital capacity (ml) for children and adolescents (students) (ml)

Age (yr)	Male	Female
7	560-2200	500-2000
8	650-2500	600-2300
9	800-2700	700-2500
10	900-2900	770-2800
11	970-3200	850-3000
12	1000-3600	960-3300
13	1100-4300	1100-3700
14	1200-4900	1200-3800
15	1600-5300	1400-3900
16	2000-5600	1500-4000
17	2100-5800	1500-4100
18	2200-5900	1500-4200
19~22	2400-6000	1700-4200

Table 1-9 "Re-examination Reference Table" of anthropometric indicator for children and adolescents (students)

Age (yr)	Male						Female					
	Height (cm)	Weight (kg)	Chest circumference (cm)	Shoulder width (cm)	Pelvis width (cm)	Skinfold thickness (mm)	Height (cm)	Weight (kg)	Chest circumference (cm)	Shoulder width (cm)	Pelvis width (cm)	Skinfold thickness (mm)
7	105-137	13-30	48-67	22-30	16-23	3-24	105-136	12-29	47-65	21-30	16-23	3-25
8	109-142	14-33	49-69	22-31	16-24	3-26	108-142	13-32	47-68	22-31	16-24	3-28
9	113-148	14-37	50-72	23-32	17-24	3-28	113-148	14-36	48-70	23-32	17-24	3-30
10	118-153	15-41	51-77	24-33	17-25	3-30	116-156	15-42	49-74	24-34	17-25	3-32
11	121-160	16-46	52-78	25-35	18-26	3-34	121-164	15-48	50-79	25-36	18-26	3-42
12	123-167	17-52	53-81	25-36	18-27	3-34	126-168	17-54	52-83	26-37	18-27	3-42
13	129-178	19-61	56-87	26-39	19-29	3-34	135-171	23-59	57-87	27-38	19-29	3-49
14	136-183	23-67	59-91	27-41	19-31	3-36	138-172	26-62	60-88	29-39	19-31	3-58
15	144-185	29-71	63-94	29-42	21-31	3-36	140-173	29-64	62-89	29-39	21-31	3-60
16	150-185	34-73	67-95	31-43	22-31	3-36	142-174	31-65	63-90	30-39	22-31	3-62
17	151-187	36-74	70-96	32-43	22-32	3-40	142-174	32-66	64-91	30-39	22-32	3-65
18	152-187	38-75	71-97	32-43	22-32	3-40	142-174	32-67	65-91	30-39	22-32	3-65
19~22	153-187	40-76	73-98	33-44	22-32	3-40	142-175	33-67	65-92	30-40	22-32	3-65

Table 1-10 "Re-examination Reference Table" for adults and seniors

Indicator	Male		Female	
	≤ Age 39	≥ Age 40	≤ Age 39	≥ Age 40
Resting heart rate (bpm)	50 ～ 120	50 ～ 120	50 ～ 120	50 ～ 120
Systolic Blood Pressure (mmHg)	90 ～ 180	90 ～ 180	80 ～ 180	80 ～ 180
Diastolic Blood Pressure (mmHg)	50 ～ 100	60 ～ 100	50 ～ 100	55 ～ 100
Height (cm)	140 ～ 200	140 ～ 200	140 ～ 190	140 ～ 190
Weight (kg)	35 ～ 110	35 ～ 110	35 ～ 90	35 ～ 95
Chest circumference (cm)	60 ～ 120	60 ～ 120	60 ～ 120	60 ～ 120
Waist circumference (cm)	60 ～ 120	63 ～ 120	56 ～ 120	59 ～ 120
Hip circumference (cm)	70 ～ 120	70 ～ 120	70 ～ 120	75 ～ 120
Upper arm skinfold thickness (mm)	2 ～ 60	2 ～ 60	2 ～ 60	2 ～ 60
Subscapula skinfold thickness (mm)	2 ～ 60	2 ～ 60	2 ～ 60	2 ～ 65
Abdominal skinfold thickness (mm)	2 ～ 60	2 ～ 65	2 ～ 65	2 ～ 70
Vital capacity (ml)	1000 ～ 7000	1000 ～ 6000	800 ～ 6000	800 ～ 5000
One-minute heart rate (times)	30 ～ 90	30 ～ 90	30 ～ 90	30 ～ 90
Two-minute heart rate (times)	30 ～ 80	30 ～ 80	30 ～ 80	30 ～ 80
Three-minute heart rate (times)	30 ～ 70	30 ～ 70	30 ～ 70	30 ～ 70
Exercising time (sec)	60 ～ 180	60 ～ 180	60 ～ 180	60 ～ 180
Grip strength (kg)	20 ～ 80	20 ～ 80	15 ～ 60	15 ～ 60
Sit and reach (cm)	-15 ～ 26	-15 ～ 26	-10 ～ 30	-11 ～ 30
Vertical jump (cm)	15 ～ 75		10 ～ 70	
Back strength (kg)	30 ～ 220		20 ～ 150	
Push-ups(times)	0 ～ 50			
One minute sit-ups (times/min)			0 ～ 60	
Standing on one foot with eyes closed (sec)	2 ～ 150		2 ～ 150	
Choice reaction time (sec)	0.220 ～ 0.90	0.30 ～ 2.00	0.22 ～ 0.90	0.30 ～ 2.00

● *Random re-examination check*

① Methods of re-examination

Checkers randomly picked 5% of total examinees each day to re-examine the anthropometric indicators and checked for errors. Detailed procedures were as follows:

◆ The data register was collected and a re-examination card (Table 1-11) was issued. The original examiner would re-examine all the anthropometric indicators following the original examination procedures and methods.

◆ After re-examination, the examinee would submit the re-examination card to the checker, who would carefully fill in the original results from the data register into the re-examination card, and returned the original data register to the examinee to complete the remaining indicators.

◆ Checkers and team leader of the study team would calculate errors together. The original value of each indicator minus the re-examination value equaled to the error of the two tests. The number of errors beyond acceptable error range was recorded **(See Acceptable range of error for anthropometric indicators)**.

◆ Checkers were to calculate the occurrence rate of re-examination error exceeding the acceptable range once every three days, and recorded in the table of re-examination errors (Table 1-12). Error occurrence rate was calculated as per the following formula：

$$P = \frac{\sum n}{AN}$$

In the formula, $\sum n$ means the total frequency of re-examination error exceeding the acceptable range. "A" means the total number of anthropometric indicators in each re-examination card. N means the number of re-examination card (number of examinees who are picked randomly to be re-examined).

Table 1-11 Re-examination card

Name_____Gender_____Age_____Work Unit_____

Type of sample: please mark " √ " on your type

Young children	Primary school students	Secondary school students	College students	Labor intensive adults	Non-labor intensive adults	Seniors

1 · Examination Date _____   2 · Date of Birth _____

3 · Parish _____   4 · Examination No. _____

Indicator	Original value	Re-examination value	Difference (Original - re-examination)	Beyond the acceptable error range (Y/N)
Height (cm)				
Sitting height (cm)				
Weight (kg)				
Chest circumference (cm)				
Waist circumference (cm)				
Hip circumference (cm)				
Upper arm skinfold thickness (mm)				
Subscapula skinfold thickness (mm)				
Abdominal skinfold thickness (mm)				
Shoulder width (cm)				
Pelvis width (cm)				
Foot length (cm)				
Total				

Table 1-12 Table of re-examination errors

Study team

Date of examination	Total no. of examinees	No. of re-examinees	Error occurrence rate	Signature
Total				

② Standard of re-examination

◆ Day of examination

During the day of examination, if the error of one anthropometric indicator was found to be beyond the acceptable range, the checkers should discuss with the examiners immediately to find out the reasons and suggested corrective actions. Examination methods should be amended promptly to meet the requirements and such indicator should be re-examined on all examinees.

◆ Within three days of examination

If the error occurrence rate was larger than 5% within three days of the examination, checkers should detect the reasons and find a solution immediately. Unqualified examiners needed to be re-trained and passed the test again in order to return to their position. If the occurrence rate was larger than 10%, all data recorded would be invalid. The anthropometric indicators of all examinees should be re-examined.

③ Acceptable range of error for anthropometric indicators

Height: ±0.5cm; Sitting height: ±0.5cm; Weight: ±0.1kg; Chest, waist and hip circumference: ±1.0cm; Skinfold thickness: ±2.0mm; Shoulder, pelvis width: ±0.5cm; Foot length: ±0.2cm.

During the whole study process, the re-examination rate was 5.2%, error occurrence rate was 1.9%, which both met the quality control standard.

(4) Calibration and Maintenance of Apparatus

The apparatus used for anthropometric measurement and physiological function needed to be properly calibrated before the beginning of each examination. If any apparatus was beyond the acceptable range, they should be calibrated, maintained or replaced timely. The Apparatus calibration and maintenance form was to be filled out (Table 1-13).

Table 1-13 Apparatus calibration and maintenance form

| | | | | Study team |
Calibration time	Name of apparatus	Error value	Solution	Signature

Throughout the whole study, apparatus calibration was performed 16 times. 1 step test apparatus and 2 skinfold calipers were maintained and replaced.

(III) Quality Control of Data Summarization

This period referred to quality control from the data summarization in Physical Fitness Monitoring Centre for Macao Residents to the establishment of original database. This period mainly included checking and verifying data entry and results on the data registers.

1. Checking of Data Register

Upon completion of examinations, each study team allocated members to classify and check the data registers. Details were as follows:

◆ Ensured validity of the data registers: If one classification code or three data items were invalid, this data register would be regarded as invalid. Data registers which could not be re-confirmed, re-done or re-examined should be discarded.

◆ Filled out the Classification table for data register (Table 1-14).

Table 1-14   Classification table for data register

Study team: Subject:

Age group (yrs)	Male	Female	Sub-total	Remark
3	206	128	334	
4	180	131	311	
5	221	142	363	
6	41	23	64	
Sub-total	648	424	1072	
6	180	140	320	
7	238	185	423	
8	188	132	320	
9	218	142	360	
10	170	148	318	
11	171	149	320	
12	190	141	331	
13	181	124	305	
14	199	144	343	
15	184	158	342	
16	200	150	350	
17	214	162	376	
18	163	174	337	
19	106	123	229	
20	92	104	196	
21	85	90	175	
22	93	97	190	
Sub-total	2872	2363	5235	
20~24	185	195	380	
25~29	213	270	483	
30~34	207	225	432	
35~39	197	193	390	
Sub-total	802	883	1685	
40~44	185	201	386	
45~49	183	209	392	
50~54	193	239	432	
55~59	188	207	395	
Sub-total	749	856	1605	
60~64	101	243	344	
65~69	100	194	294	
Sub-total	201	437	638	
Total	5272	4963	10235	

2. Examination of Data Register

In order to guarantee accuracy and reliability of the study results, Physical Fitness Monitoring Centre for Macao Residents examined randomly selected data registers and tables.

Detailed methods were as follows:

Firstly, the Centre checked whether the data registers were grouped by category, gender and age; and whether sample size of each age group met the specified quantity.

Secondly, the Centre randomly chose 5% (about 500 registers) of all the data registers for examination and verification according to the systematic sampling method.

Contents of examination: Firstly, checked whether the classification codes were filled clearly and completely. Secondly, checked whether any items were omitted or any logic errors existed according to sequence. Lastly, checked whether there were missing examined indicators.

Examination standards and management: Classified and corrected on the spot any data registers with problems. If unqualified registers were above 5% of the total, all data registers of the same team would be re-classified and re-checked. Logic reasoning or re-examination by the original team could be done on individual data registers with suspicious figures. If any suspicious figure could not be confirmed, the data registers with such figure would be discarded and not be entered into the computer.

Examination results: Through examining the data registers, main problems found in the questionnaire part were logic contradictions in "age" and "years of residence in Macao", "with or without diseases" and "types of diseases experienced", "physical exercise participation" and "conditions on physical exercise", as well as "decreasing heart rate in step test" in the examined indicator part. There were about 1,200 suspicious items totally. Correction on the spot was carried out promptly by experts at the Physical Fitness Monitoring Centre for Macao Residents.

3. Data Entry

Data entry was done by double input, subject to checking by computer automatically, and completed by the Physical Fitness Monitoring Centre for Macao Residents. During the entire entry work, "Responsibility system" was established, i.e. each checker was responsible for the entry of data registers at each sampling site, and each questionnaire should be completed simultaneously.

Entry result standards: The error rate of data entry needed to be controlled below 0.05%. If error rate exceeded 0.05%, entry must be stopped, deleted and re-entered. The responsible entry clerk could not resume the position until he/she was re-qualified after training.

4. Checking of Entry Results

3% of all data registers (about 300 registers) were randomly selected for checking of entry results. The method for random selection of registers was as follows: the registers entered by each entry clerk were considered as one sampling unit. According to systematic sampling, 96 registers were taken from the young children group, 65 registers were taken from the children and adolescents (students) group, 52 registers were taken from adults group A, 36 registers were taken from adults group B, and 46 registers were taken from the seniors group. All selected questionnaires were manually checked. The selections also covered checking the entry results of each entry clerk and both genders in each age group.

Consistency checking was a method comparing electronic data entered with the results in the data registers. If the two values were inconsistent, the value in the database was modified based on the data registers. 19 data items were modified in the young children group, 44 data items were modified in the children and adolescents (students) group, 9 data items were modified in adults group A, 13 data items were modified in adults group B, and 3 data items were modified in seniors group.

From June 29 to 30, 2015, checking of entry results was completed by the Physical Fitness Monitoring Centre for Macao Residents. The error rate of entry results was 0.027%, reaching the specified quality standard. Entry errors were largely in "8"-"5", "9"-"6", "entry of null value in wrong line", "wrong entry of systolic blood pressure and diastolic blood pressure" and other entry errors. The experts in the Centre timely corrected about 82 characters from manual check error and logic test error.

5. Data Cleaning

Data cleaning was the last step in the calculation of database for data screening. The data were subject to comprehensive logic judgment of options, which was mainly realized through two types of logic entries, i.e., judgment of logic entries of different indicators, different indicators with extreme values, screening of repeated data, deletion of excessive samples by sex and age, and logic interval judgment of options of each questionnaire.

(1) Logic Judgment Entries between Study Indicators

A total of 102 logic judgment entries of study indicators were included. For example:

[Height X – weight Y] logic checking

Male aged 3~6 $Y= 49.9017-0.9643*X +0.0067 *X^2$ $Y= -84.623 +1.6647*X -0.0070*X^2$

Male aged 20~29 $Y= 71.5611-1.1026*X - 0.0072 *X^2$ $Y= -44.371 +0.5764*X -0.0005*X^2$

Female aged 3~6 $Y= 33.8955-0.6359 *X +0.0050 *X^2$ $Y= -70.576 +1.3983*X -0.0058*X^2$

Female aged 20~29 $Y=191.275-2.3152 *X +0.0099 *X^2$ $Y= 50.7099-0.6507 *X +0.0034 *X^2$

(2) Logic Judgment Entries of Questionnaires

A total of 52 logic judgment statements were compiled for logic judgment of all questionnaires.

For example: Young children group

▲ **Classification Code**

① Gender of young children: 1 or 2;

② After subtracting date of birth from test date, the age should be within 3-6 years;

③ Years of residence of young children in Macao should be within the age range.

▲ **Questionnaire: options were chosen beyond the answers to specific questions.**

▲ **The specific types of questions were as follows:**

Personal Information of Young Children

① Question3: for young children with birth weight ≧ 6kg, 99.9 should be filled in.

② Question 4: for young children with birth length ≧ 60cm, 99.9 should be filled in.

③ Question 7 and Question 8: the number filled in Question 7 should not be larger than that of Question 8.

④ Question 10: if "(2) None" is selected, proceed to Question 12.

⑤ Question 22: if "(2) None" or "(3) Not known" is selected, proceed to Question 24.

Paternal Personal Information

① The date of birth of father should be prior to June 30, 1997; (at least 18 years old).

② The years of residence in Macao should be within the age range.

③ Indicators of height and weight should be within the reasonable range of adults.

④ Question 8: if "(1) Never" is selected, Questions 9 and 10 should not be answered.

(3) Results of Data Cleaning

▲ Study Indicators:

① Screening results: 120 suspicious data from the young children group, 196 suspicious data from the children and adolescents (students) group, 326 suspicious data from adults group A, 219suspicious data from adults group B, and 46 suspicious data from seniors group.

② Data manually checked, deleted and revised by experts:

Young children group: 18 anthropometric data items, 2 physiological function data items and 12 physical fitness data items were deleted.

Children and adolescents (students) group: 46 anthropometric data items, 48 physiological function data items and 15 physical fitness data items were deleted.

Adults group A: 6 anthropometric data items, 14 physiological function data items and 1 physical fitness data item were deleted.

Adults group B: 11 anthropometric data items, 18 physiological function data items and 2 physical fitness data items were deleted.

Seniors group: 1 anthropometric data item, 7 physiological function data items and 2 physical fitness data items were deleted.

▲ Questionnaire indicators:

① 701 suspicious data from the young children group, 1,723 suspicious data from the children and adolescents (students) group, 717 suspicious data from adults group A, 1,116 suspicious data from adults group B, and 154 suspicious data from seniors group.

② Errors included allocation of answer in the wrong coding box, and logic contradiction between age and the length of residence in Macao.

③ Solution: for questions with multiple answers, if the first and the second coding boxes were 0, and there was an answer in the third coding box, the third code should be rewritten in the first coding box.

5,318 suspicious data items were voided eventually (including 4,411 suspicious data items from the questionnaire).The numbers of valid samples in the database after data cleaning were 10,235.

6. Database Establishment

The establishment of an original database needed repeated review by researchers to ensure the validity and scientificity of the data registers. Prior to establishing the database, the Physical Fitness Monitoring Centre for Macao Residents together with China Institute of Sport Science carefully carried out logic inventory work. Ultimately, 88 data items were voided and a total of 10,235 samples were included in the original database.

V. Statistical Analysis

(I) Grouping

1. Young children were classified according to gender and age (1 year difference between each age group), giving rise to 8 groups in total.

2. Students aged 6 to 22 were classified according to gender and age (1 year difference between each age group), giving rise to 34 age groups. In addition, students were also subdivided into three groups: aged 6~12, 13~18 and 19~22, with 6 age sub-groups altogether.

3. Adults were classified into 4 categories according to age, gender, labor or non-labor intensive worker. Each age group had a 5 year difference, with 32 age groups altogether.

4. Seniors were classified into 4 groups according to gender and age. Each age group had a 5 year difference.

5. Regional grouping: The seven parishes in Macao were divided into three areas: Nossa Senhora de Fátima (north), Santo António and S.Lázaro (central) and S.Lourenço, Sé Catedral, Nossa Senhora do Carmo and São Francisco Xavier (south).

(II) Indicators

1. Indicators of Inquiry

① Young children: 26 items including basic information (birth place, parish of residence, kindergarten, etc.), feeding patterns at birth, physical exercise, occurrence of diseases, dental hygiene and eating habits.

② Students: 30 items including basic information (birth place, parish of residence, schooling, etc.), living habits, PE class at school, extracurricular physical exercises, occurrence of diseases, dental hygiene and eating habits.

③ Adults: 34 items including basic information (birth place, parish of residence, education level, occupation, working environment, etc.), living habits, physical exercises, occurrence of diseases, eating habits, perception about the physical fitness study.

④ Seniors: 35 items including basic information (birth place, parish of residence, education level, occupation before retirement, working environment before retirement, etc.), living habits, physical exercises, occurrence of diseases, eating habits, perception about the physical fitness study.

2. Study Indicators

① Anthropometric measurements: height, sitting height, weight, chest circumference, waist circumference, hip circumference, skinfold thickness, shoulder width, pelvis width and foot length; total of 10 items.

② Physiological function: resting pulse (heart rate), blood pressure, vital capacity, step test (adults); total of 4 items.

③ Physical fitness indicators:

● **Young children**

Aged 3~6: 6 items including 10m shuttle run, standing long jump, walking on balance beam, successive jumps with both feet, tennis ball distance throw and sit and reach.

● **Children and adolescents**

Aged 6~12: 11 items including 50m run, 50m x 8 shuttle run, standing long jump, inclined pull-ups (male), one-minute sit-ups (female), vertical jump, grip strength, back strength, sit and reach, standing on one foot with eyes closed and selective response time.

Aged 13~18: 11 items including 50m run, 800m run (female) or 1,000m run (male), standing long jump, pull-ups (male), one-minute sit-ups (female), vertical jump, grip strength, back strength, sit and reach, standing on one foot with eyes closed and choice reaction time.

Aged 19~22: 11 items including 50m run, 800m run (female) or 1,000m run (male), standing long jump, pull-ups (male), one-minute sit-ups (female), vertical jump, grip strength, back strength, sit and reach, standing on one foot with eyes closed and choice reaction time.

● **Adults**

Aged 20~39: 8 items including vertical jumps, grip strength, back strength, push-ups (male), one-minute sit-ups (female), sit and reach, standing on one foot with eyes closed and choice reaction time.

Aged 40~59: 4 items including grip strength, sit and reach, standing on one foot with eyes closed and choice reaction time.

● **Seniors**

Aged 60~69: 4 items including grip strength, sit and reach, standing on one foot with eyes closed and choice reaction time.

3. Derivative indicators

Derivative indicators included BMI, Quetelet Index, WHR (waist-hip ratio), percent body fat, lean body mass, pressure difference and vital capacity/weight ratio, which were calculated as follows:

BMI = weight/height^2 (kg/m^2)

Quetelet Index= weight/height x 1,000 (kg/cm)

WHR = waist circumference/hip circumference x 100%

Percent body fat (%) = (4.570÷Db − 4.142) × 100

Aged 9~11: Db = 1.0879 − 0.00151X (male), Db = 1.0794 − 0.00142X (female)

Aged 12~14: Db = 1.0868 − 0.00131X (male), Db = 1.0868 − 0.00131X (female)

Aged 15~18: Db = 1.0977 − 0.00146X (male), Db = 1.0931 − 0.00160X (female)

Aged≥19: Db = 1.0913 − 0.00116X (male), Db = 1.0897 − 0.00133X (female)

X=upper arm skinfold thickness + subscapula skinfold thickness (mm)

Lean body mass = weight-weight x percent body fat

Pressure difference = systolic blood pressure - diastolic blood pressure

4. Health indicators

The occurrence of dental decay, vision impairment (mild, moderate and severe), myopia, and color vision deficiency were examined. Dental decay was indicated by the percentage of decay (%). The problems of primary tooth included primary tooth decay (d), tooth loss (m), tooth filling (f) and primary tooth decay, loss and filling (dmf=d+m+f). The problems of permanent tooth included permanent tooth decay (D), tooth loss (M) and tooth filling (F), and permanent tooth decay, loss and filling (DMF=D+M+F).

Vision impairment was indicated by the proportion of poor vision detected, myopia and the degree of poor vision. An uncorrected visual activity of < 5 is considered as poor vision, a 4.9 visual activity is considered as mildly poor vision, a 4.6~4.8 visual activity indicates moderately poor vision, and ≤4.5 is considered as severely poor vision. Using string mirrors can further assess the refractive error. Subjects were considered to be "nearsighted" when positive vision decreased and negative vision increased.

(III) Contents of Calculation

1. The valid sample size of each population group was calculated according to age groups.

2. The actual valid sample size of different age groups was calculated according to **Grouping** (Item 1-4) under Statistical Analysis.

3. The origin of the subjects, sampling sites and some general information (birth place, parish of residence, kindergarten and school attendance, education level, occupation and working environment, etc.) of the subjects in each age group were calculated according to **Grouping** (Items 1-4) under Statistical Analysis, i.e. frequency and cumulative frequency.

4. The frequency, population percentage and full sampling cumulative frequency and population percentage of the questionnaire items in each age group were calculated according to **Grouping** (Items 1-4) under Statistical Analysis.

In which:

① For young children: number of samples, mean, standard deviation and3rd, 10th, 25th, 50th, 75th, 90th and 97th percentiles of birth weight and birth length of each age group were calculated respectively. Living habits including average accumulated sleeping hours per day, hours of outdoor activity, hours of watching TV, video and playing video games, information regarding extracurricular activities, physical exercises, occurrence of diseases, dental hygiene and eating habits, were examined.

② For students, living habits including cumulative time and major transportation means to school, average cumulative time spent on outdoor activities during leisure time per day, average cumulative time spent on watching TV, video and playing video games per day, average cumulative time spent on homework per day, average cumulative sleeping hours per day (including naps), involvement of extracurricular activities (hobby classes) were examined. Information on physical education class at school such as frequency of physical exercise class per week and self-perception on exercise intensity were investigated. Information on extracurricular physical exercises including the frequency, duration, intensity and physical exercises were examined. The occurrence of diseases within the last 5 years, dental hygiene and eating habits were also examined.

③ For adults and seniors, living habits included daily sleeping hours and sleeping quality, cumulative walking and sitting time, modes of activities during leisure time, smoking and drinking status. Information on physical exercise included average frequency of physical exercise per week, average duration of physical exercise each time, duration of persistent exercising, purposes of physical exercise, types of physical exercise frequently participated, physical exercise venue, self-perception after physical exercise and main obstacles for participating in physical exercise, as well as the occurrence of diseases within the last 5 years, knowledge about physical fitness study and eating habits.

5. The number and the percentage of the subjects who were 'frequent exerciser', "occasional exerciser" or "non-exerciser" were calculated according to Grouping (Items 2-4) under Statistical Analysis. "Frequent exerciser" was defined as people who exercised 3 times or more per week, each time for longer than 30 minutes with moderate intensity. People who achieved one or two of the above exercise conditions but not all three conditions at the same time was defined as "occasional exerciser". People who did not meet any of the above exercise condition were defined as "non-exerciser".

6. Number of samples, mean, standard deviation and 3rd, 10th, 25th, 50th, 75th, 90th and 97th percentiles of all examined variables of each age group were calculated according to **Grouping** (Items 1-4) under Statistical Analysis.

7. Number of samples, mean, standard deviation and 3rd, 10th, 25th, 50th, 75th, 90th and 97th percentiles of the derivative indicators of each age group were calculated according to **Grouping** (Items 1-4) under Statistical Analysis.

8. Number of samples, occurrence of dental decay (%) including primary and permanent tooth decay of each age group in **Grouping** (Item 1) under Statistical Analysis were calculated.

9. Number of samples, occurrence of dental decay (%), vision impairment, myopia, color vision deficiency and hearing disorders of each age group in **Grouping** (Item 2) under Statistical Analysis were calculated.

10. Individual sampling difference test and single factor variance analysis were used to examine the difference between all examined variables, derivative indexes and health indexes among different age groups and genders.

(IV) Elaboration on Calculation Methods

1. Mean

Mean indicates the average level or intensified trend of a group of observed values, and calculated with the following formula:

$$Mean = \frac{\sum x}{n}$$

in which: X indicates the observed value and n indicates the sample size.

2. Standard Deviation

Standard deviation indicates the variation of a group of observed values, where the smaller the standard deviation, the smaller the variation. Standard deviation is indicated by Sd and calculated with the following formula:

$$Sd = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$$

3. Percentile

Percentile is commonly used when the frequency distribution of the variables is not normal. If all the observed values are arranged in sequence from small to large, the values at the positions of 1~100 percent of all the observed values may be called 1st~100th percentiles respectively. It is indicated by Px and calculated with the following formula:

$$P_X = X\% \times (n+1)$$

4. t-Test (Test of difference t in mean values of two samples)

$$t = \frac{|M_1 - M_2|}{\sqrt{s_{m1}^2 + s_{m2}^2}}$$

Calculate with the following formula:

In which, M_1 represents the mean of indicator 1 and M_2 represents the mean of indicator 2; S_{m1} is the standard deviation of measurements (SEM) of indicator 1 and S_{m2} is the standard deviation of measurements of indicator 2. S_m (standard deviation) is calculated with the following formula:

$$S_m = \frac{Sd}{\sqrt{n}}$$

Table 1-15 Degree of freedom (n') = $n_1 + n_2 - 2$. Significance of the difference is determined by the t-value as follows:

t	P	Significance of difference
< t (n') 0.05	> 0.05	No significant difference
≥ t (n') 0.05	≤ 0.05	Of significant difference (*)
≥ t (n') 0.01	≤ 0.01	Of highly significant difference (**)

Note: "**"$P < 0.01$, "*"$P < 0.05$

When the sample size n≥1,000,

if t<1.96, P>0.05 indicates no significant difference between the two tested average.

if 2.58>t≥1.96, P≤0.05 indicates significant differences found between the two tested average.

if t≥2.58, P≤0.01indicates highly significant differences found between the two tested averages.

5. Proportion

$$\text{Proportion} = \frac{\text{Number of Positive Samples}}{\text{Total number of sample examined}} \times 100\% \text{ (or } 1000\text{‰)}$$

6. Significance Test for Proportion

① Significant test of difference between sample rate and population rate

When the observed samples are of fairly large number, the frequency distribution of the sampling proportion appears to be close to normal distribution. The difference significance of regularity test proportion of normal distribution may be applied and it is not necessary to check the t-value table. The standard deviation of proportion may be obtained from calculation according to total proportion, and then calculate how many times the difference between sampling proportion and total proportion are to the standard deviation, which is called u and its formula is:

$$u = \frac{|P - \pi|}{S_p} = \frac{|P - \pi|}{\sqrt{\dfrac{\pi(1 - \pi)}{n}}}$$

in which : P- sample proportion

π – proportion tested against (the proportion obtained from a large number of observations can be deemed as the proportion tested against)

S_p - standard deviation

② Significance test of difference in two proportions

The calculation formula is as follows:

$$u = \frac{|P_1 - P_2|}{S(p_1 - p_2)} = \frac{|P_1 - P_2|}{\sqrt{P(1 - P)\left(\dfrac{1}{n_1} + \dfrac{1}{n_2}\right)}}$$

in which: P_1, P_2 - respective positive proportion of both samples

S (P_1-P_2) - the difference in standard deviation of the two proportions

P - sum of the positive proportion of the two groups

n_1, n_2 - two sample sizes

Table 1-16 ｜ U ｜ , P and the difference significance

｜ U ｜	P	Significance of difference
< 1.96	> 0.05	No significant difference
≥ 1.96	≤ 0.05	Of significant difference (*)
≥ 2.58	≤ 0.01	Of highly significant difference (**)

Note: "***"$P < 0.01$, "**"$P < 0.05$

(V) Statistical Tool

SPSS10.0 Statistical Package Software was used for statistic analysis.

Part II - Study Results

I. Young children

(I) Physical Fitness Conditions of Young Children in 2015

1. Basic Information of the Subjects

Young children were divided into two categories according to gender, and then further classified into 8 age groups that differed by one year. Macao was divided into three sampling areas: north area, central area and south area. From Nossa Senhora de Fátima (north), 353 subjects (206 boys and 147 girls) were drawn from two sampling sites: Keang Peng School (kindergarten) and Hou Kong Middle School (kindergarten). From Santo António and S. Lázaro (central area), 408 subjects (255 boys and 153 girls) were drawn from Pui Ching Middle School (kindergarten) and Chan Sui Ki Perpetual Help College (branch school - kindergarten). From Sé Catedral and S.Lourenço (south), 311 subjects (187 boys and 124 girls) were selected from Pooi To Middle School (kindergarten) and Estrela do Mar School (kindergarten). The sample size in each age group, the distribution of sampling sites (kindergartens), and the residential distribution of the subjects (%) were shown in Tables 2-1-1-1, 3-1-1-1, and 3-1-1-2 respectively.

Table 2-1-1-1 Sample size in each age group

Age group (yrs)	3	4	5	6
Boys	206	180	221	41
Girls	128	131	142	23
Total	**334**	**311**	**363**	**64**

Early admission to kindergarten was gaining popularity in Macao. Swept by the prevailing trend, most young children started kindergarten when they were just turning 3, and entered primary school at age 6 after 3 years attending kindergarten. Few 6-year-old children could be found in the sampling kindergartens, the number of subjects aged 6 was insufficient for the representative sample size. Thus, the aged 6 group was excluded from statistical analysis and the following study in this part.

Among the 1,008 subjects aged 3~5, 93.4 % of the boys and 92.0 % of the girls were born in Macao, followed by Hong Kong, Mainland China and other countries (regions) (Table 3-1-1-3). 99.0% of the boys and 97.3% of the girls attended full-day kindergarten, whereas none attended boarding schools for kindergartens (Table 3-1-1-4). About 3/5 of the young children were under the care of their parents and 2/5 was under the care of the elderly or baby-sitters. The proportion of girls under direct care of their parents increased with advancing age, no significant difference was found among the boys (Table 3-1-1-5).

2. Lifestyle

Birth, feeding patterns, living habits, physical exercise, occurrence of diseases, dental hygiene and eating habits were examined in the category of young children. Basic information was as follows:

(1) Birth and Feeding Patterns

Our study showed that infants with full term birth accounted for 84.3%, while those of premature and post term birth accounted for 12.1% and 3.6% respectively. No significant difference in gestational age at birth was found between genders or among age groups (Table 3-1-2-1).

The average birth weight of the infants was 3.2±0.51kg, the average birth weight of the boys and girls were 3.2±0.54kg and 3.1±0.45kg respectively. There was no significant difference in birth weight between genders or among age groups (Table 3-1-2-2).

The average birth length of the infants was 48.3±5.04cm. The average birth length of the boys and girls were 48.4±5.21cm and 48.2±4.76cm respectively. No significant difference in birth length was found between genders or among age groups (Table 3-1-2-3).

Feeding patterns included breast feeding, formula feeding and mixed feeding. The proportion of young children who were breast-fed, formula-fed or a combination of both (mixed feeding) within the first four months after birth were 23.4%, 35.6% and 41.0%, respectively. The proportion of boys (36.9%) who were formula-fed was higher than that of girls (33.7%), whereas the proportion of boys who were breast-fed was lower than that of girls ($p < 0.05$). No significant difference in feeding patterns was observed among age groups of 3~5 (Table 3-1-2-4, Figure 2-1-1-1).
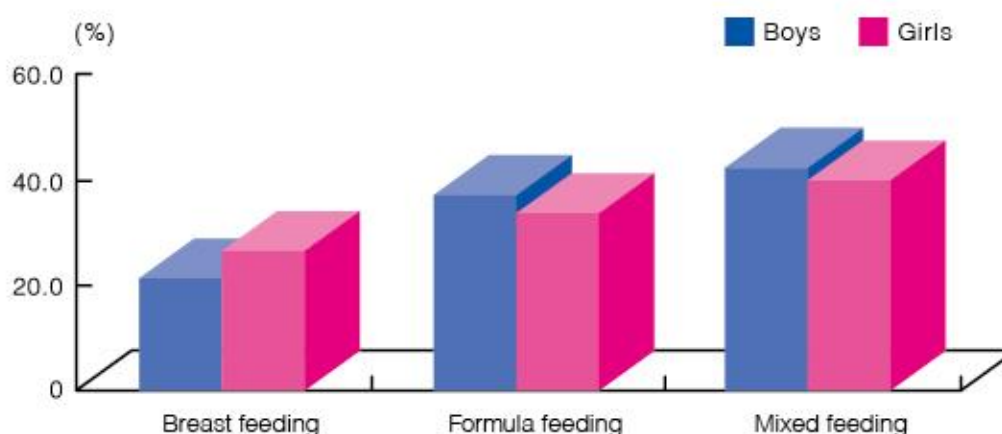
Figure 2-1-1-1 Proportion of feeding patterns in young children

(2) Living Habits

Information on living habits included four aspects, namely, average daily accumulated sleeping hours (including naps), average daily accumulated time spent on outdoor activities, average daily accumulated time of indoor activities such as watching TV, video and playing video games and participation in extracurricular activities (hobby classes).

Our study showed that the proportion of young children who slept for 8~10 hours per day, more than 10 hours per day and less than 8 hours per day were 73.0%, 25.1% and 1.9%, respectively. No significant difference in sleeping hours was found between genders. The proportion of young children who had more than 10 hours of sleep decreased gradually while the proportion of those who had less than 8 hours of sleep increased gradually with advancing age (Table 3-1-2-5, Figure 2-1-1-2).
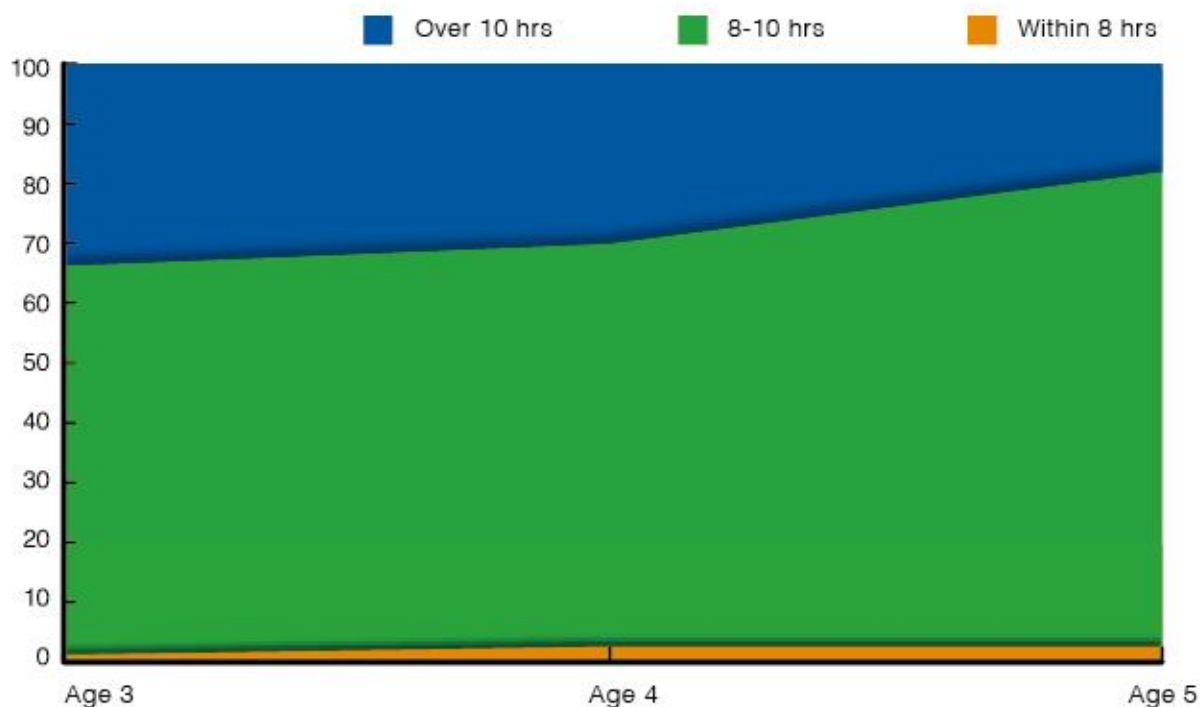
Figure 2-1-1-2 Proportion of sleeping hours in young children (%)

Accumulated time spent on outdoor activities referred to the total hours that the young children spent on outdoor activities, games, exercises and sport activities. Young children who spent 30 minutes to 1 hour daily on outdoor activities accounted for the highest proportion (49.2%), followed by those spending less than 30 minutes (26.8%), 1~2 hours (19.2%) and 2 hours or more (4.8%) on outdoor activities. No significant difference in the accumulated hours of outdoor activities was found between genders or among age groups (Table 3-1-2-6, Figure 2-1-1-3).
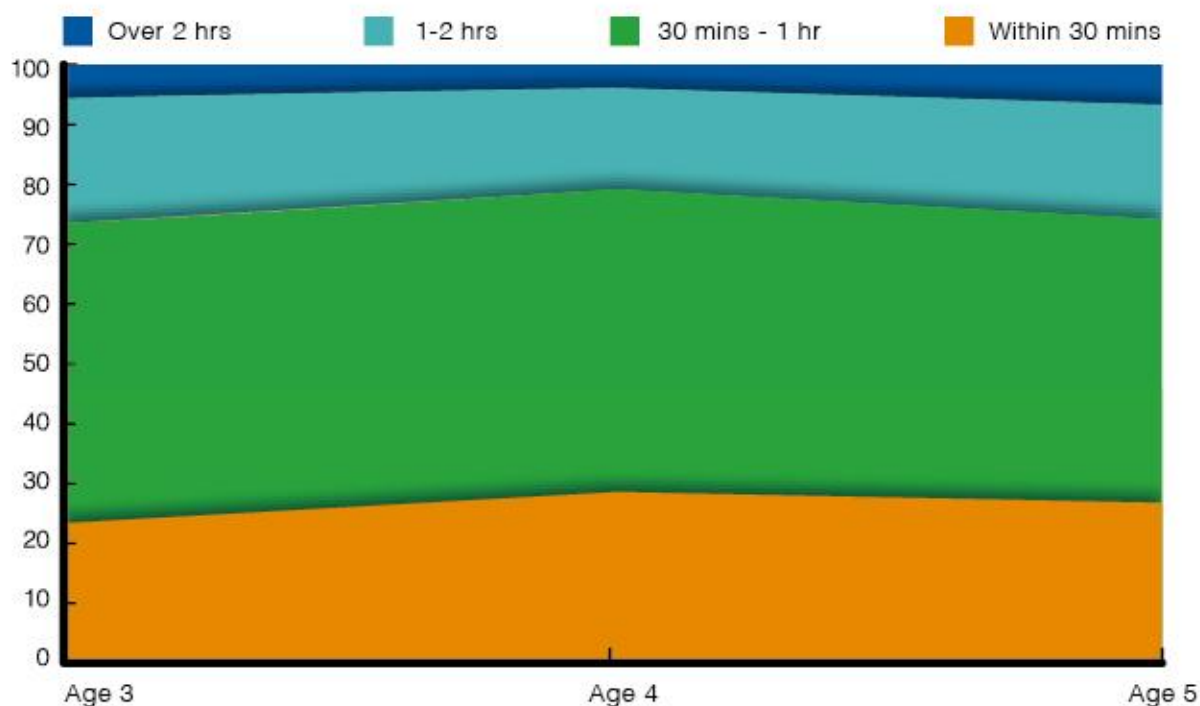
Figure 2-1-1-3 Proportion of average daily accumulated hours on outdoor activities in young children (%)

The proportion of young children spending less than 30 minutes, 30 minutes to 1 hour, 1~2 hours, 2~3 hours and 3 hours or more in watching TV, video and playing video games daily were 19.4%, 41.7%, 25.8%, 9.2% and 3.8%, respectively. No significant difference in the hours of indoor activities was seen between genders or among different age groups (Table 3-1-2-7).

Young children participating in extracurricular activities (hobby classes) accounted for 59.4%, with 29.5%, 18.4% and 11.5% of the young children participated in one, two and three hobby classes, respectively. Young children who participated in music and dancing classes accounted for the highest proportion (57.4%), followed by those participating in drawing and calligraphy classes (36.1%), tutoring class (35.5%), sport activities (23.2%) and chess classes (only 2.0%). The proportion of hobby classes participation in young children was shown in Table 3-1-2-8. Significant difference in the number of participants in hobby classes was found among age groups (P < 0.01), but not between genders. The proportion of young children participating in hobby classes increased substantially with advancing age. The highest proportion was recorded in the boys at the age of 5 (Figure 2-1-1-4).
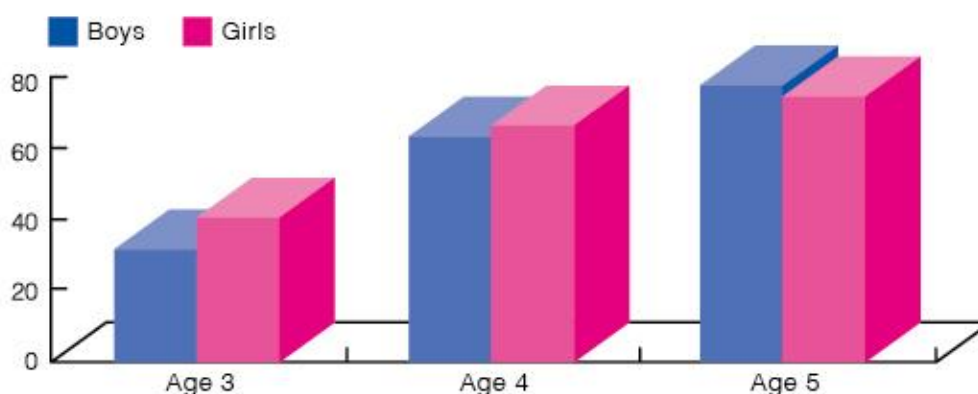
Figure 2-1-1-4 Proportion of hobby classes participation in young children (%)

(3) Physical Exercise

Physical exercise of young children mainly referred to as physical activities particpated by the young children outside of kindergartens, including hobby classes, exercises organized by associations, and exercises of individual interest. Bicycling (43.9%), swimming (25.9%), ball games (21.8%), dancing (17.5%) and track and field (12.9%) were the top five sports with highest participation. The most popular sports for boys and girls were different. Bicycling had the highest participation (50.5%) in boys, while dancing accounted for the highest participation (36.0%) in girls (Figures 2-1-1-5 and 2-1-1-6, Table 3-1-2-9).

The proportion of young children participating in various physical exercises among age groups did not differ significantly. Physical exercise with higher participation were bicycling, ball games, swimming and dancing etc.
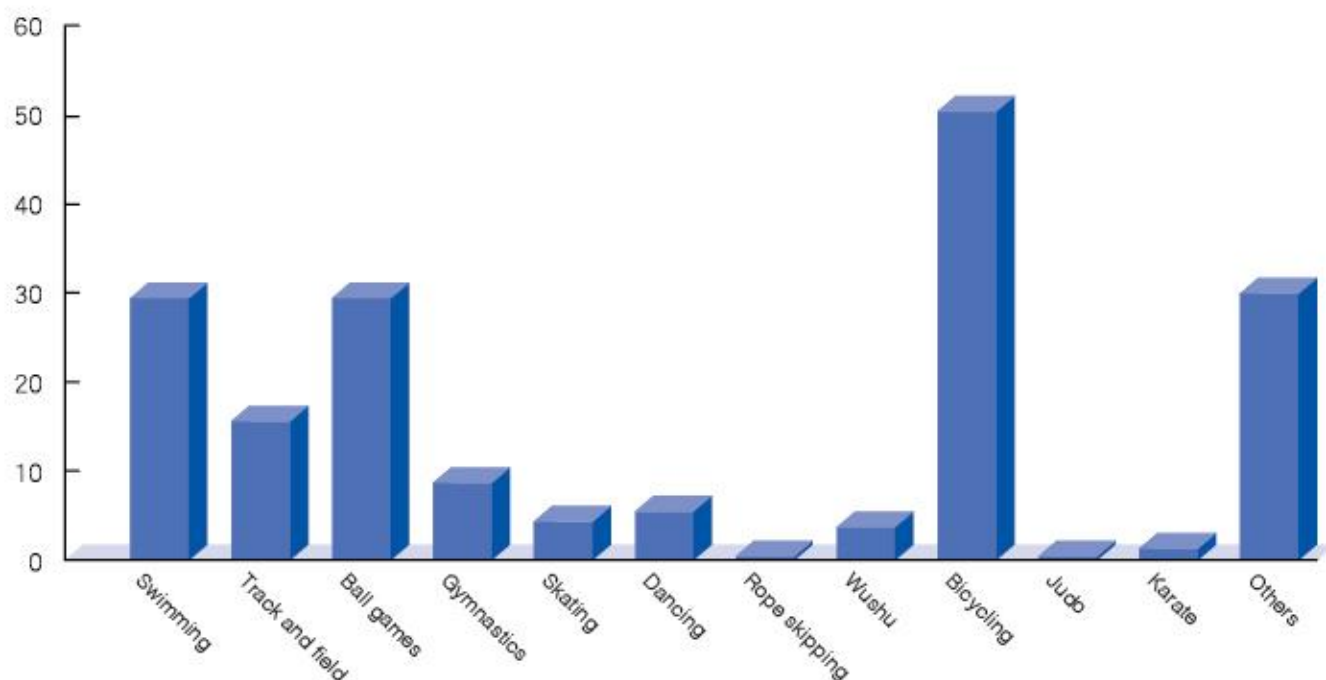
Figure 2-1-1-5 Proportion of physical exercises in young children (boys) (%)
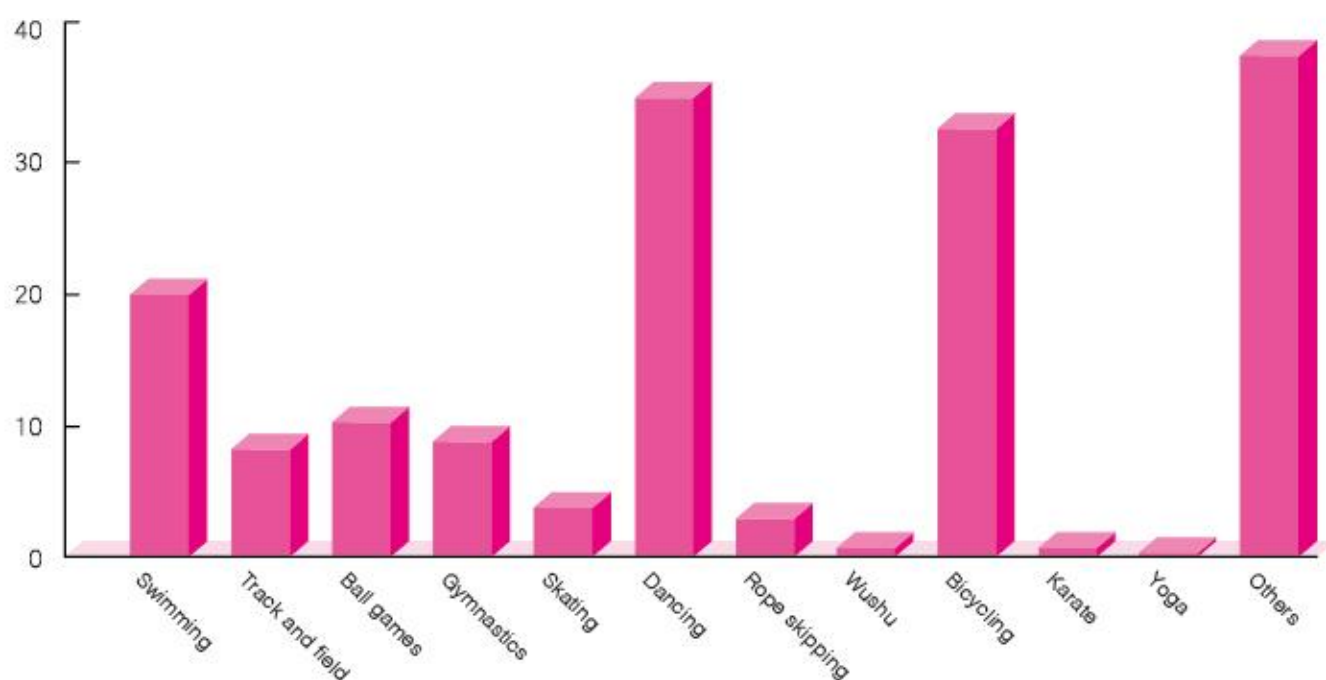
Figure 2-1-1-6 Proportion of physical exercises in young children (girls) (%)

(4) Occurrence of Diseases

In the previous year, 97.6 % of young children had a flu or fever. Among these young children, 64.0 % suffered 3 or more times from a flu or fever. No significant difference in the number of times of suffering from a flu was observed between genders, but highly significant difference was found among different age groups (P < 0.01). Generally speaking, the proportion of young children suffering from a flu 3 or more times a year declined gradually with advancing age (Table 3-1-2-10 and Figure 2-1-1-7).
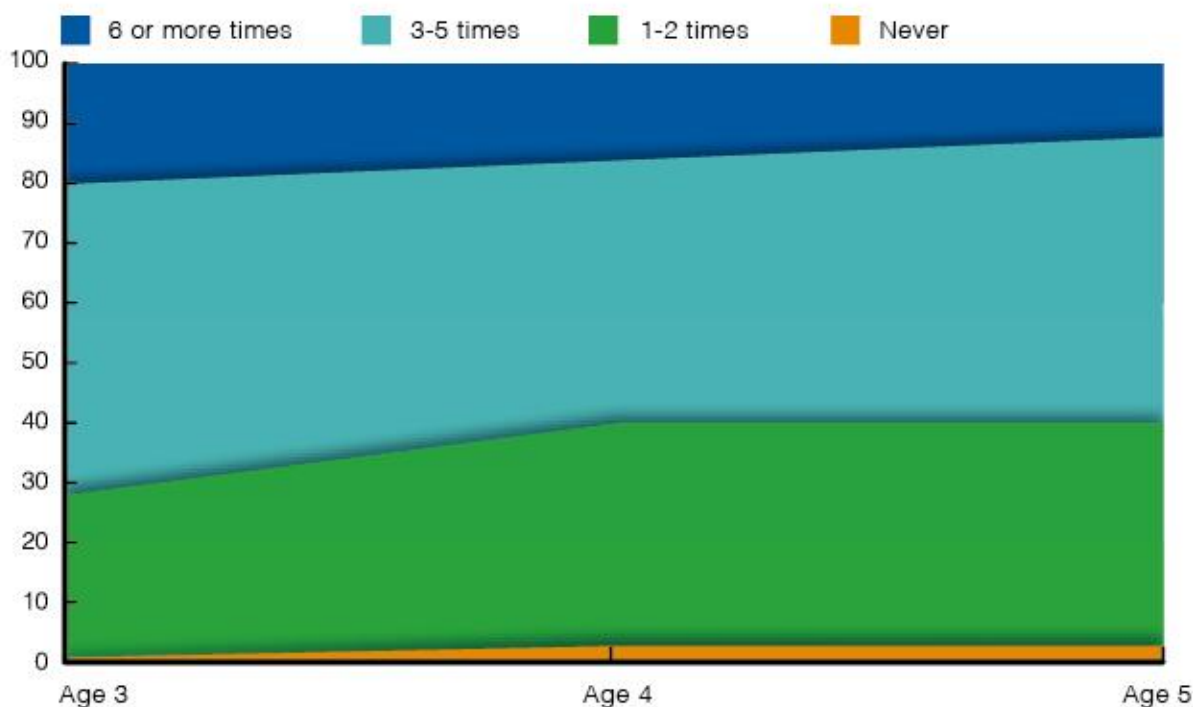
Figure 2-1-1-7 Proportion of young children suffering from a flu or fever in the previous year (%)

Young children diagnosed with diseases by the hospital accounted for 21.1%. The proportion of boys and girls diagnosed with diseases were 23.6% and 17.2% respectively. The proportion of young children diagnosed with diseases at age 3, 4 and 5 were 20.1%, 20.6% and 22.3%, respectively. Diseases with high occurrence were chronic bronchitis, pneumonia and asthma. Significant difference was observed in the occurrence of diseases between genders, but not among different age groups (Tables 3-1-2-11 and 3-1-2-12).

(5) Dental Hygiene

Our study showed that 88.7% of young children brushed their teeth every day, but only 3.9% used dental floss every day. The frequency of tooth-brushing in young children increased with age, with highly significant difference found in boys among age groups (P < 0.01). However, no significant difference in the frequency of tooth-brushing and using dental floss was seen between genders (Tables 3-1-2-13 and 3-1-2-14).

According to data collected, 20.8% of young children went to a dental clinic for dental examination within the past 12 months. The proportion of young children going to a dental clinic for dental examination within the past 12 months tended to increase gradually with advancing age, and varied significantly among different age groups (P < 0.01); however, no significant difference was found between genders (Table 3-1-2-15, Figure 2-1-1-8). Moreover, 16.1% of the parents had knowledge on the dental problem of their children. The proportion of such known problem among the parents increased progressively with advancing age of their children, and varied significantly among different age groups (P < 0.01) (Table 3-1-2-16). As for the children with decayed teeth, 54.9% of them went to a dental clinic for treatment. The proportion of receiving treatment increased with advancing age and differed significantly among age groups (P < 0.05). In addition, more boys received treatment than girls (Table 3-1-2-17).
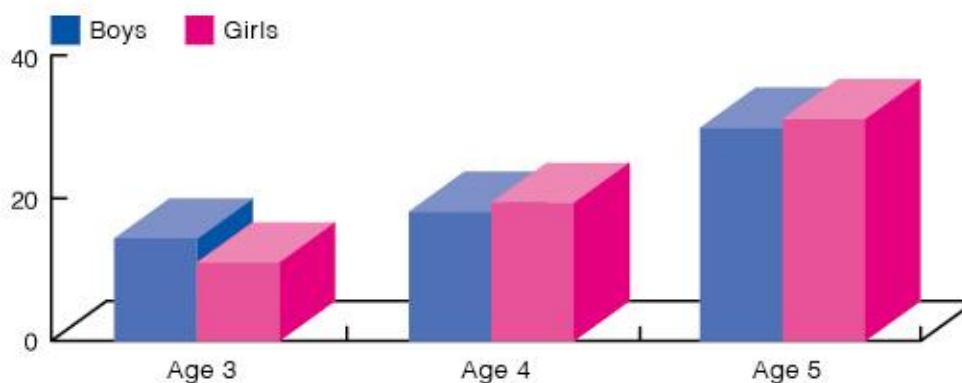
Figure 2-1-1-8 Proportion of young children going to a dental clinic for dental examination within the past 12 months (%)

(6) Eating Habits

89.3% of young children had breakfast 6 or more days a week, 8.3% of them had breakfast 3~5 days a week, while 0 day and 1~2 days accounted for 0.3% and 2.1% respectively. The number of days of young children having breakfast per week did not differ significantly between genders or among age groups (Figure 2-1-1-9 and Table 3-1-2-18).
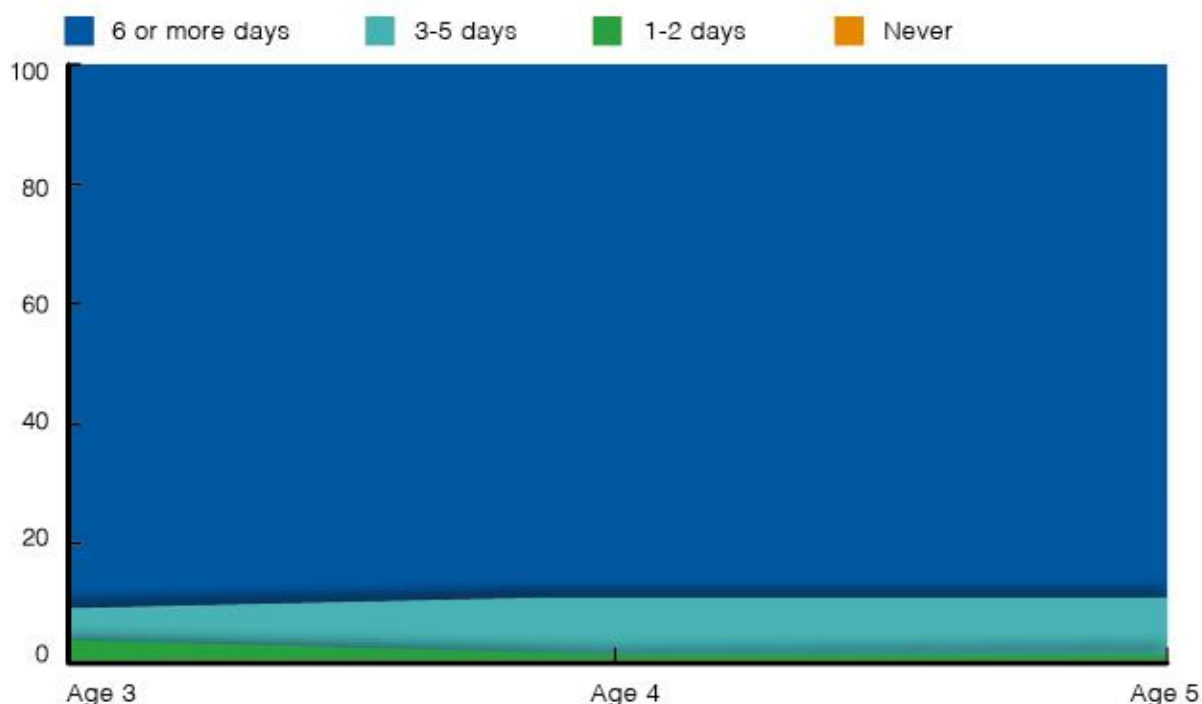
Figure 2-1-1-9 Proportion of young children having breakfast per week (%)

The proportion of young children having meals in the restaurants or fast food places for 0 time, 1~3 times, 4~6 times, 7~9 times and 10 or more times per week were 10.0%, 69.4%, 17.0%, 1.6% and 2.0%, respectively. No significant difference was found between genders or among age groups (Table 3-1-2-19).

The proportion of young children consuming high fat and high carbohydrate snacks for 0 time, 1~2 times, 3~5 times and 6 or more times per week were 1.9%, 39.3%, 38.2% and 20.7%, respectively. No significant difference was seen between genders or among age groups (Table 3-1-2-20), either.

3. Anthropometric Measurements

(1) Length Indicators

Height, sitting height and foot length of young children of both genders increased with advancing age, and varied significantly among different age groups (P < 0.05). The average height of boys and girls ranged from 99.0~112.0cm and 98.3~111.8cm respectively. The average sitting height ranged from 57.3~62.5cm and 56.0~61.8cm for boys and girls, respectively. As for the foot length, it ranged from 15.6~17.3cm and 15.6~17.4cm for boys and girls, respectively (Tables 3-1-3-1, 3-1-3-2 and 3-1-3-3).

The average height and sitting height of boys were higher than those of girls. Significant difference between genders was observed in the height of young children aged 4, also found in the sitting height of young children aged 3~5 (P < 0.05). However, no significant difference in foot length between genders was seen in each age group (Figures 2-1-1-10, 2-1-1-11 and 2-1-1-12).
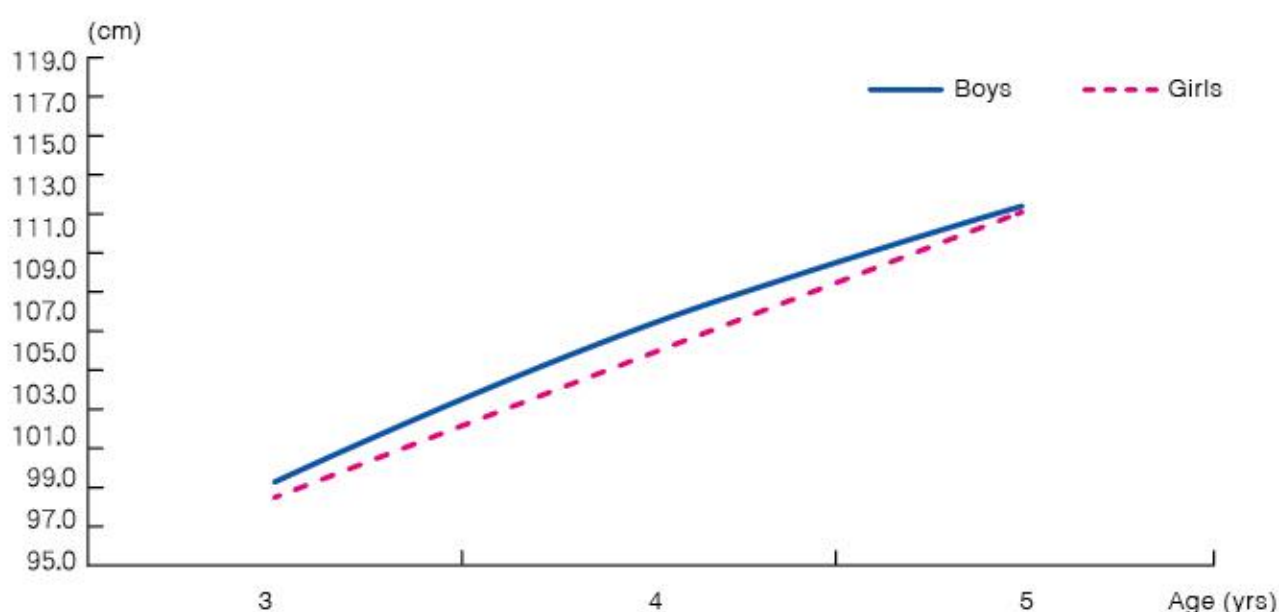
Figure 2-1-1-10 Average height of young children
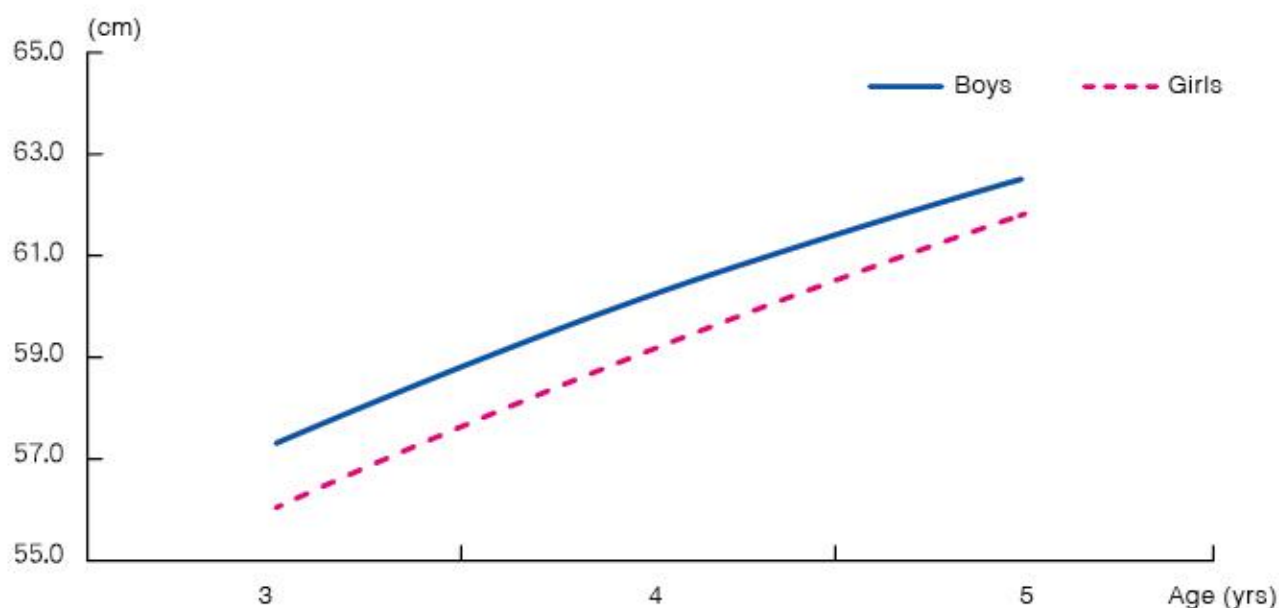
Figure 2-1-1-11 Average sitting height of young children
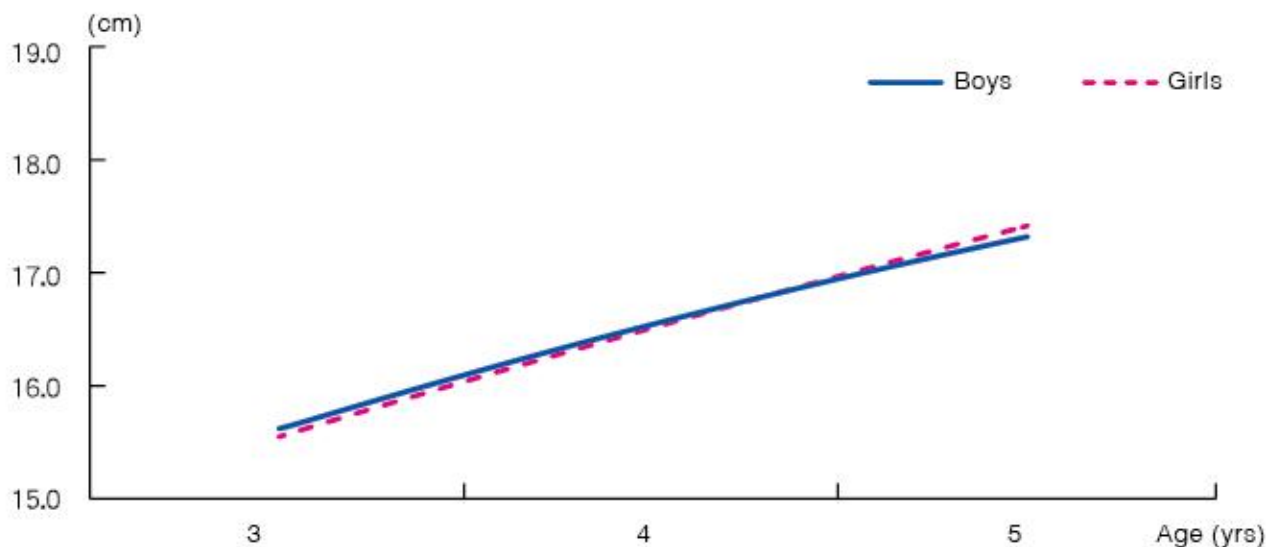
Figure 2-1-1-12 Average foot length of young children

(2) Weight and BMI

Weight of young children increased with advancing age, and the average weight of boys and girls ranged from 15.3~19.5kg and 14.9~19.0kg, respectively (Table 3-1-3-4, Figure 2-1-1-13).

BMI of young children was fairly stable and varied very little with advancing age. The average BMI of boys and girls ranged from 15.4~15.6 and 15.2~15.3, respectively (Table 3-1-3-5, Figure 2-1-1-14).

The average weight and BMI of boys and girls were basically similar. Only the average weight of young children aged 3 differed siginificantly between genders ($P < 0.05$).
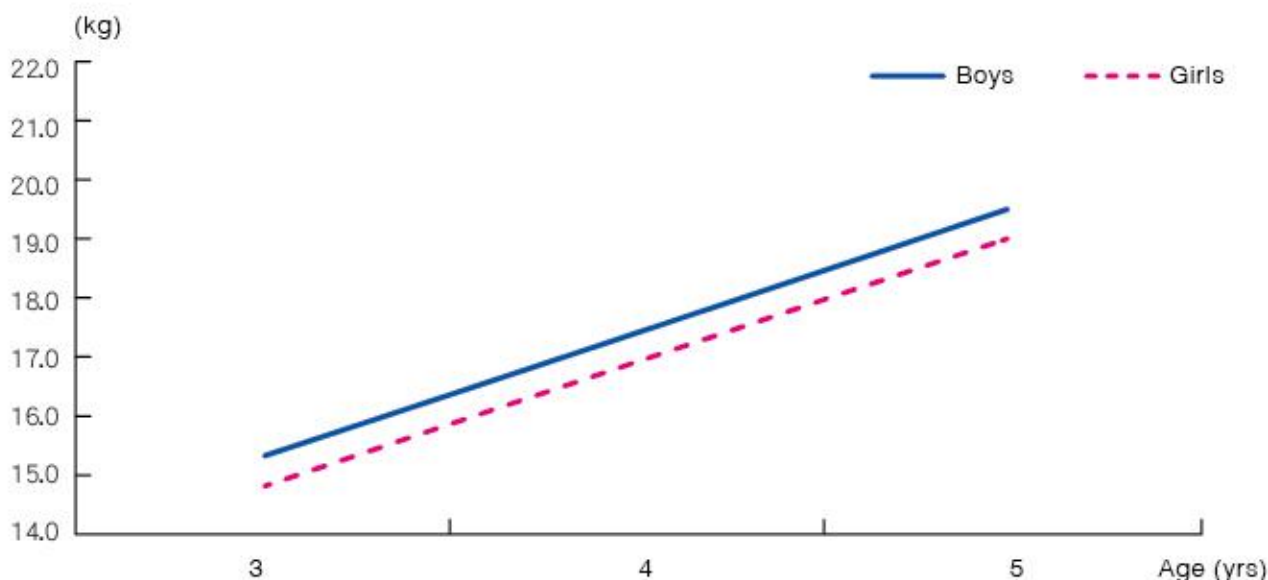
Figure 2-1-1-13 Average weight of young children
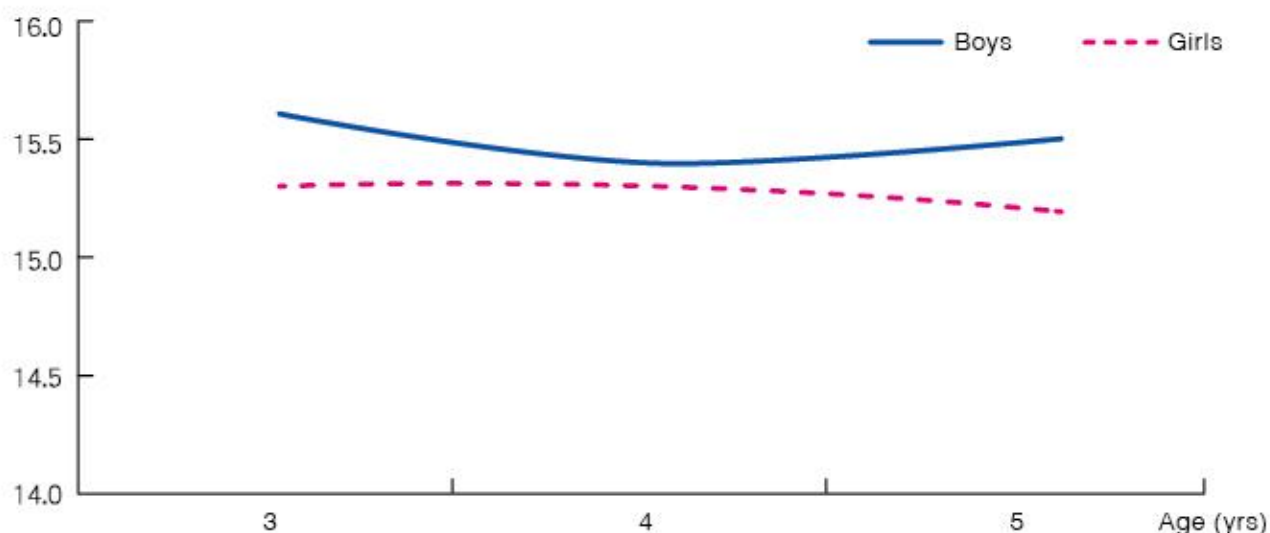
Figure 2-1-1-14 Average BMI of young children

According to the weight for height standards of young children in the "National Physical Fitness Standards for Chinese Citizens", analysis was made on obesity and overweight of young children, which indicated that 3.9%, 7.2% and 11.4% of boys aged 3, 4 and 5 respectively were obese, and 2.3%, 2.3% and 3.5% of girls aged 3, 4 and 5 respectively were obese. Besides, the obesity rate of boys increased with advancing age and differed significantly among age groups ($p < 0.05$) (Table 3-1-3-6, Figure 2-1-1-15).
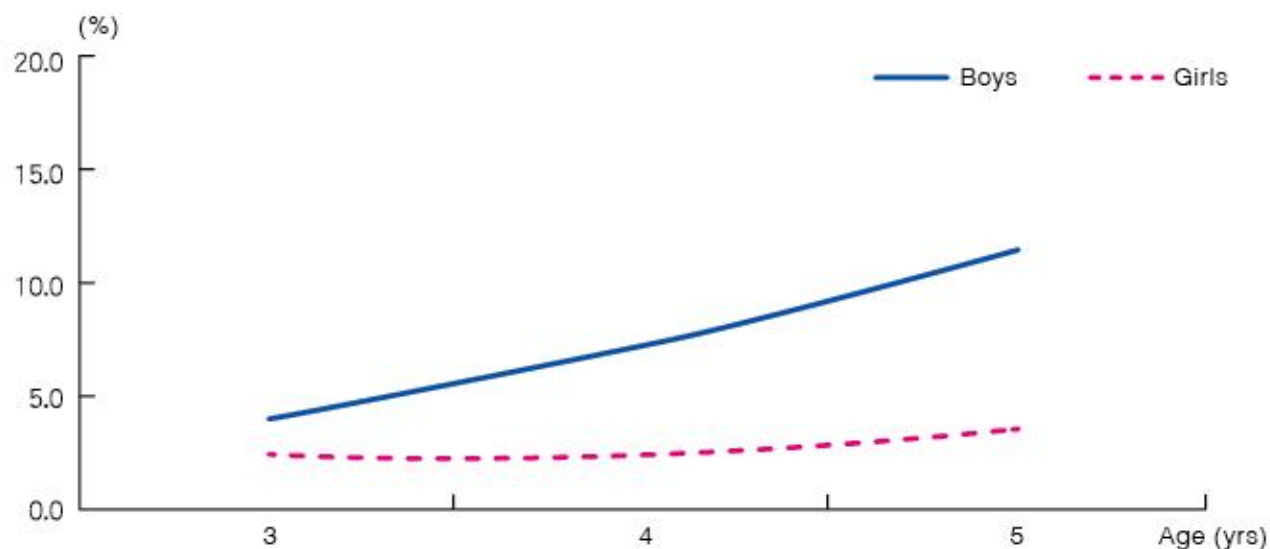
Figure 2-1-1-15 Proportion of obesity rate in young children

(3) Circumference Indicators

Chest, waist and hip circumferences of young children increased with advancing age. The average chest circumference of boys and girls ranged from 51.4~55.3cm and 50.4~53.9cm, respectively. The average waist circumference of boys and girls ranged from 48.6~51.6cm and 48.2~50.7cm, respectively. The average hip circumference ranged from 52.4~57.7cm and 52.7~57.7cm, respectively (Tables 3-1-3-7 to 3-1-3-9).

WHR (Waist-Hip Ratio) of young children declined as age increased. The average WHR of boys and girls ranged from 0.897~0.929 and 0.878~0.915, respectively (Table 3-1-3-10).

The average chest circumference of boys was higher than that of girls. The difference between boys and girls increased with advancing age, ranging from 0.9~1.4cm. Significant difference in chest circumference was found between genders in each age group (P < 0.05). The average waist circumference of the boys and girls aged 3~4 did not differ significantly; at the age of 5, boys had larger waist circumference than girls. Significant difference in WHR between genders was found in the age groups of 3 and 5 (P < 0.05) (Figures 2-1-1-16 to 2-1-1-19).
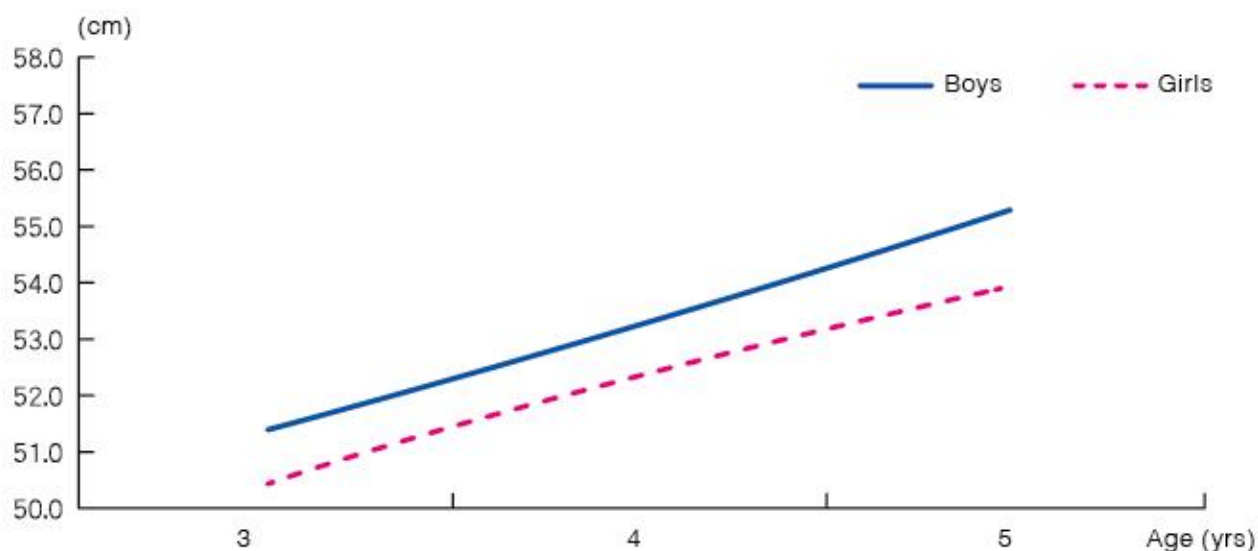
Figure 2-1-1-16 Average chest circumference of young children
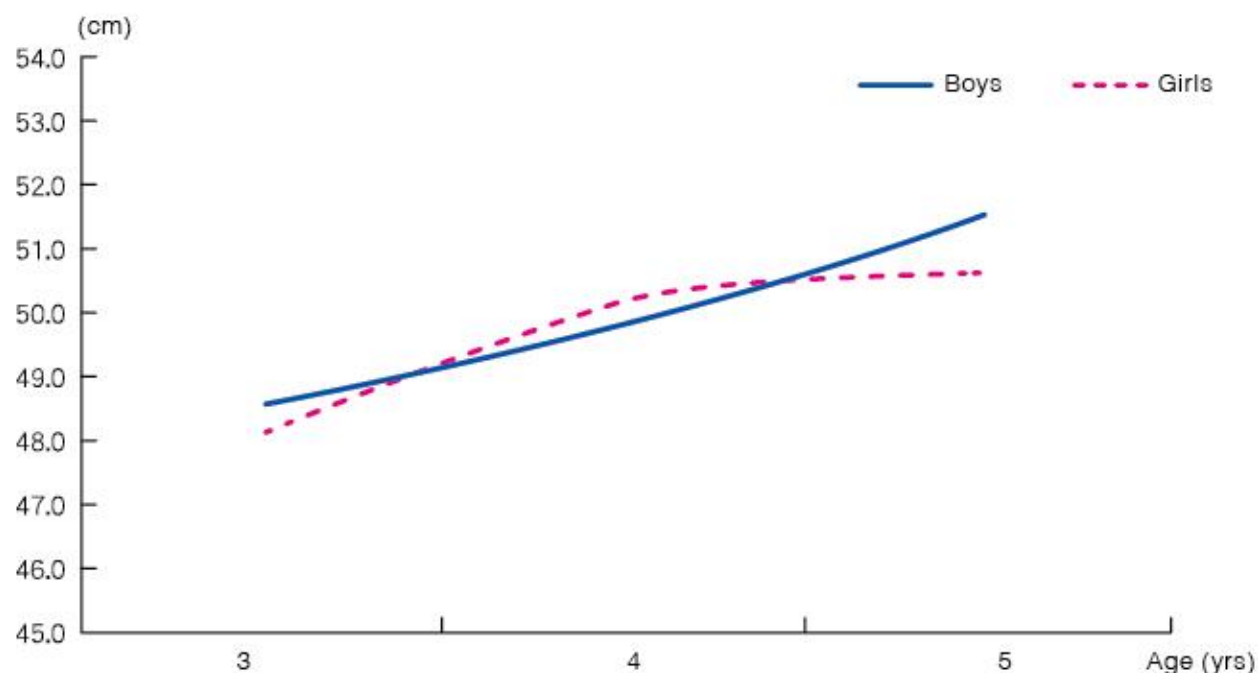
Figure 2-1-1-17 Average waist circumference of young children
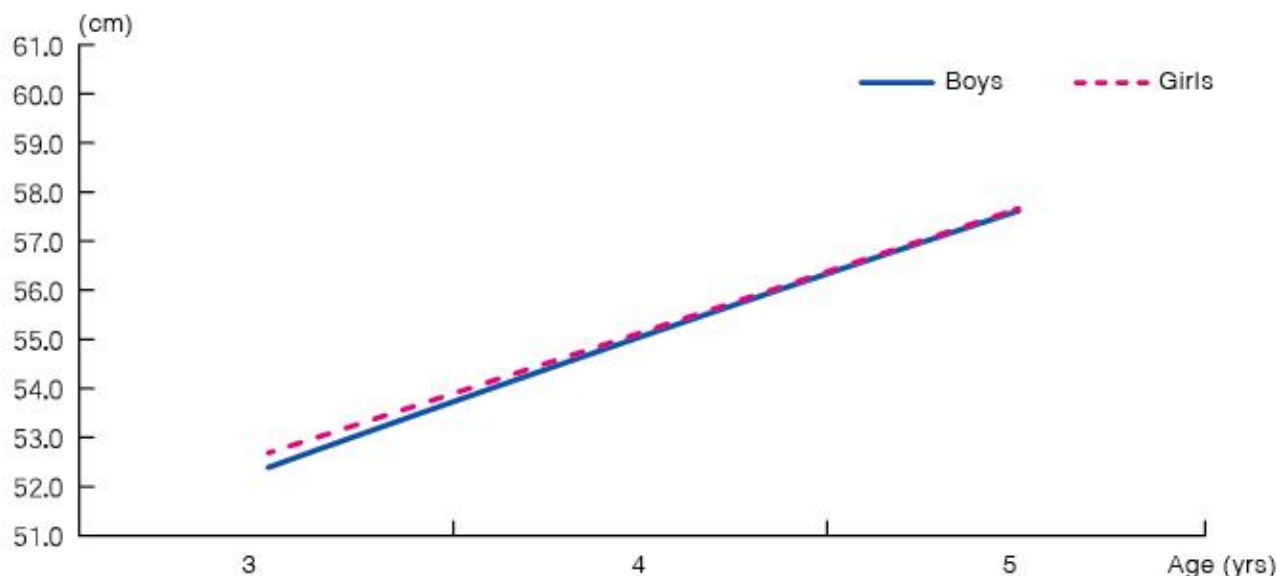
Figure 2-1-1-18 Average hip circumference of young children
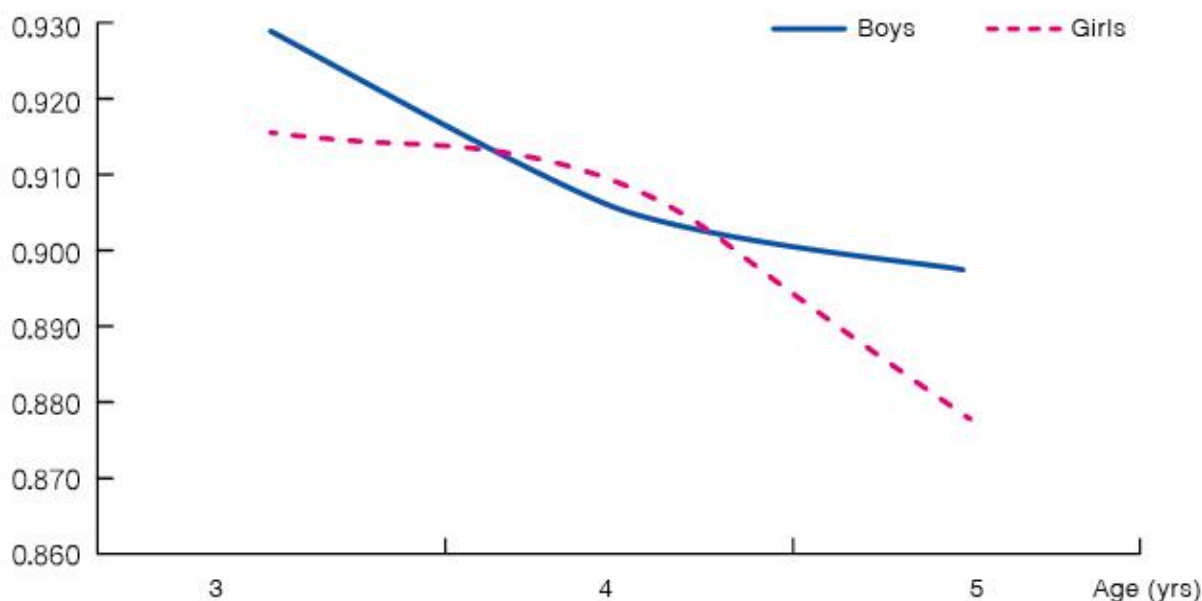
Figure2-1-1-19 Average WHR of young children

(4) Width Indicators

Shoulder and pelvis width of boys and girls increased with advancing age. The average shoulder width of boys and girls ranged from 21.6~24.1cm and 21.9~24.1cm, respectively. The average pelvis width of boys and girls ranged from 15.9~17.3cm and 16.0~17.5cm, respectively (Tables 3-1-3-11 and 3-1-3-12).

The average shoulder width of girls was higher than that of boys at the age of 3. Among all the width indicators, significant difference in shoulder width between genders was found at age 3 only (p < 0.05). No statistical difference between genders was observed in other width indicators (Figures 2-1-1-20 and 2-1-1-21).
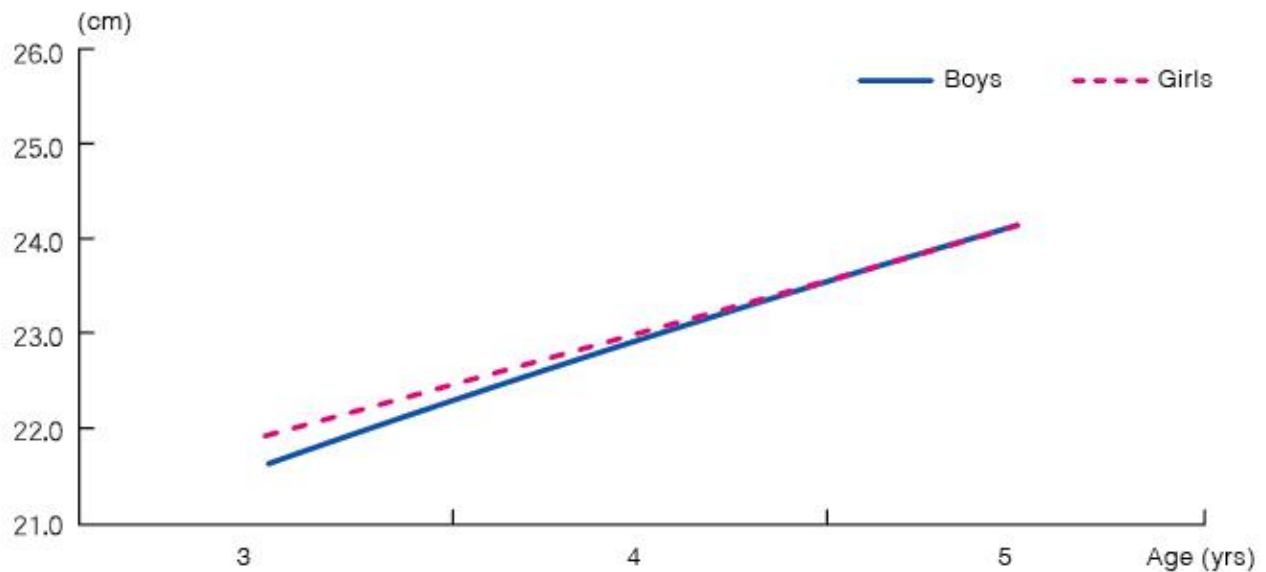
Figure 2-1-1-20 Average shoulder width of young children
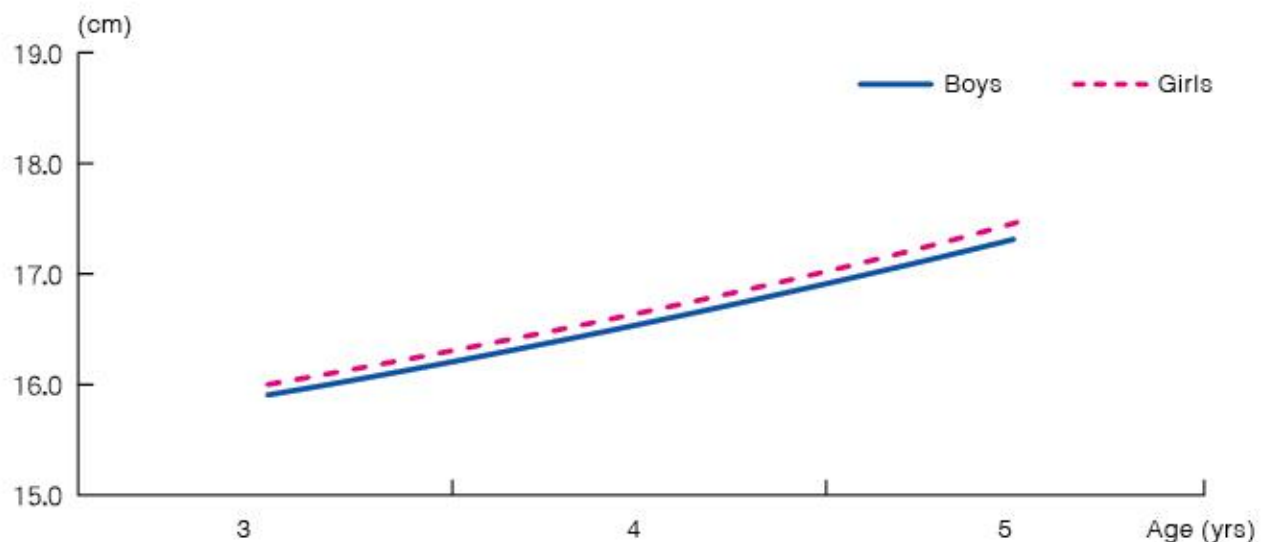
Figure 2-1-1-21 Average pelvis width of young children

(5) Body Composition

The average skinfold thickness of upper arm, scapular and abdomen of boys increased with advancing age; the average skinfold thickness of these three parts of girls increased first and then decreased with advancing age. The average skinfold thickness of upper arm for boys and girls were 8.4-8.9mm and 9.9~10.7mm, respectively. The average subscapular skinfold thickness for boys and girls were 5.1~5.2mm and 5.3~5.8mm, respectively. The average abdominal skinfold thickness for boys and girls were 5.1~6.7mm and 6.6~7.6mm, respectively (Tables 3-1-3-13, 3-1-3-14 and 3-1-3-15).

The average skinfold thickness of all three parts of girls was larger than boys. The differences in the upper arm, subscapular and abdominal skinfold thickness between boys and girls ranged from 1.3~2.1mm, 0.2~0.6mm and 0.4~1.8mm, respectively, with significant difference between genders found in the upper arm skinfold thickness of young children in all ages, the subscapular skinfold thickness of young children aged 4 and the abdominal skinfold thickness of young children aged 3~4 (p < 0.05) (Figures 2-1-1-22, 2-1-1-23 and 2-1-1-24).
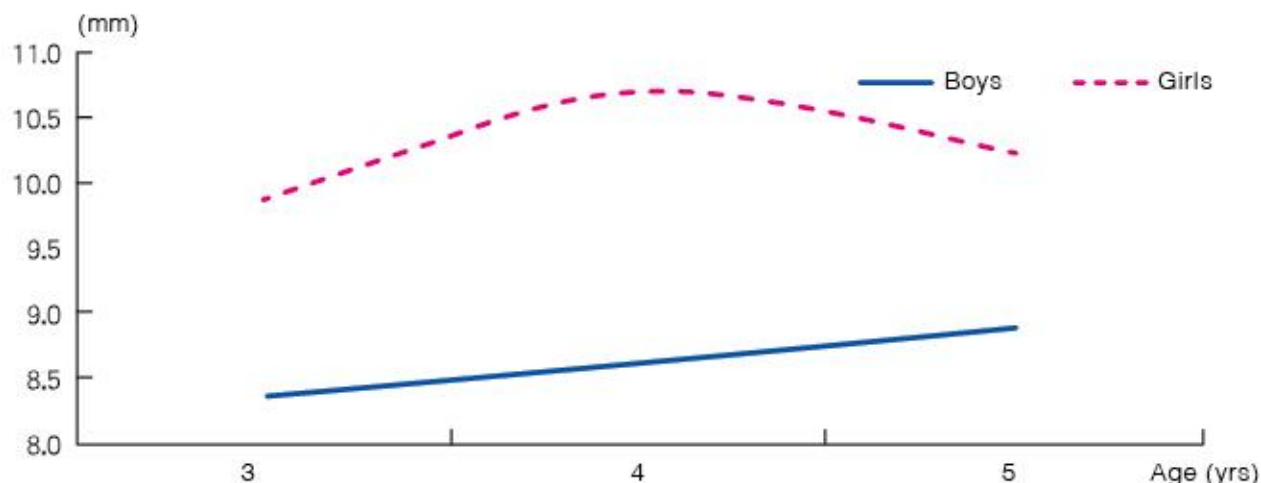
Figure 2-1-1-22 Average upper arm skinfold thickness of young children
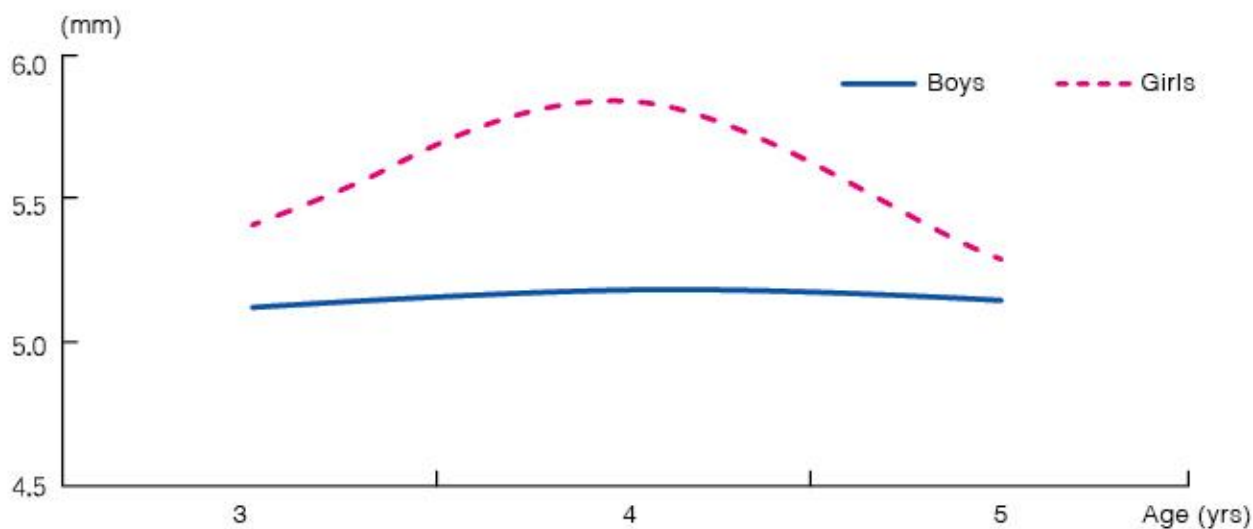
Figure 2-1-1-23 Average subscapular skinfold thickness of young children
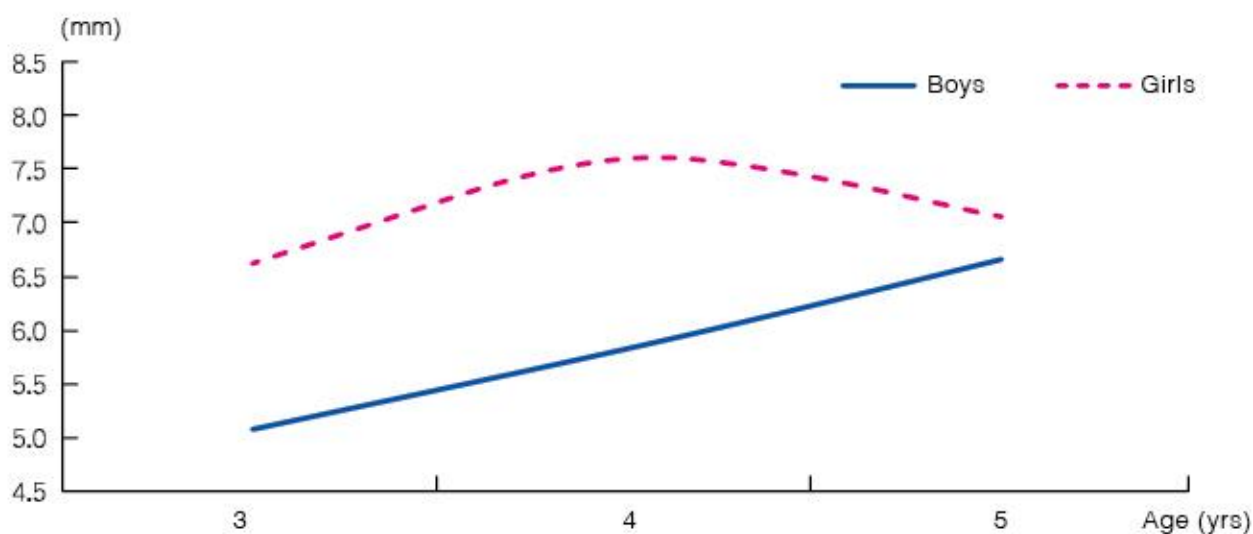
Figure 2-1-1-24 Average abdominal skinfold thickness of young children

4. Physiological Function

The average resting heart rate of young children tended to decline with advancing age. The average resting heart rate of boys and girls ranged from 93.5~89.1bpm and 97.0~90.4bpm, respectively. Significant difference in the resting heart rate was observed between genders in the young children of aged 3~4 ($p < 0.05$) (Table 3-1-4-1, Figure 2-1-1-25).
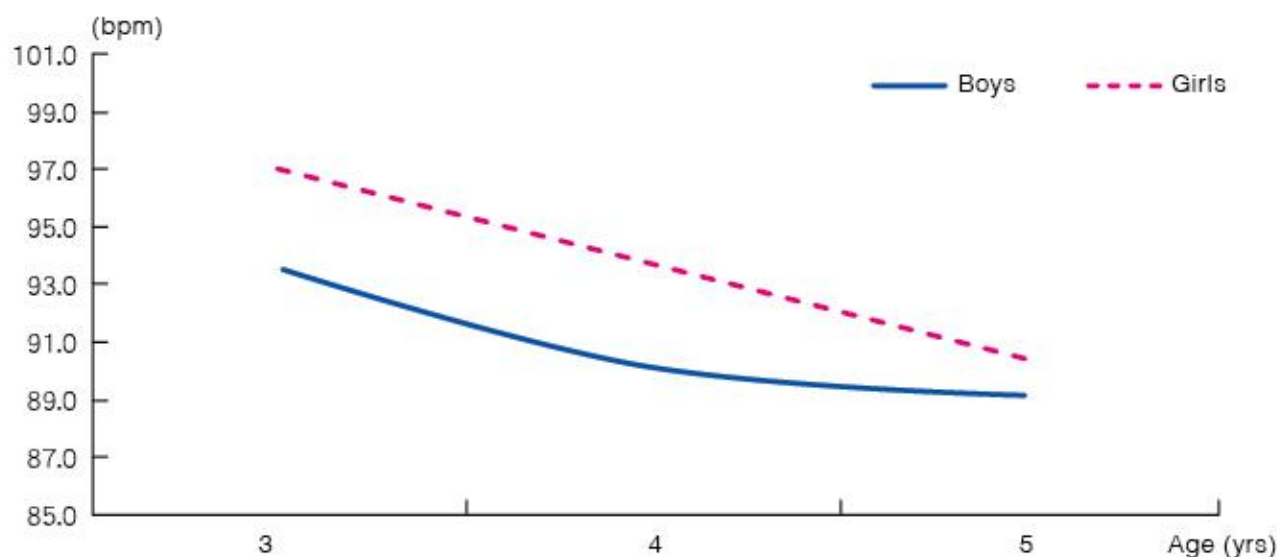
Figure 2-1-1-25 Average resting heart rate of young children

5. Physical Fitness

(1) Speed and Sensitivity

Speed and sensitivity of young children were reflected by 10m shuttle run and successive jumps with both feet.

The average time for 10m shuttle run and successive jumps with both feet of boys ranged from 6.9~9.8 seconds and 6.9~13.7 seconds, respectively. The average time for 10m shuttle run and successive jumps with both feet of girls ranged from 7.1~9.9 seconds and 6.7~13.2 seconds, respectively (Tables 3-1-5-1 and 3-1-5-2). Significant difference in 10m shuttle run and successive jumps with both feet of the same gender was seen among different age groups ($p<0.05$). Significant difference in 10m shuttle run between genders was observed in all age groups except the aged 3 group ($p<0.05$), whereas no significant difference in successive jumps with both feet between genders was found. Study results indicated that speed and sensitivity of young children tended to improve and the rate of increase also accelerated with advancing age. The characteristic of speed and sensitivity of boys and girls differed slightly. Boys and girls had fairly similar sensitivity, but boys had faster speed than girls (Figures 2-1-1-26 and 2-1-1-27).
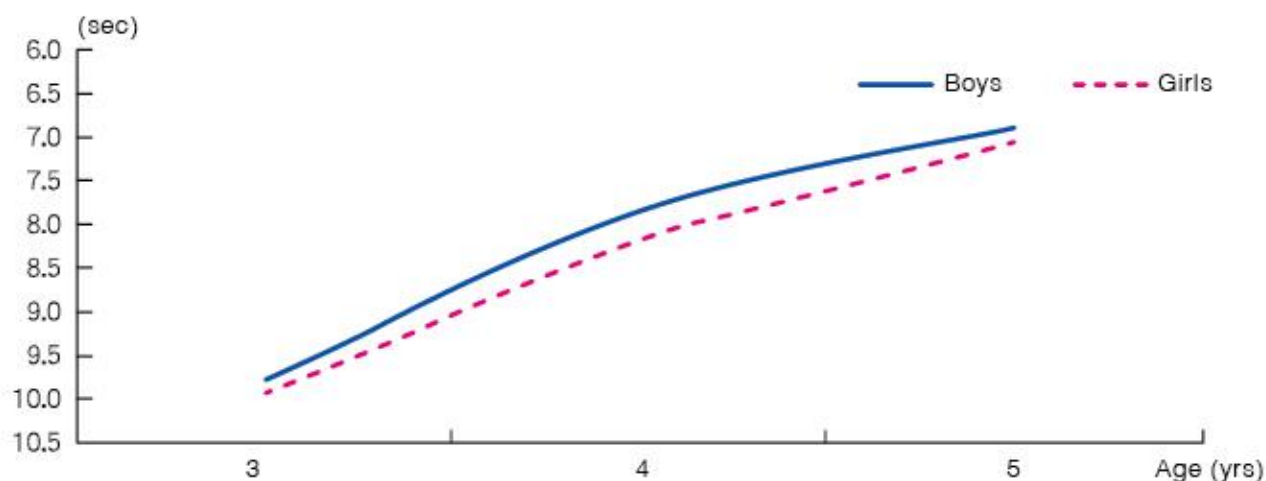
Figure 2-1-1-26 Average time of 10m shuttle run of young children
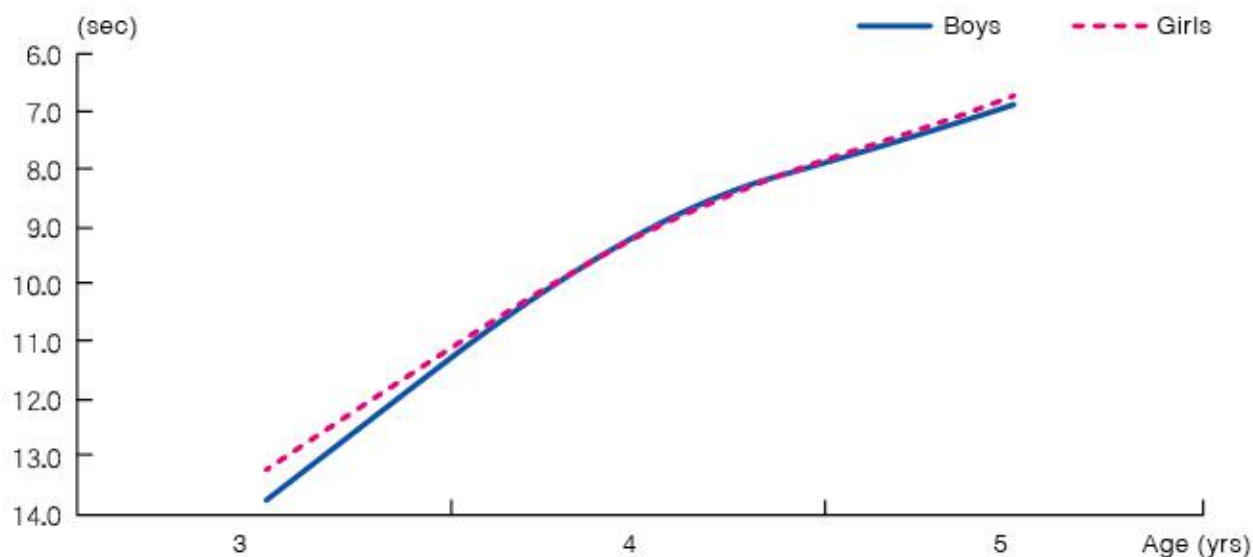
Figure 2-1-1-27 Average time of successive jumps with both feet of young children

(2) Strength

Strength of young children was reflected by standing long jump and tennis ball distance throw.

The average standing long jump and tennis ball distance throw of boys ranged from 54.3~94.1cm and 2.7~5.2m, respectively; those of girls ranged from 49.9~87.6cm and 2.2~4.2m (Tables 3-1-5-3 and 3-1-5-4), respectively. Significant difference was found in the average standing long jump and tennis ball distance throw of the same gender among different age groups. By contrast, the average standing long jump and tennis throw of boys were higher than girls among all age groups. Significant difference between genders was found in all age groups except in the standing long jump of the aged 4 group (p < 0.05), the difference between genders apparently increased with age. The results showed that the strength of both boys and girls tended to improve with advancing age. Boys had better strength than girls, and the difference between them increased with advancing age (Figures 2-1-1-28 and 2-1-1-29).
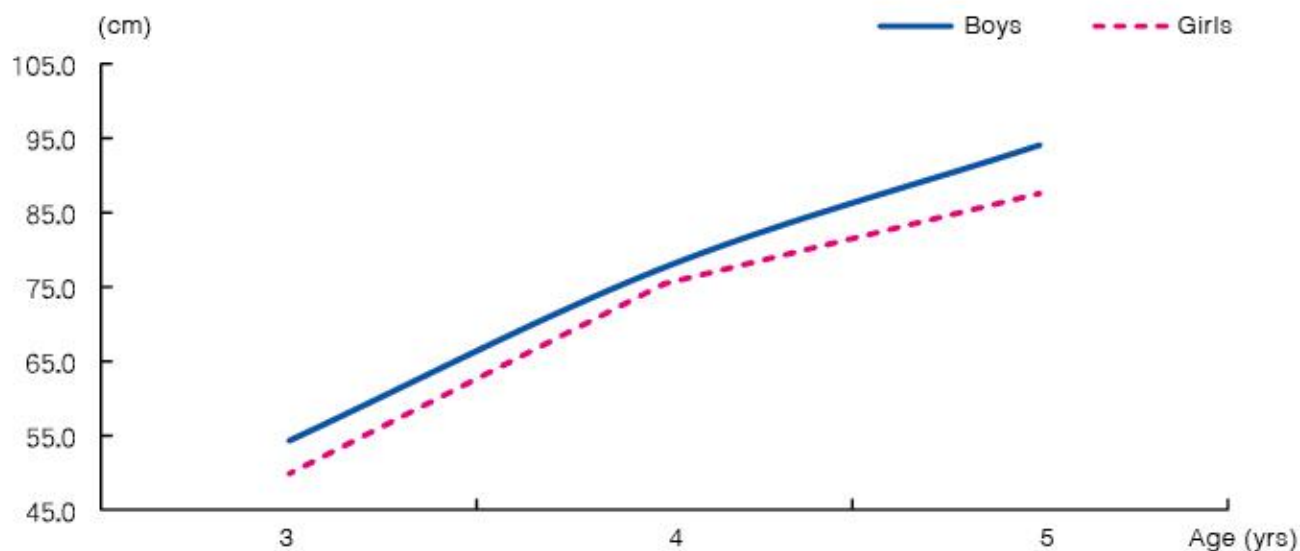
Figure 2-1-1-28 Average standing long jump of young children
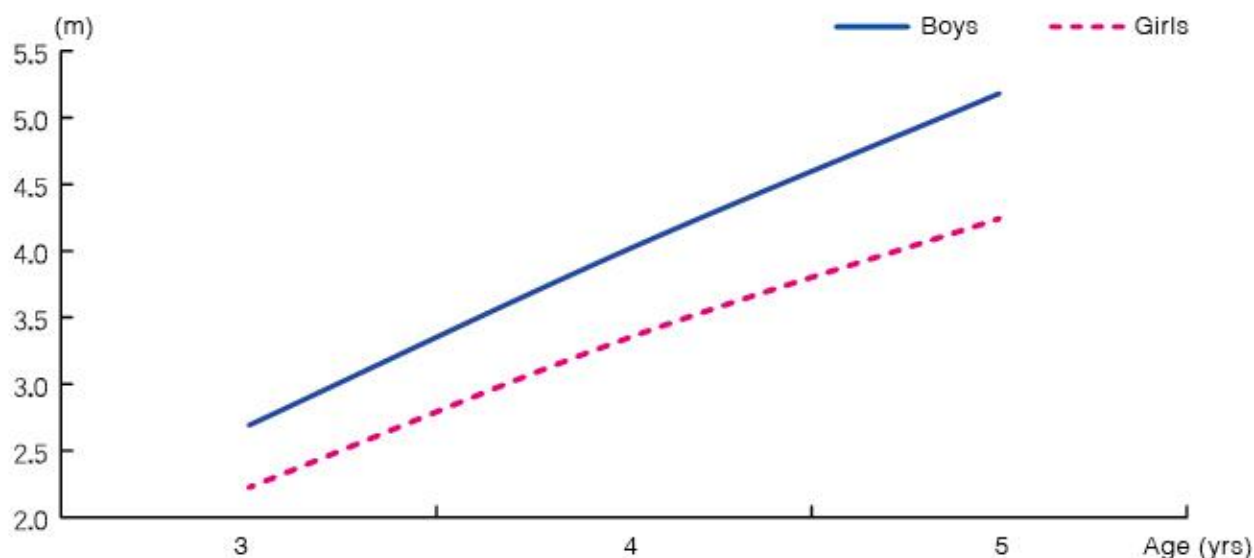
Figure 2-1-1-29 Average tennis ball distance throw of young children

(3) Flexibility

Sit and reach reflects flexibility.

The average sit and reach of boys and girls ranged from 7.6~10.2cm and 8.9~10.4cm, respectively. As age increased, the average sit and reach of boys declined, while that of girls varied irregularly, which indicated that flexibility of boys declined with advancing age (Table 3-1-5-5).

The average sit and reach of girls was higher than that of boys, and significant difference was found between genders in the aged 4~5 groups ($p < 0.05$), which showed that the flexibility of girls was distinctly better than boys (Figure 2-1-1-30).
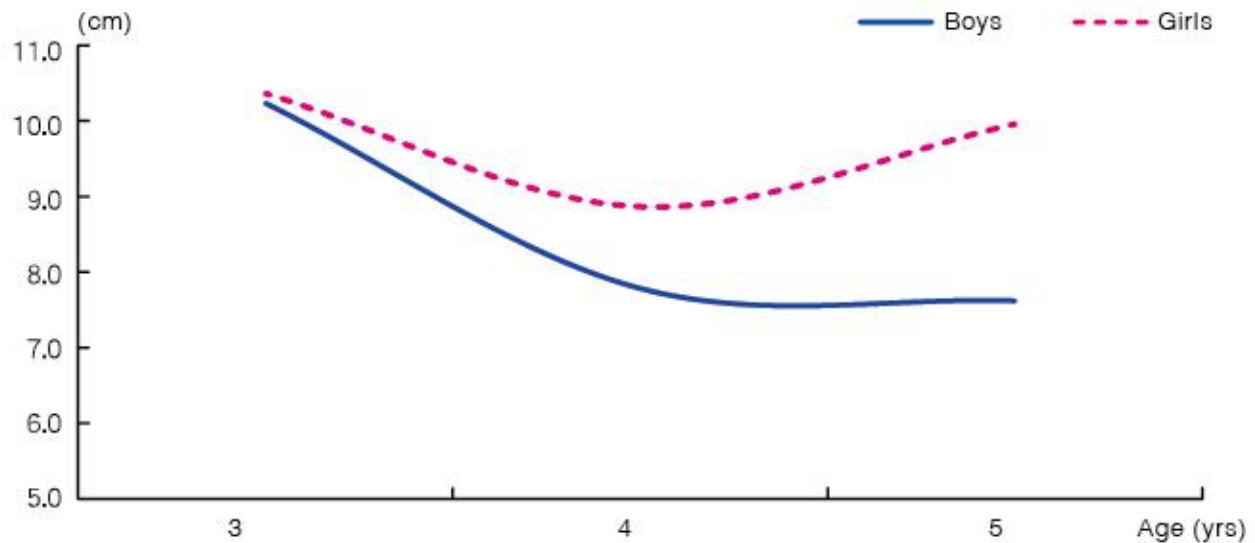
Figure 2-1-1-30 Average sit and reach of young children

(4) Balance

Balance of young children was reflected by walking on balance beam. The manner of walking on balance beam and the completion time were used to reflect the balance ability of young children.

In terms of manner of walking on balance beam, 73.3% of boys and 85.2% of girls at age 3 were able to finish the test normally (moving forward). At age 5, all boys and girls were able to finish the test normally (Table 2-1-1-2).

In terms of completion time, the average time for boys and girls ranged from 22.1~7.6 seconds and 22.5~9.4 seconds, respectively. Young children at age 3 required the longest time and young children at age 5 required the shortest time to complete, indicating that the balance ability improved substantially with advancing age (Figure 2-1-1-31).

The balance ability of boys and girls tended to vary in the same way, and the time required to finish walking by boys was slightly less than that of girls. Significant difference between genders was only found in the aged 5 group ($p < 0.05$) (Figure 2-1-1-31 and Table 3-1-5-6).

Table 2-1-1-2 Proportion of young children on the manner of walking on balance beam (%)

Gender	Manner of walking	Age (yrs)			Total
		3	4	5	
	Moving forward	73.3	95.0	99.5	**89.3**
Boys	Moving slowly sideways	15.5	3.9	0.5	**6.6**
	Unable to finish	11.2	1.1	0.0	**4.1**
	Moving forward	85.2	95.4	99.3	**93.5**
Girls	Moving slowly sideways	8.6	2.3	0.7	**3.7**
	Unable to finish	6.3	2.3	0.0	**2.7**
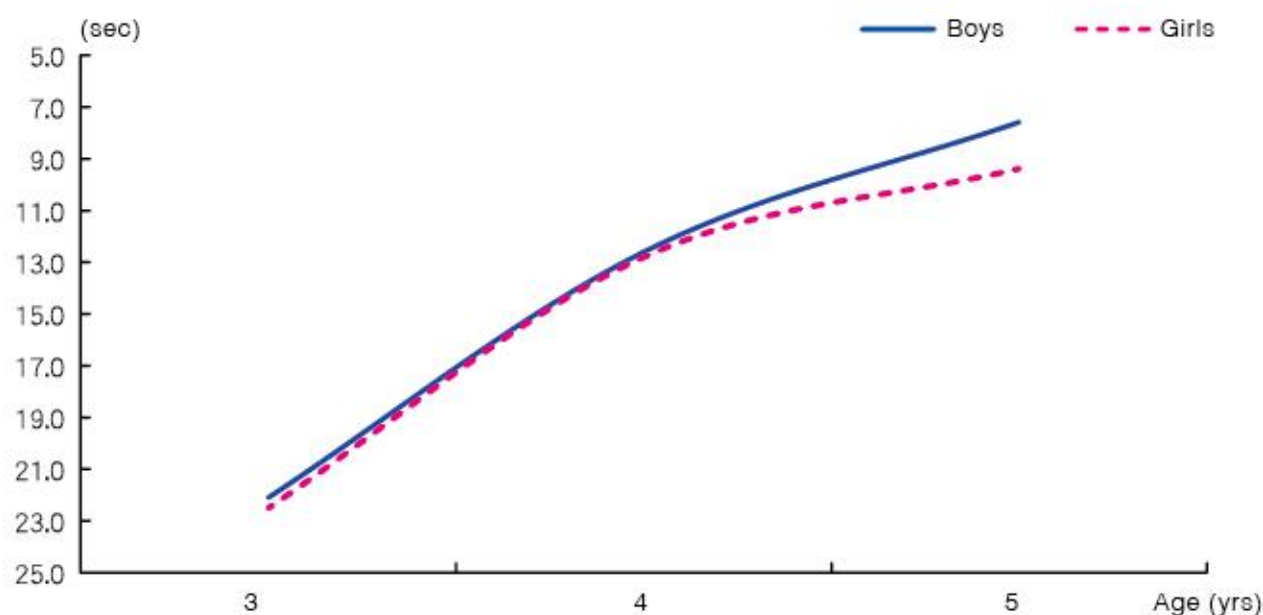
Figure 2-1-1-31 Average time of walking on balance beam of young children

6. Health

Occurrence of dental carries was reflected by the prevalence of decayed teeth (%), the prevalence of missing teeth (%), the prevalence of filled teeth (%) and the prevalence of decayed-missing-filled teeth (%). The prevalence of decayed primary teeth (d) meant the incidence rate of subjects having decayed primary teeth. The prevalence of missing primary teeth (m) referred to the incidence rate of missing primary teeth due to decay before the development of permanent teeth. The prevalence of filled primary teeth (f) meant the percentage of primary teeth with fillings. The prevalence of decayed-missing-filled primary teeth (dmf) referred to the total incidence rate of decay, missing and filling in primary teeth.

(1) Occurrence of Decayed Primary Teeth

Among boys and girls aged 3~5, the prevalence of decayed primary teeth increased gradually with advancing age. The changing trend was basically consistent in boys and girls, with significant difference found among age groups (p < 0.05). From age 3 to age 5, there were 19.8% and 18.8% increase on the prevalence of decayed primary teeth in boys and girls, respectively. The prevalence of decayed primary teeth ranged from 42.2%~62.0% and 37.5%~56.3% in boys and girls, respectively.

Among different age groups, no significant difference in the prevalence of decayed primary teeth was observed between genders (Table 3-1-6-1, Figure 2-1-1-32).
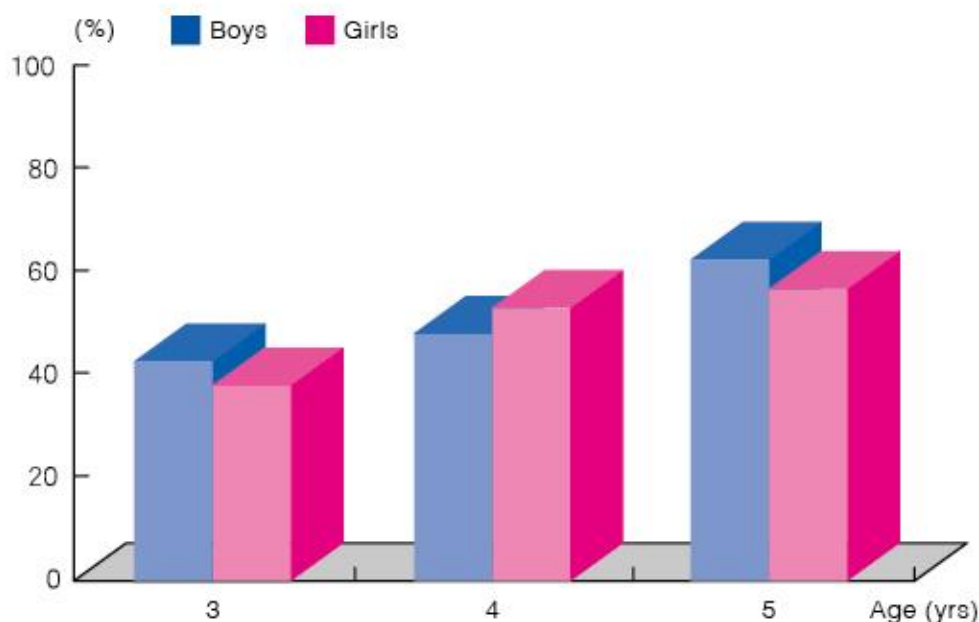
Figure 2-1-1-32 Prevalence of decayed primary teeth in young children

Among the young children aged 3~5, the prevalence of filled primary teeth increased gradually with advancing age. The changing trend was similar in boys and girls, with significant difference found among age groups ($p < 0.05$). The prevalence of filled primary teeth ranged from 2.9%~13.1% and 1.6%~12.0% in boys and girls, respectively.

Significant difference in the prevalence of filled primary teeth (f) was observed between genders at age 4 ($p < 0.05$) (Figure 2-1-1-33).
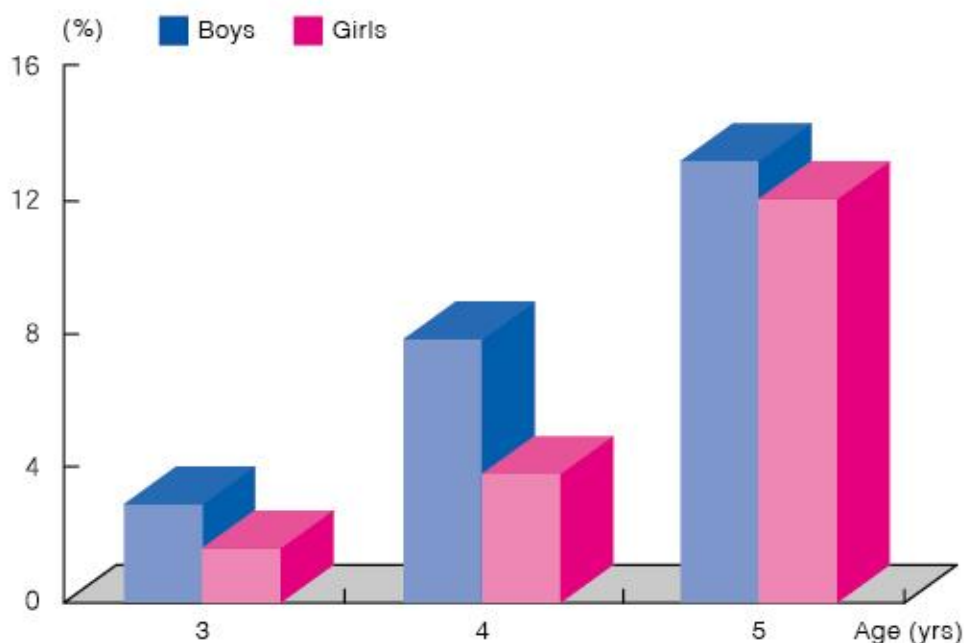
Figure 2-1-1-33 Prevalence of filled primary teeth in young children

The prevalence of missing primary teeth (m) was less than 1% in young children of all three age groups. No significant difference was observed among age groups (Figure 2-1-1-34).
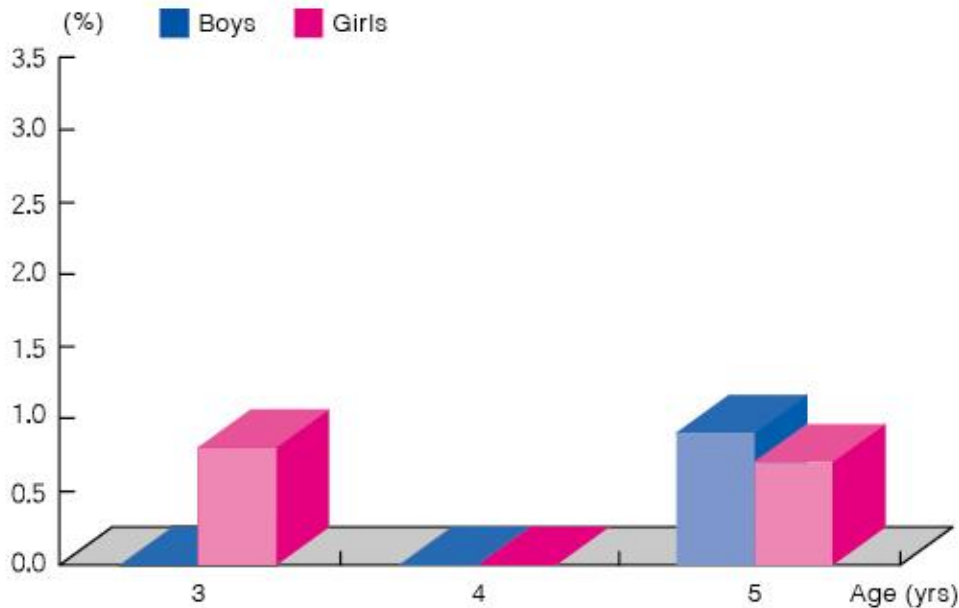
Figure 2-1-1-34 Prevalence of missing primary teeth in young children

The prevalence of decayed-missing-filled primary teeth (dmf) increased distinctly with advancing age. The prevalence rose gradually from a low of 42.7% for boys aged 3 to a high of 63.3% for boys aged 5, with an increase of 20.6%; it also increased gradually from 37.5% for girls aged 3 to 59.9% for girls aged 5, with an increase of 22.4%. Significant difference was seen among age groups ($p < 0.05$).

It revealed that significant difference was observed between genders in each age group ($p < 0.05$). In the aged 3 and 5 groups, the prevalence of dmf teeth of boys was higher than that of girls (Figure 2-1-1-35).
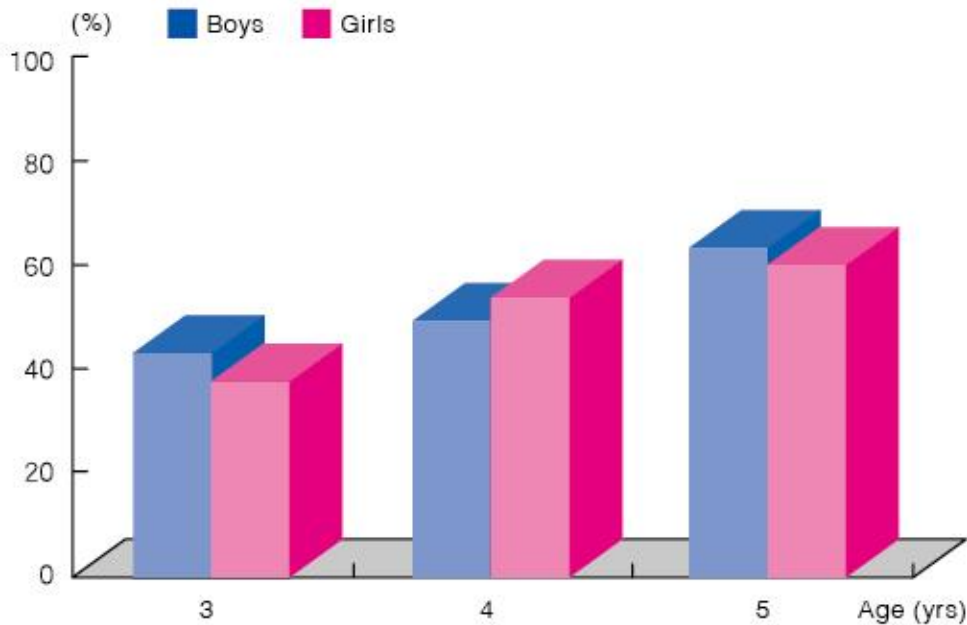
Figure 2-1-1-35 Prevalence of decayed-missing-filled primary teeth in young children

(2) Occurrence of Decayed Permanent Teeth

Occurrence of dental decay in permanent teeth was reflected by the prevalence of decayed permanent teeth (%), the prevalence of missing permanent teeth (%), the prevalence of filled permanent teeth (%) and the prevalence of decayed-missing-filled permanent teeth (%). The prevalence of decayed permanent teeth (D) meant the incidence rate of subjects having decayed permanent teeth. The prevalence of missing permanent teeth (M) referred to the incidence rate of missing permanent teeth due to caries. The prevalence of filled permanent teeth (F) meant the percentage of permanent teeth with fillings. The prevalence of decayed-missing-filled permanent teeth (DMF) referred to the total incidence rate of decay, missing and filling in permanent teeth.

The prevalence of decayed, filled and DMF permanent teeth occurred among young children at age 5, with the incidence rate in boys and girls accounting for 0.5% and 0.7%, respectively (Table 3-1-6-2).

(II) Comparison of 2015 and 2010 Results on the Physical Fitness Study of Macao Young Children

1. Comparison of Basic Information of the Subjects

893 and 1,008 samples were drawn randomly for the 2010 and 2015 physical fitness study of Macao young children. The parishes where the sampling sites located were consistent in two studies.

2. Comparison of Lifestyle

(1) Birth and Feeding Patterns

Compared with the results in 2010 study, no significant change was seen in the average birth weight of boys and girls in each age group in 2015. The average birth length of boys and girls in each age group decreased by 0.4cm and 0.1cm, respectively, without significant difference between 2010 and 2015 results.

The comparison of two studies indicated that the proportion of young children who were breast-fed and mixed-fed increased in 2015, and those who were formula-fed decreased. The proportion of boys and girls who were formula-fed decreased by 20.2% and 18.5%, respectively (Table 2-1-2-1).

Table 2-1-2-1 Comparison of feeding patterns in young children (%)

Feeding patterns	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
Breast feeding	11.5	21.4	9.9	16.0	26.4	10.4
Formula feeding	57.1	36.9	-20.2	52.1	33.6	-18.5
Mixed feeding	31.4	41.7	10.3	31.9	39.9	8.0

Note: Difference equals to data in 2015 minus data in 2010. * is the comparison result of the two studies in which p<0.05. This calculation method applies to subsequent tables.

(2) Living Habits

Information about living habits that were examined included average daily accumulated sleeping hours (including naps), average daily accumulated hours of outdoor activities, average daily accumulated hours of indoor activities such as watching TV, video and playing video games, as well as participation in extracurricular activities (hobby classes).

Results in the two studies showed that the average daily sleeping hours of young children changed slightly. Compared with the results in 2010, the proportion of young children who spent 30 minutes to 1 hour on outdoor activities daily increased by 5.8% in 2015, those spending 1~2 hours, more than 2 hours and less than 30 minutes

all decreased (Table 2-1-2-2). In 2015, the proportion of young children who spent less than 1 hour watching TV, video and playing video games daily increased by 13.4%, which differed significantly ($p < 0.05$); nonetheless, those spending more than 1 hour decreased. The results indicated that average daily accumulated hours of indoor activities such as watching TV, video and playing video games tended to decline (Table 2-1-2-3). However, the proportion of young children participated in extracurricular activities (hobby classes) increased by 5.7% in 2015.

Table 2-1-2-2 Comparison of average daily accumulated time spent on outdoor activities in young children (%)

Year	Less than 30 minutes	30 minutes~1 hour	1~2 hours	2 hours or more
2010	28.4	43.4	20.9	7.3
2015	26.8	49.2	19.2	4.8
Difference	-1.6	5.8	-1.7	-2.5

Table 2-1-2-3 Comparison of average daily accumulated time spent on watching TV, video and playing video games in young children (%)

Year	Less than 30 minutes	30 minutes~1 hour	1~2 hours	2~3 hours	3 hours or more
2010	16.8	30.9	33.0	15.7	3.6
2015	19.4	41.7	25.8	9.2	3.8
Difference	2.6	10.8[*]	-7.2	-6.5	0.2

(3) Physical Exercise

Results in the two studies showed that bicycling, swimming, ball games and dancing were the top four sports with highest participation among young children (Table 2-1-2-4). There was a difference in the type of sports that boys and girls frequently participated. Bicycling accounted for the highest proportion that boys participated, whereas dancing accounted for the highest proportion in girls in both 2010 and 2015.

Table 2-1-2-4 Comparison of physical exercise in young children (%)

Year	Swimming	Track and field	Ball games	Gymnastics	Dancing	Rope skipping	Martial arts etc.	Bicycling	Others
2010	23.2	13.0	22.5	17.8	18.6	2.8	2.7	44.0	20.6
2015	25.9	12.9	21.8	8.8	17.5	1.3	2.5	43.9	33.5
Difference	2.7	-0.1	-0.7	-9.0	-1.1	-1.5	-0.2	-0.1	12.9

(4) Occurrence of Diseases

Results in the two studies revealed that no significant difference was found in the occurrence of diseases among young children having a flu or fever in the previous year.

3. Comparison of Anthropometric Measurements

(1) Length Indicators

Results in the two studies showed that height, sitting height and foot length of young children increased with advancing age. Compared with 2010 results, the average sitting height of young children, the average foot length of boys in most of the age groups decreased in 2015. The average height of boys aged 3 and girls aged 4 also decreased. However, the average foot length of girls increased. According to the comparison, the average foot

length of boys and girls in each age group of two studies differed significantly (p<0.05) (Tables 2-1-2-5, 2-1-2-6 and 2-1-2-7).

Table 2-1-2-5 Comparison of average height in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	99.8	99.0	-0.8	98.2	98.3	0.1
4 years	106.2	106.4	0.2	105.1	105.0	-0.1
5 years	111.9	112.0	0.1	110.9	111.8	0.9

Table 2-1-2-6 Comparison of average sitting height in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	57.4	57.3	-0.1	56.3	56.0	-0.3
4 years	60.4	60.2	-0.2	59.4	59.2	-0.2
5 years	62.3	62.5	0.2	62.0	61.8	-0.2

Table 2-1-2-7 Comparison of average foot length in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	15.9	15.6	-0.3*	15.2	15.6	0.4*
4 years	16.8	16.5	-0.3*	16.2	16.6	0.4*
5 years	17.5	17.3	-0.2*	17.1	17.4	0.3*

(2) Weight and BMI

Results in the two studies revealed that weight of boys and girls increased with advancing age. Compared with the results in 2010, the average weight and BMI of boys and girls declined slightly in 2015. The average weight of boys and girls decreased by 0.1~0.4kg and 0.2~0.3kg, respectively. Moreover, BMI of boys decreased by 0.1~0.2 and that of girls decreased by 0.2 (Tables 2-1-2-8 and 2-1-2-9). Compared with 2010 data, the obesity rate of boys and girls in all ages reduced in 2015, with the reduction ranging from 0.2%~6.3% and 2.6%~4.5% for boys and girls respectively. However, no significant difference in the average weight, BMI and obesity rate of boys and girls was seen between 2010 and 2015 results (Table 2-1-2-10).

Table 2-1-2-8 Comparison of average weight in young children (kg)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	15.7	15.3	-0.4	15.1	14.9	-0.2
4 years	17.7	17.4	-0.3	17.2	16.9	-0.3
5 years	19.6	19.5	-0.1	18.8	19.0	0.2

Table 2-1-2-9 Comparison of average BMI in young children

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	15.6	15.6	0.0	15.5	15.3	-0.2
4 years	15.6	15.4	-0.2	15.5	15.3	-0.2
5 years	15.6	15.5	-0.1	15.2	15.2	0.0

Table 2-1-2-10 Comparison of obesity rate in young children (%)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	5.2	3.9	-1.3	4.9	2.3	-2.6
4 years	13.5	7.2	-6.3	6.8	2.3	-4.5
5 years	11.6	11.4	-0.2	7.5	3.5	-4.0

(3) Circumference Indicators

Results in the two studies indicated that chest, waist and hip circumferences of young children tended to increase with advancing age, while WHR decreased. The changing trend was consistent in two studies. Compared with the results in 2010, the average chest, waist and hip circumferences of young children decreased in most of the age groups in 2015, whereas the average WHR rose. The average chest, waist and hip circumferences of boys in each age groups were 0.1~0.9cm lower than the results in 2010; the average chest, waist and hip circumferences of girls aged 3 were 0.1~0.5cm lower than those in 2010; however, the average WHR of young children in all ages increased by 0.003~0.018. Significant difference was found between two studies in the hip circumference and WHR of boys aged 3 and in the WHR of girls aged 4 ($p < 0.05$) (Tables 2-1-2-11 to 2-1-2-14).

Table 2-1-2-11 Comparison of average chest circumference in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	51.7	51.4	-0.3	50.5	50.4	-0.1
4 years	53.6	53.2	-0.4	52.4	52.3	-0.1
5 years	55.4	55.3	-0.1	53.8	53.9	0.1

Table 2-1-2-12 Comparison of average waist circumference in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	48.8	48.6	-0.2	48.5	48.2	-0.3
4 years	50.4	49.8	-0.6	49.8	50.2	0.4
5 years	51.6	51.6	0.0	50.2	50.7	0.5

Table 2-1-2-13 Comparison of average hip circumference in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	53.3	52.4	-0.9*	53.2	52.7	-0.5
4 years	55.8	55.1	-0.7	55.9	55.2	-0.7
5 years	58.1	57.7	-0.4	57.7	57.7	0.0

Table 2-1-2-14 Comparison of average WHR in young children

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	0.918	0.929	0.011*	0.912	0.915	0.003
4 years	0.902	0.906	0.004	0.891	0.909	0.018*
5 years	0.889	0.897	0.008	0.870	0.878	0.008

(4) Width Indicators

Two studies indicated that shoulder and pelvis width of boys and girls increased with advancing age. Compared with 2010 results, the average shoulder width of girls aged 4 decreased by 0.4cm, which differed significantly ($p < 0.05$), however, shoulder width measured in other age groups increased slightly. The average pelvis width of boys in each age group decreased, with the difference ranging from 0.1~0.3cm, and there was a significant difference found in the age group of 5 ($p < 0.05$). The average pelvis width of girls aged 4 declined by 0.3cm, which also differed significantly ($p < 0.05$) (Tables 2-1-2-15 and 2-1-2-16).

Table 2-1-2-15 Comparison of average shoulder width in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	21.5	21.6	0.1	21.9	21.9	0.0
4 years	22.7	23.0	0.3	23.4	23.0	-0.4*
5 years	24.1	24.1	0.0	24.1	24.1	0.0

Table 2-1-2-16 Comparison of average pelvis width in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	16.0	15.9	-0.1	15.9	16.0	0.1
4 years	16.8	16.5	-0.3	16.9	16.6	-0.3*
5 years	17.6	17.3	-0.3*	17.5	17.5	0.0

(5) Body Composition

Results in the two studies showed that the average upper arm, subscapular and abdominal skinfold thickness of boys increased with advancing age, the average skinfold thickness of these three parts of girls increased first then decreased with age. Compared with 2010 results, the average upper arm, subscapular and abdominal skinfold thickness of boys in 2015 were higher, whereas the average skinfold thickness of these three parts of girls were lower. The average upper arm, subscapular and abdominal skinfold thickness of boys increased by 0.3~1.0mm, 0.9~1.5mm and 1.0~1.4mm, respectively. However, the average upper arm, subscapular and abdominal skinfold thickness of girls decreased by 0.2~0.9mm, 0.4~0.7mm and 0.3mm, respectively. Significant difference was observed between two studies in the average skinfold thickness of all three parts among boys aged 3 and 5, as well as the average subscapular and abdominal skinfold thickness of boys aged 4 ($p < 0.05$) (Tables 2-1-2-17 to 2-1-2-19).

Table 2-1-2-17 Comparison of average upper arm skinfold thickness in young children (mm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	7.7	8.4	0.7*	10.8	9.9	-0.9
4 years	8.3	8.6	0.3	10.9	10.7	-0.2
5 years	7.9	8.9	1.0*	10.9	10.2	-0.7

Table 2-1-2-18 Comparison of average subscapular skinfold thickness in young children (mm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	3.6	5.1	1.5*	6.1	5.4	-0.7
4 years	3.8	5.2	1.4*	6.5	5.8	-0.7
5 years	4.2	5.1	0.9*	5.7	5.3	-0.4

Table 2-1-2-19 Comparison of average abdominal skinfold thickness in young children (mm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	4.1	5.1	1.0*	6.9	6.6	-0.3
4 years	4.7	5.8	1.1*	7.9	7.6	-0.3
5 years	5.3	6.7	1.4*	7.4	7.1	-0.3

4. Comparison of Physiological Function

The two study results revealed that the average resting heart rate of young children aged 3~5 in 2015 was significantly lower than that in 2010 ($p < 0.05$). The average resting heart rate of boys decreased by 5.5~7.0bpm, and a decrease of 3.1~4.0bpm was recorded for girls. Significant difference was seen between 2010 and 2015 ($p < 0.05$) (Table 2-1-2-20).

Table 2-1-2-20 Comparison of average resting heart rate in young children (bpm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	99.0	93.5	-5.5*	100.1	97.0	-3.1*
4 years	97.1	90.1	-7.0*	97.0	93.6	-3.4*
5 years	94.8	89.1	-5.7*	94.4	90.4	-4.0*

5. Comparison of Physical Fitness

(1) Speed and Sensitivity

Results in the two studies showed that speed and sensitivity of young children improved with advancing age. Camparison of two study results indicated that the average time for 10m shuttle run for boys aged 4 and girls aged 3~4 decreased by 0.1~0.2 second, no difference was recorded in other age groups. The average time for successive jumps with both feet for boys aged 4~5 decreased, with difference ranging from 0.1~0.7 second; the record of girls remained stable at age 4, but decreased by 0.7 second at age 5, and the record of other age groups increased by 0.8~1.1 seconds. Significant difference between two studies was found in the average time for successive jumps with both feet in girls aged 5 and boys aged 3 and 5 ($p < 0.05$) (Tables 2-1-2-21 and 2-1-2-22).

Table 2-1-2-21 Comparison of average time of 10m shuttle run in young children (sec)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	9.8	9.8	0.0	10.1	9.9	-0.2
4 years	8.0	7.8	-0.2	8.3	8.2	-0.1
5 years	6.9	6.9	0.0	7.1	7.1	0.0

Table 2-1-2-22 Comparison of average time of successive jumps with both feet in young children (sec)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	12.6	13.7	1.1*	12.4	13.2	0.8
4 years	9.2	9.1	-0.1	9.1	9.1	0.0
5 years	7.6	6.9	-0.7*	7.4	6.7	-0.7*

(2) Strength

Results in the two studies showed that strength of young children improved with advancing age. Boys were stronger than girls. Comparison of the two study results indicated that the average standing long jump of boys in each age group and girls aged 3~4 increased, with difference ranging from 1.6~6.8cm, whereas the average of girls aged 5 decreased by 2.6cm. The average tennis ball distance throw of girls aged 5 decreased by 0.3m, data of other age groups remained stable or an increase of merely 0.1m was recorded. Thus, significant difference between two studies was observed in the average standing long jump among boys and girls in the age group of 4 only ($p < 0.05$) (Tables 2-1-2-23 and 2-1-2-24).

Table 2-1-2-23 Comparison of average standing long jump in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	52.7	54.3	1.6	46.9	49.9	3.0
4 years	73.3	77.6	4.3*	68.6	75.4	6.8*
5 years	91.6	94.1	2.5	90.2	87.6	-2.6

Table 2-1-2-24 Comparison of average tennis ball distance throw in young children (m)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	2.7	2.7	0.0	2.2	2.2	0.0
4 years	3.9	4.0	0.1	3.2	3.3	0.1
5 years	5.1	5.2	0.1	4.5	4.2	-0.3

(3) Flexibility

The two study results showed that girls were more flexible than boys. Comparison of two results indicated that the average sit and reach of boys in each age group and girls aged 5 increased, with difference ranging from 0.1~1.8cm, however the average of girls aged 3 and 4 decreased by 0.3cm and 1.5cm, respectively. It also showed that significant difference between two studies was seen in the averge sit and reach among girls aged 4 and boys aged 3 and 5 ($p < 0.05$) (Table 2-1-2-25).

Table 2-1-2-25 Comparison of average sit and reach in young children (cm)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	8.4	10.2	1.8*	10.7	10.4	-0.3
4 years	7.7	7.8	0.1	10.4	8.9	-1.5*
5 years	6.5	7.6	1.1*	9.5	10.0	0.5

(4) Balance

Compared with 2010 results, the average time to finish walking on balance beam for boys aged 4 and 5 decreased by 1.1 seconds and 1.9 seconds, respectively ($p < 0.05$); the average time decreased by 0.2 second for girls aged 3 and 0.4 second for girls aged 5; the average time for boys aged 3 and girls aged 4 increased by 0.1 second and 0.9 second, respectively. The above aspects revealed that the balance ability of the older children improved, while that of the younger ones declined (Table 2-1-2-26).

Table 2-1-2-26 Comparison of average time to finish walking on balance beam in young children (sec)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	22.0	22.1	0.1	22.7	22.5	-0.2
4 years	13.7	12.6	-1.1	11.9	12.8	0.9
5 years	9.5	7.6	-1.9*	9.8	9.4	-0.4

6. Comparison of Health Status

(1) Occurrence of Decayed Primary Teeth

Results of the two studies showed that the prevalence of decayed primary teeth of boys and girls tended to increase progressively with advancing age, and the changing trend was fairly consistent in boys and girls. Compared with 2010 study, the prevalence of decayed primary teeth of young children in 2015 varied irregularly with different trend observed between genders. In 2015, the prevalence of decayed primary teeth among boys aged 3~4 was lower than that in 2010, with significant difference found in the age group of 4 (p < 0.05), whereas the prevalence of young children aged 5 was obviously higher than that in 2010 (p < 0.05). According to the results, the prevalence among girls aged 3 and 5 was apparently lower than that in 2010 (p < 0.05), but the prevalence in the aged 4 group was obviously higher than that in 2010 (p < 0.05). In 2015, the prevalence of decayed primary teeth ranged from 42.2%~62.0% for boys and 37.5%~56.3% for girls; while the prevalence in 2010 ranged from 42.5%~55.0% for boys, and 39.3%~60.7% for girls (Table 2-1-2-27).

Table 2-1-2-27 Comparison of decayed primary teeth in young children (%)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	42.5	42.2	-0.3	40.2	37.5	-2.7*
4 years	54.1	47.8	-6.3*	39.3	52.7	13.4*
5 years	55.0	62.0	7.0*	60.7	56.3	-4.4*

The prevalence of filled primary teeth increased with advancing age. It was significantly higher in 2015 than 2010 for both boys and girls except for boys in the aged 3 group (p<0.05), and the prevalence of girls aged 5 in 2015 was obviously higher than 2010 (p<0.05). The prevalence of filled primary teeth of young children in 2015 ranged from 2.9%~13.1% for boys and 1.6%~12.0% for girls, and the prevalence in 2010 ranged from 3.2~9.5% for boys and 3.9%~10.3% for girls (Table 2-1-2-28).

Table 2-1-2-28 Comparison of filled primary teeth in young children (%)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	3.6	2.9	-0.7*	3.9	1.6	-2.3*
4 years	3.2	7.8	4.6*	4.3	3.8	-0.5*
5 years	9.5	13.1	3.6*	10.3	12.0	1.7*

The prevalence of missing primary teeth of young children tended to increase with advancing age,but no regular pattern was being observed. In 2015, the sign of missing primary teeth appeared at age 5 for boys and at age 3 for girls, respectively (Table 2-1-2-29).

Table 2-1-2-29 Comparison of missing primary teeth in young children (%)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	0.5	0.0	-0.5*	0.0	0.8	0.8*
4 years	1.1	0.0	-1.1*	0.9	0.0	-0.9*
5 years	3.2	0.9	-2.3*	0.9	0.7	-0.2

Two study results showed that the prevalence of decayed-missing-filled primary teeth tended to increase sharply with advancing age for both boys and girls. By contrast, the prevalence of decayed-missing-filled primary teeth in 2015 was significantly lower than that in 2010 among boys aged 3~4 ($p < 0.05$), but obviously higher among boys in the aged 5 group than 2010 ($p < 0.05$). As for the girls, the prevalence in the age groups of 3 and 5 in 2015 was lower than 2010 ($p < 0.05$), but higher in the aged 4 group than 2010 ($p < 0.05$). The prevalence of decayed-missing-filled primary teeth in 2015 ranged from 42.7%~63.3% for boys and 37.5%~59.9% for girls, while the prevalence in 2010 ranged from 44.0%~57.7% for boys and 40.2~61.7% for girls (Table 2-1-2-30).

Table 2-1-2-30 Comparison of decayed-missing-filled primary teeth in young children (%)

Age group	Boys			Girls		
	2010	2015	Difference	2010	2015	Difference
3 years	44.0	42.7	-1.3*	40.2	37.5	-2.7*
4 years	55.1	48.9	-6.2*	42.7	53.4	10.7*
5 years	57.7	63.3	5.6*	61.7	59.9	-1.8*

(2) Occurrence of Decayed Permanent Teeth

2015 study results showed that the prevalence of decayed permanent teeth, the prevalence of filled permanent teeth and the prevalence of decayed-missing-filled permanent teeth all appeared at age 5 for both boys and girls, with similar incidence rate, namely, 0.5% for boys and 0.7% for girls. Results in 2010 study showed that the prevalence of decayed permanent teeth appeared at age 5 for both boys and girls, with the incidence rate ranging from 0.5%~1.9%.

(III) Summary

1. Summary of 2015 Results on Physical Fitness Study of Young Children

Information regarding birth revealed that most infants were born full-term, with normal birth length and weight. The proportion of breast-fed within the first four months after birth was only approximately 20%. Our study indicated that the majority of young children slept for more than 8 hours daily, about 1/4 of them had more than 10 hours of sleep; around half of the young children spent 30 minutes to 1 hour daily on both outdoor activities and indoor activities such as watching TV, video and playing video games; more than half of them participated in extracurricular activities (hobby classes), with the highest proportion recorded in music and dancing classes; bicycling, swimming, ball games, dancing and track & field were the top five physical exercises young children participated frequently, in which bicycling had the highest participation in boys, while dancing accounted for the highest participation in girls. According to 2015 results, most young children brushed their teeth every day, but only a few used dental floss in addition to tooth brushing, about 1/5 of them went to a dental clinic for dental examination within the past 12 months. High proportion of the young children had breakfast 6 or more days a week, had an average of 1~3 meals per week eaten in the restaurants or fast food restaurants, and consumed high-fat and high-sugary snacks for 1~5 times a week.

Our study indicated that the anthropometric measurements of young children tended to increase with advancing age which was a natural phenomenon. The rate of increase in height and weight was basically consistent. The rate of increase in waist circumference was slower than that in hip circumference which meant that WHR declined gradually with advancing age. In addtion, the skinfold thickness and obesity of girls reduced after the age of 5. The average height, sitting height and chest circumferences of boys were all higher than those of girls, while the average skinfold thickness of girls was higher than that of boys.

As age increased, the resting heart rate of young children decreased, whereas their physiological function tended to improve with advancing age.

Physical fitness of young children including speed and sensitivity, strength and balance ability improved with advancing age. By contrast, girls were more flexible than boys, while boys had apparently better speed and strength than girls. No significant difference in the balance ability and sensibility was found between genders.

Our study also showed that gradual increase in the occurrence of dental caries was observed among young children with advancing age, which was manifested by the prevalence of decayed primary teeth, filled primary teeth and decayed-missing-filled primary teeth. The regularity of difference between genders in decayed primary teeth was not obvious. The incidence of decayed permanent teeth only appeared at age 5 (except the prevalence of missing permanent teeth).

2. Comparison of 2015 and 2010 Physical Fitness Study Results of Young Children

According to the 2015 and 2010 questionnaires, the proportion of young children who were breast-fed and mixed-fed increased in 2015. The proportion of young children participating in extracurricular activities (hobby classes) increased progressively, most of them spent 30 minutes to 1 hour on outdoor activities daily; besides, they spent less time watching TV, video and playing video games. Among the most popular physical exercises, bicycling, swimming, ball games and dancing were still the top four with highest participation.

The two study results showed that anthropometric measurements of young children increased with advancing age,in accordance with the growth and development principle. By contrast, the average WHR among boys and girls, as well as the average shoulder width and skinfold thickness of boys were higher in 2015 than 2010, other indicators remained basically stable or tended to decline slightly.

Compared with 2010 results, physiological function of young children in 2015 improved steadily with advancing age, indicating that the development of their cardiovascular system was progressively advancing.

Comparison of the two studies showed that the physical fitness indicators of young children varied differently in 2015, reflecting that the lower limb strength and flexibility of boys improved. The sensitivity and balance ablility enhanced among boys aged 4~5, but declined at age 3. The speed and strength of girls aged 3~4 improved, while their sensitivity, flexibility and balance declined; it was opposite for girls aged 5 who had decreased speed and strength, but better sensitivity and flexibility.

Compared with 2010, the incidence rate of decayed primary teeth for boys and girls in 2015 tended to increase gradually with advancing age, which was reflected by the prevalence of decayed primary teeth, filled primary teeth and decayed-missing-filled primary teeth. Comparison of the two study results showed that the regularity of difference between genders in decayed primary teeth was not significant, and the incidence of decayed permanent teeth only occurred at age 5 (except the prevalence of missing permanent teeth).

II. Children and Adolescents (Students)

(I) Physical Fitness Conditions of Children and Adolescents (Students) in 2015

1. Basic Information of the Subjects

The primary and secondary school students were divided into two categories according to gender, and further classified into 26 age groups which differed by one year. The university students were divided into two categories according to gender, and further divided into 8 age groups which differed by one year.

In the primary and secondary school student (aged 6~18) category, 1,640 subjects (906 males and 734 females) were drawn randomly from Keang Peng School (primary and secondary school sections), Hou Kong Middle School and its affiliated primary school in the north area (Nossa Senhora de Fátima). In the central area (Santo António and São Lázaro), 1,394 subjects (793 males and 601 females) were drawn from Pui Ching Middle School, Colegio Dom Bosco (Yuet Wah) Chinese Section, Yuet Wah College (Chinese Section) and Sacred Heart Canossian College. In the south area (Sé Catedral and São Lourenço), 1,371 subjects (794 males and 577 females) were drawn from Pooi To Middle School (including Taipa Primary Branch, branch school of Praia Grande and primary school section) and Estrela do Mar School (including branch school). In addition, 40 subjects (3 males and 37 females) under 19 years of age from the University of Macau, Macao University of Science and Technology, Macao Polytechnic Institute, Kiang Wu Nursing College of Macao, Institute for Tourism Studies and a few other universities or colleges were grouped into this category.

In the university student (aged 19~22) category, 790 subjects (376 males and 414 females) were drawn from five universities including the University of Macau, Macao University of Science and Technology, Macao Polytechnic Institute, Kiang Wu Nursing College of Macao, Institute for Tourism Studies and other universities or colleges. Furthermore, a few secondary school students over 19 years of age from Keang Peng School (primary and secondary school sections), Hou Kong Middle School and its affiliated primary school, Pui Ching Middle School, Yuet Wah College (Chinese Section), Sacred Heart Canossian College, Pooi To Middle School (including branch school of Taipa Primary Branch, branch school of Praia Grande and primary school section) and Estrela do Mar School (including branch school) were grouped into this category.

The distribution of subjects and sampling sites was shown in Table 3-2-1-1. The residential distribution of the student subjects (%) was shown in Table 3-2-1-2 and the sample size in each age group was shown in Table 2-2-1-1.

Table 2-2-1-1 Sample size in each age group

Age group (yrs)	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
Male	180	238	188	218	170	171	190	181	199	184	200	214	163	106	92	85	93	**2872**
Female	140	185	132	142	148	149	141	124	144	158	150	162	174	123	104	90	97	**2363**
Subtotal	**320**	**423**	**320**	**360**	**318**	**320**	**331**	**305**	**343**	**342**	**350**	**376**	**337**	**229**	**196**	**175**	**190**	**5235**

In this Study, a majority of children and adolescents were born in Macao, followed by Mainland China and Hong Kong, with similar proportion of males and females. Among secondary school students aged 13~18, students who were born in Mainland China accounted for a higher proportion, with 19.7% males and 24.6% females (Table 3-2-1-3). Most students attended full-day schools (Table 3-2-1-4).

2. Lifestyle

In the category of children and adolescents (students aged 6~22), information on living habits, physical education at school, extracurricular physical exercise, occurrence of disease, dental hygiene and eating habits was examined.

(1) Living Habits

7 areas on living habits were examined: 1) daily accumulated time spent commuting to and from school, 2) major transportation means to and from school, 3) average daily accumulated time of outdoor activities after school, 4) average daily accumulated time spent on homework, 5) average daily accumulated time of watching TV, video and playing video games, 6) average daily accumulated sleeping hours (including naps), and 7) participation in extracurricular activities (hobby classes).

The study showed that 63.2 % of the students spent less than 30 minutes daily commuting to and from school, with the highest proportion from the 6~12 year age groups which accounted for 71.5%. The proportion of students above the age of 13 spending 30 minutes to 1 hour and 1~2 hours to commute increased; however, without significant difference between genders (Tables 3-2-2-1 and 3-2-2-2). The transportation means used varied significantly among different age groups (P < 0.05). Students aged 6~18 commuted to and from school mainly on foot (58.9%), followed by bus (25.0%), with no significant difference between genders. After age 19, most female students commuted to and from school by bus (48.8%) and on foot (30.0%), whereas most male students commuted on foot (33.9%) and by bus (32.5%) with fairly similar proportion recorded, then followed by motorcycle (27.5%) (Figure 2-2-1-1, Tables 3-2-2-3 and 3-2-2-4).
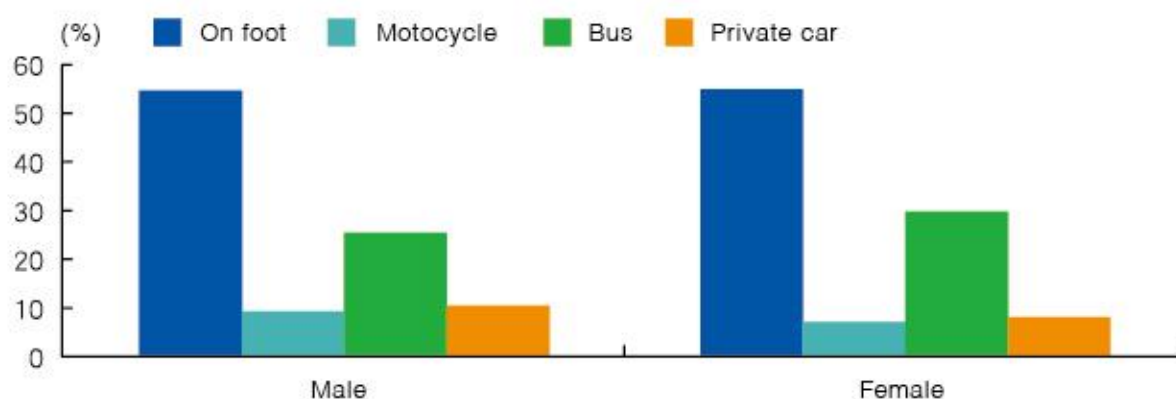
Figure 2-2-1-1 Proportion of major transportation means to and from schools in students

Students spending less than 30 minutes daily on outdoor activities after school accounted for the highest proportion (47.6%), followed by 30 minutes to 1 hour (29.9%), 1~2 hours (13.1%) and 2 hours or more (9.4%). The proportion of female students spending less than 30 minutes was higher than that of the male students, and highly significant difference was seen between genders and among age groups (P < 0.01) (Tables 3-2-2-5 and 3-2-2-6).

The proportion of students spending 30 minutes to 1 hour daily on homework at home accounted for the highest proportion (30.9%), followed by spending 1~2 hours (29.8%) and less than 30 minutes (16.5%). The proportion of students spending 2~3 hours and 3 hours or more were 13.6% and 9.1%, respectively. Among different age groups, the proportion of students aged 6~12 (12.9%) spending less than 30 minutes on homework was significantly lower than that of students aged 13~18 (19.9%) and 19~22 (18.7%) (p < 0.01). The proportion of students aged 6~12 (34%) spending 30 minutes to 1 hour was higher than that of students aged 13~18 (27.9%) and 19~22 (29.9%) (p < 0.01). The proportion of students aged 6~12 (32.8%) spending 1~2 hours was higher than that of students aged 13~18 (28.7%) and aged 19~22 (23.7%) (p < 0.01). The proportion of students aged

6~12 (13.7%) spending 2~3 hours was higher than that of students at age 13~18 and 19~22 (13.6% and 13.5% respectively). The proportion of aged 6~12 students spending more than 3 hours (6.7%) was lower than that of students aged 13~18 and 19~22 (10.0% and 14.2%) (p < 0.05). The proportion of female students (13.4%) spending less than 30 minutes on homework was lower than that of male students (19.0%), while female students had a higher proportion (16.1%) in spending 2~3 hours than male students (11.5%) (p < 0.05) (Tables 3-2-2-7 and 3-2-2-8).

Students who spent 1~2 hours daily in watching TV, video and playing video games accounted for the highest proportion (28.5%), followed by spending 30 minutes to 1 hour (25.1%), 3 hours or more (17.3%), 2~3 hours (15.4%) and less than 30 minutes (13.7%). No significant difference was observed between genders. The proportion of students aged 6~12 spending 30 minutes to 1 hour (35.8%) was higher than that of students aged 13~22 (16.0%), while the proportion of those spending more than 2 hours (16.8%) was lower than that of those aged 13~22 (46.1%). Highly significant difference was seen among age groups (P < 0.01) (Tables 3-2-2-9 and 3-2-2-10).

Among students aged 6~12, 77.5% slept an average of 8~10 hours daily (including naps), whereas 71.2% and 76.8% slept less than 8 hours in students aged 13~18 and 19~22, respectively. A higher proportion of females had less than 8 hours of sleep than males. Highly significant difference was found between genders and among age groups (P < 0.01) (Tables 3-2-2-11 and 3-2-2-12).

The proportion of participants in extracurricular activities (hobby classes) tended to decline with advancing age. The proportion of female students participated in hobby classes (72.1%) was slightly higher than male students (69.7%), without significant difference; however, difference was found in the types of hobby classes participated by male and female students. In male students, physical exercise accounted for the highest participation, followed by tutoring class, music and dancing, drawing and calligraphy, and chess. In female students, music and dancing accounted for the highest participation, followed by tutoring class, physical exercise, drawing and calligraphy, and chess. The proportion of students aged 19~22 was apparently lower than students aged 6~12 and 13~18 in all hobby classes except tutoring class. The order of choices for hobby classes was similar in each age group; however, the proportion varied (P < 0.01) (Figures 2-2-1-2 and 2-2-1-3, Tables 3-2-2-13 and 3-2-2-14).
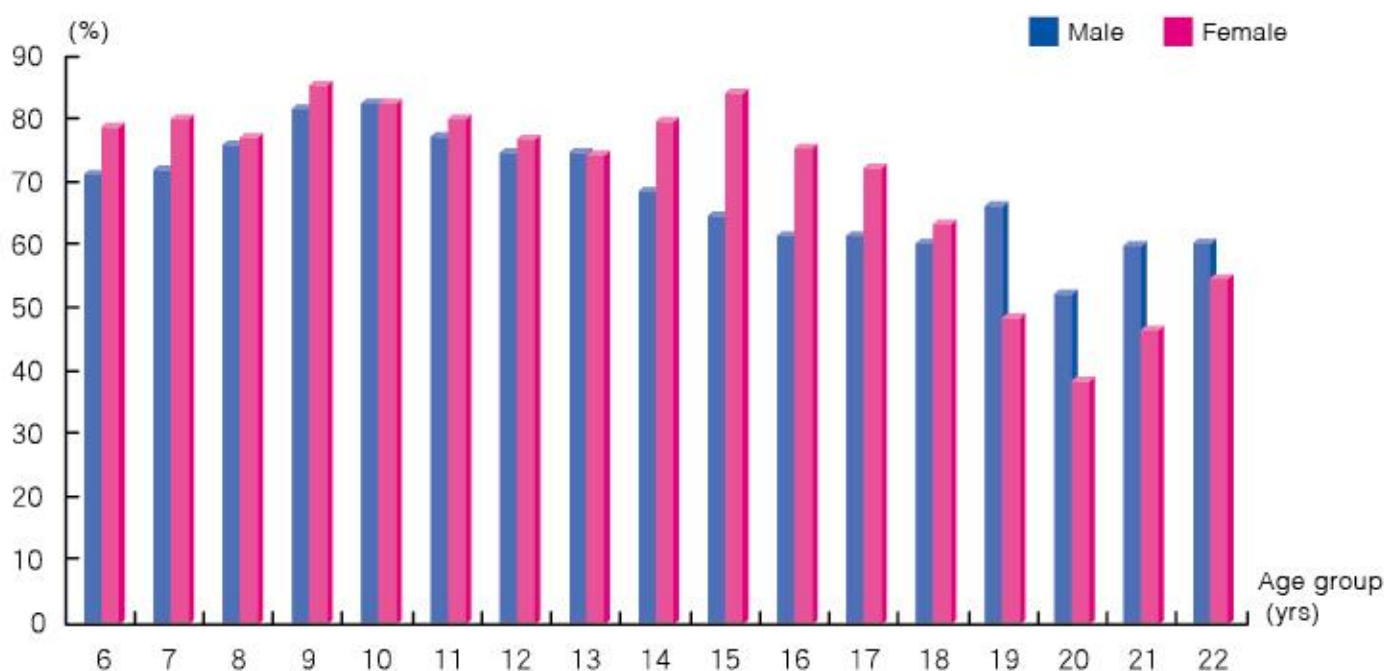
Figure 2-2-1-2 Proportion of extracurricular activities (hobby classes) in students
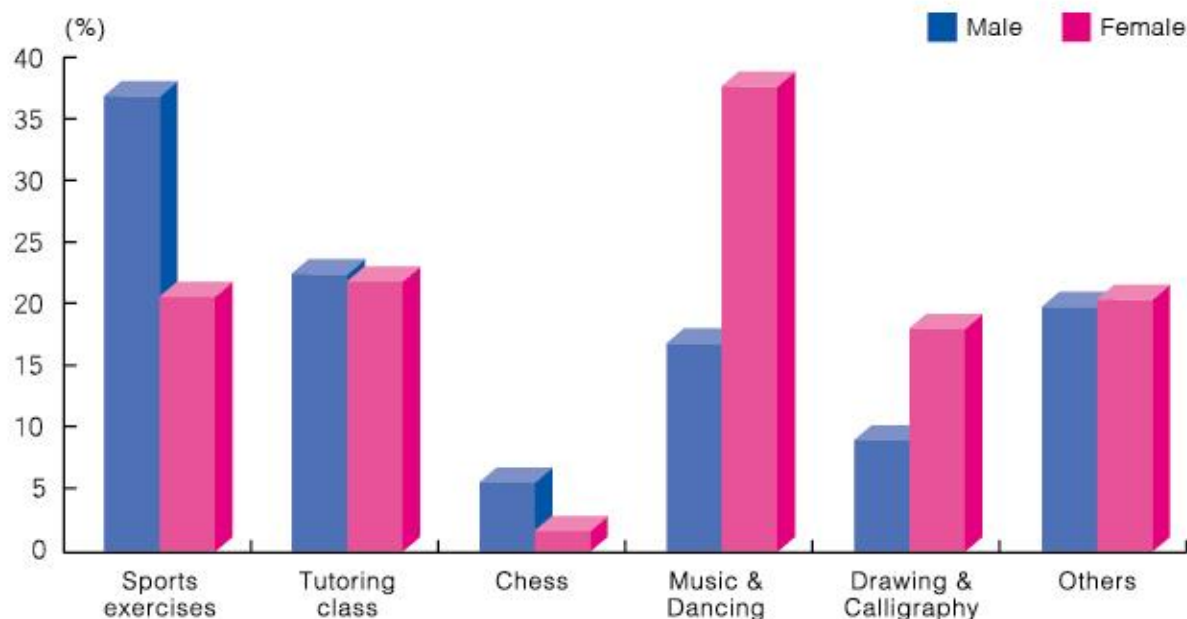
Figure 2-2-1-3 Proportion of students participating in hobby classes

(2) Physical Education at School

Information regarding physical education (PE) class at school was examined, comprising the weekly frequency of attending PE classes and self-perception of exercise intensity during PE class.

The percentage of students aged 6~12 who had one, two, three, four or more PE classes weekly accounted for 26.8%, 71.9%, 0.8% and 0.3%, respectively. The percentage of students aged 13~18 who had one, two, three and four or more PE classes weekly accounted for 61.8%, 34.8%, 0.9% and 0.9%, respectively. In the aged 19~22 group, students who had none, one, two, three and four or more PE classes weekly accounted for 66.0%, 22.7%, 8.3%, 1.1% and 1.9%, respectively (Figures 2-2-1-4 and 2-2-1-5, Tables 3-2-2-15 and 3-2-2-16).
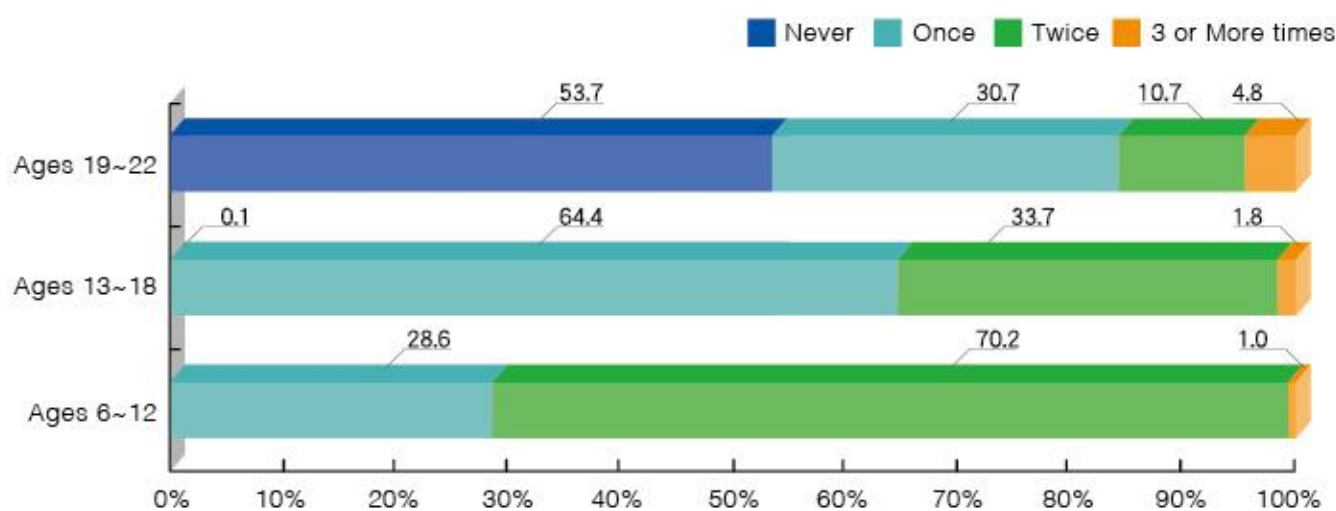
Figure 2-2-1-4 Proportion of male students attending PE classes weekly

75

Never Once Twice 3 or More times
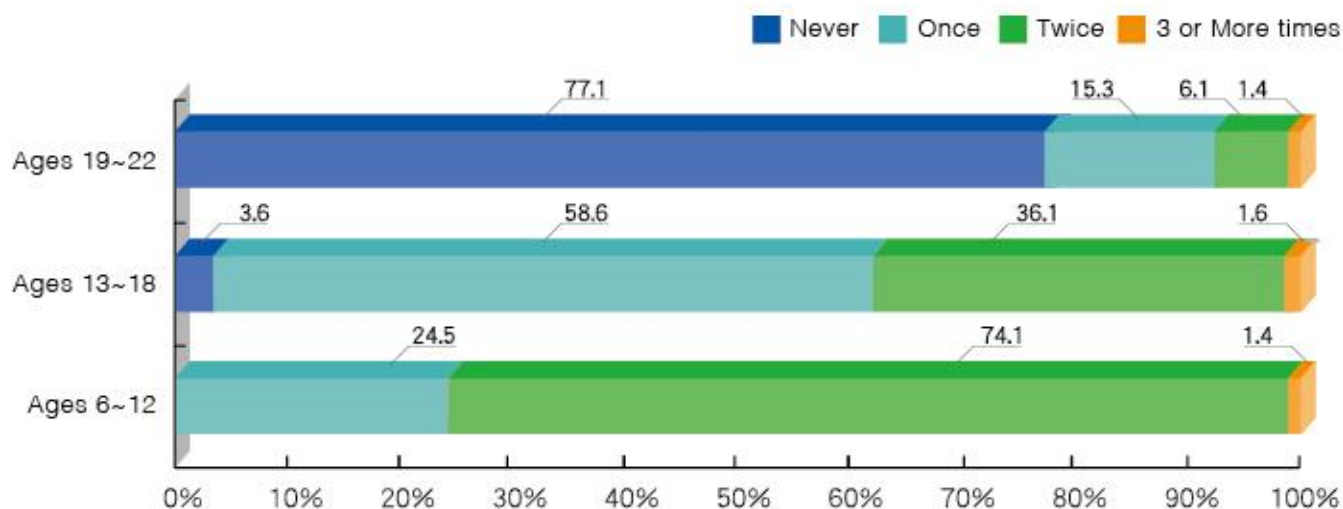
Figure 2-2-1-5 Proportion of female students attending PE classes weekly

Students who were able to reach low, moderate and high exercise intensity during PE classes were 20.9%, 61.0% and 18.1%, respectively. The proportion of students reaching high exercise intensity tended to decrease with advancing age. The changing trend was fairly consistent in male and female students. However, male students had a higher percentage (19.9%) in reaching high exercise intensity than female students (15.7%). Significant difference in exercise intensity was found between genders and among age groups ($P < 0.01$) (Figures 2-2-1-6 and 2-2-1-7, Tables 3-2-2-19 and 3-2-2-20).

Low intensity Moderate intensity High intensity
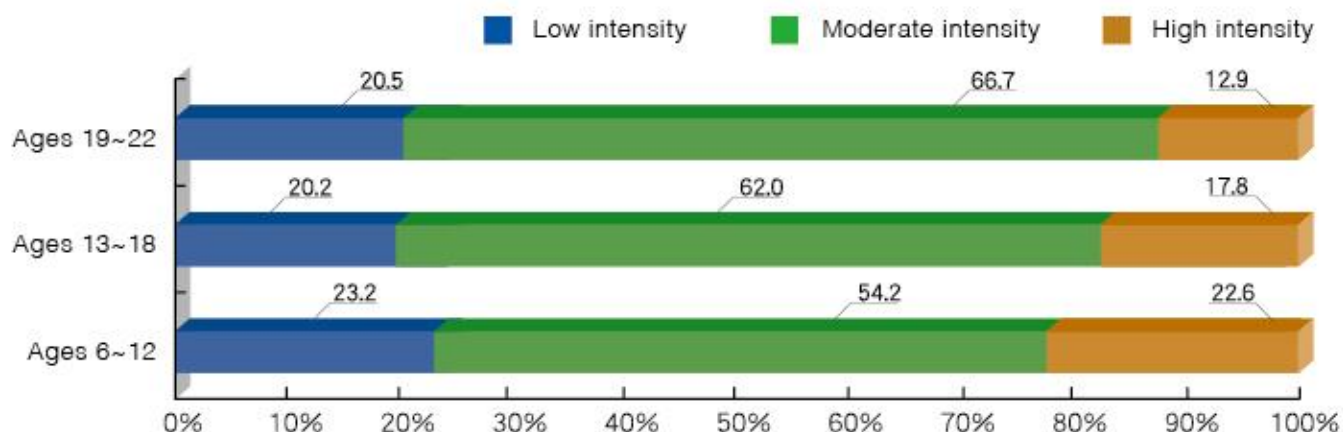
Figure 2-2-1-6 Exercise intensity of male students during PE classes

Low intensity Moderate intensity High intensity
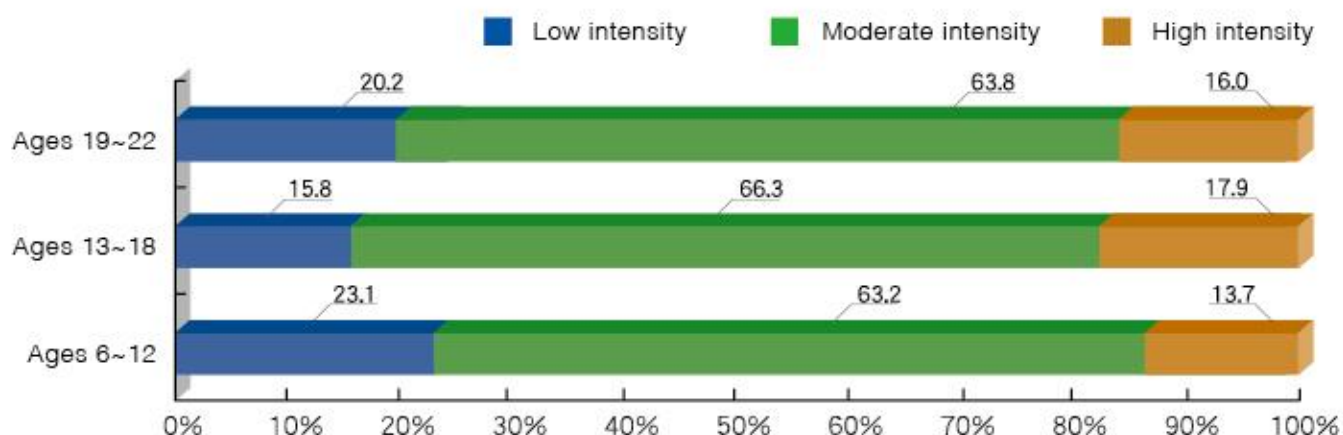
Figure 2-2-1-7 Exercise intensity of female students during PE classes

(3) Extracurricular Physical Exercise

Four aspects of extracurricular physical exercise on students were examined, which included weekly frequency of doing physical exercise, average duration of physical exercise each time, intensity of exercise and main types of exercise.

Results showed that subjects who participated in extracurricular physical exercise once to twice a week accounted for the highest proportion (35.9%), followed by those who never participated in extracurricular physical exercise (27.9%), then by those who participated less than once (18.9%), 3~4 times (11.1%) and 5 or more times (6.3%). The order of results was basically consistent between genders and among the three age groups.

Among students aged 6~22, the proportion of female students that never participated in extracurricular physical exercise (33.6%) was higher than that of male students (23.1%); the proportion of students aged 19~22 who never participated in extracurricular physical exercise was higher than aged 6~12 and 13~18. Highly significant difference was found between genders and among age groups ($P < 0.01$) (Figure 2-2-1-8, Tables 3-2-2-21 and 3-2-2-22).
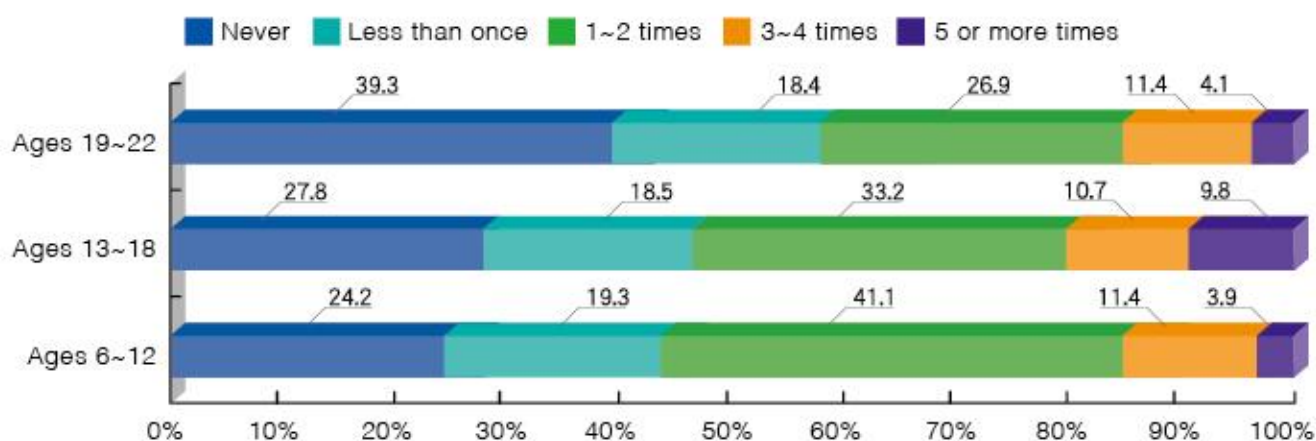
Figure 2-2-1-8 Proportion of students participating in extracurricular exercises weekly

Students who exercised for 30 minutes to 1 hour accounted for the highest proportion (41.8%), followed by 1 to 2 hours (29.2%), within 30 minutes (16.5%) and 2 hours or more (12.5%). This pattern of exercise duration was the same for male and female students. However, the proportion of females who exercised for more than 2 hours was apparently lower than that of males. The pattern of exercise duration of the three age groups was basically consistent (table 3-2-2-23, table 3-2-2-24).

Most of the students (54.9%) reached moderate exercise intensity and the proportion of male students reaching high intensity (35.5%) was higher than that of female students (23.9%). In all three age groups, students doing exercises with moderate intensity accounted for the highest proportion. The proportion of male and female students doing low intensity exercise decreased with advancing age, while the proportion of male students doing high intensity exercise increased with age. Female students aged 13~18 doing high intensity exercise accounted for the highest proportion (Figure 2-2-1-9, Tables 3-2-2-25 and 3-2-2-26).
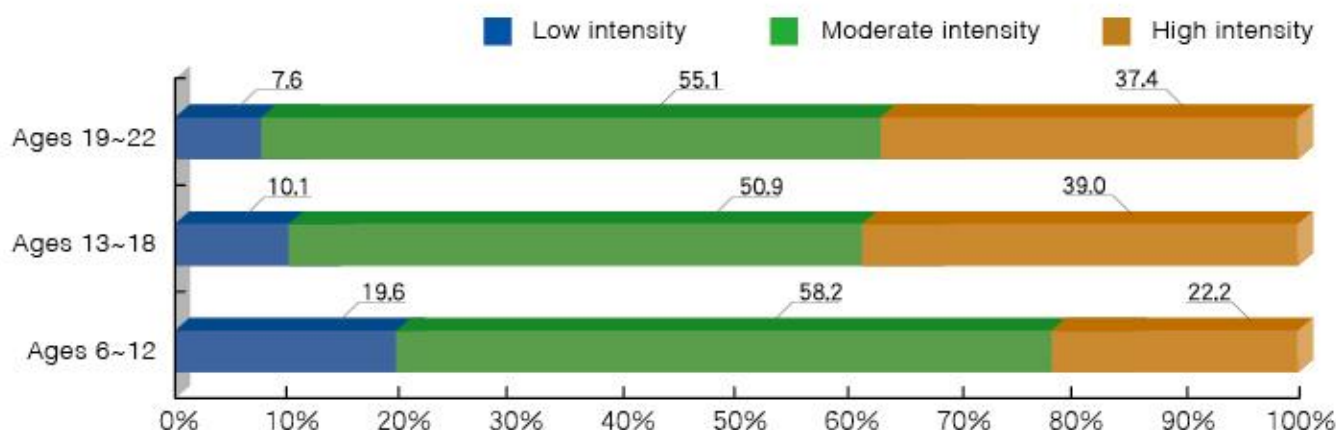
Figure 2-2-1-9 Extracurricular exercise intensity of students

Among subjects participated in extracurricular physical exercise, subjects who exercised 3 or more times weekly, each time for longer than 30 minutes with moderate exercise intensity were defined as "frequent exerciser". For those who exercised but could not achieve all three criteria at the same time were defined as "occasional exerciser". Those who did not meet any of the criteria were defined as "non-exerciser".

Among students, 14.5% were frequent exercisers, 57.7% were occasional exercisers and 27.9% were non-exercisers. The proportion of frequent exercisers was higher in males than females, and the proportion of non-exercisers was lower in male than females. Frequent exercisers accounted for the highest proportion (18.1%) in students aged 13~18, and the lowest (11.8%) in students aged 6~12. Non-exercisers accounted for the highest proportion (39.3%) in students aged 19~22. Significant difference was observed between genders and among age groups (P < 0.01) (Figure 2-2-1-10).
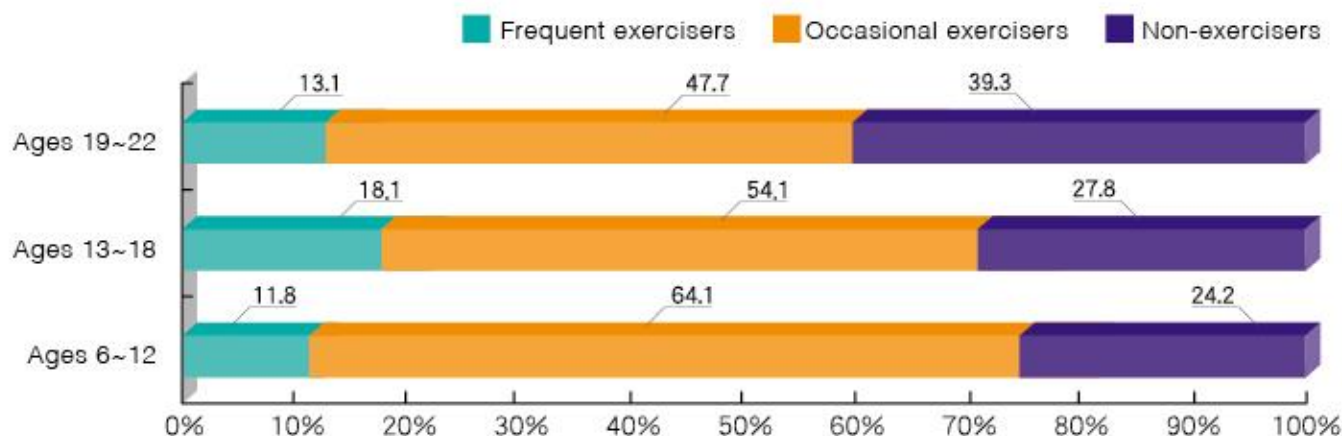
Figure 2-2-1-10 Proportion of frequent, occasional and non-exercisers in students

Among all the extracurricular physical exercises, the sports that the students participated in the most were ball games (50.8%), swimming (26.3%), track and field (25.4%), bicycling (24.4%) and dancing (10.4%). The order of the top three sports with the highest participation for male and female students was similar, but ball games had apparently lower participation in females than that in males. For the 13~18 and 19~22 year age groups, sports with the highest participation were ball games, followed by track and field, bicycling, swimming, and others. For the 6~12 year age group, the subsequent highest proportion of participation was ball games, swimming, bicycling, track and field, and others (Tables 3-2-2-27 and 3-2-2-28).

The highest participation of ball games was basketball (36.4%), followed by badminton (25.8%), football (14.3%), table tennis (11.0%) and volleyball (5.8%). Participation in other ball games was low. Basketball accounted for the highest participation (41.9%), followed by football (20.0%) and badminton (16.2%) in male students; while badminton (48.6%), basketball (23.2%) and volleyball (10.8%) were more popular among the female students. Students aged 6~12 participated in the most were basketball, followed by badminton and football. Students aged 13 onwards participated in the most were basketball with the highest proportion of 43.1%, followed by badminton and football (Tables 3-2-2-29 and 3-2-2-30).

(4) Occurrence of Diseases

Among student subjects, 12.9% had been diagnosed by the hospital to have certain diseases in the past 5 years. The occurrence of disease among males and females were 13.6% and 11.9%, respectively (Figure 2-2-1-11, Tables 3-2-2-31 and 3-2-2-32).

The top five diseases among students were accidental injury (20.1%), chronic bronchitis (14.6%), pneumonia (13.2%), asthma (11.9%) and anemia (7.1%). For male students, the top five most frequent diseases observed were accidental injury (22.0%), chronic bronchitis (15.6%), asthma (14.3%), pneumonia (13.6%) and anemia (3.1%); whereas the top five in females were accidental injury (17.4%), chronic bronchitis (13.1%), pneumonia (12.8%), anemia (12.8%) and asthma (8.5%).

The top five diseases occurring in students aged 6~12 in descending order were pneumonia, chronic bronchitis, asthma, accidental injury and anemia. Accidental injury, chronic bronchitis, asthma, anemia and pneumonia were the most commonly seen diseases in students aged 13~18 in descending order. For students aged 19~22, the descending order was accidental injury, chronic bronchitis, anemia and pneumonia. It was noteworthy that accidental injury accounted for the highest proportion in male students after age 10; female students aged 13 onwards had a higher proportion suffering from anemia (Tables 3-2-2-33 and 3-2-2-34).
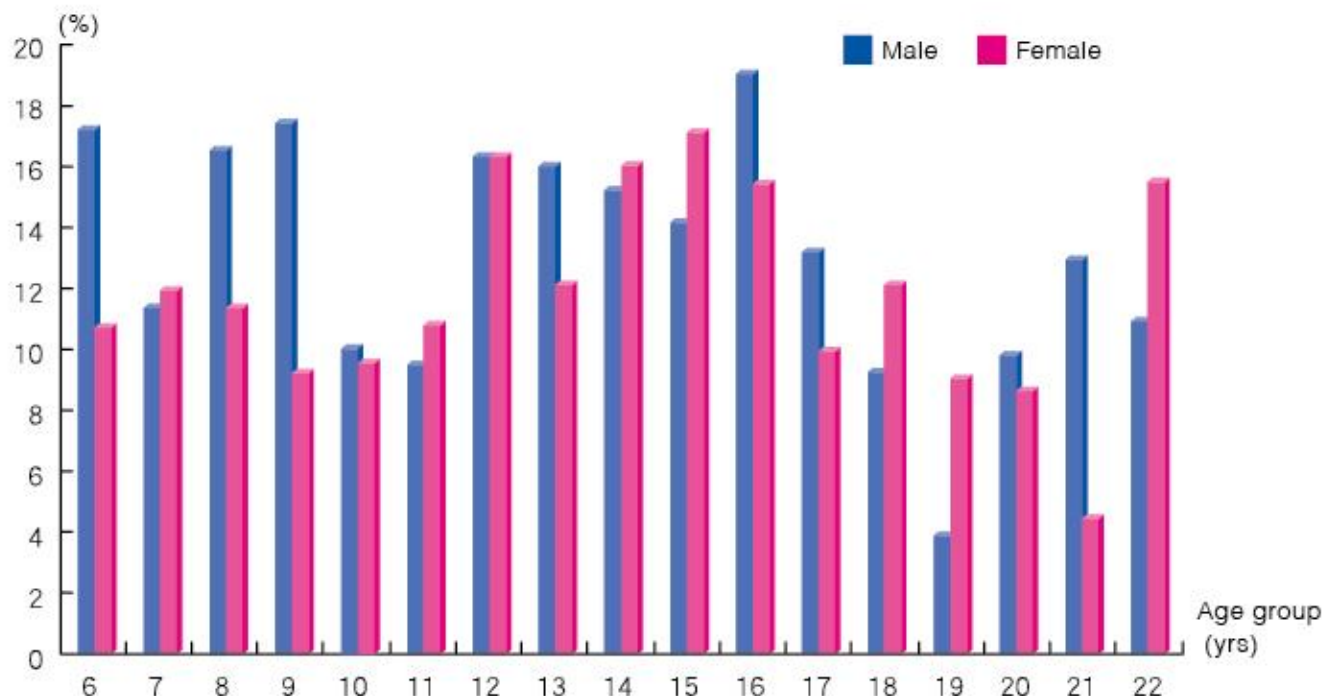
Figure 2-2-1-11 Occurrence of diseases in the past 5 years in students

(5) Dental Hygiene

Among student subjects, more than 90% brushed their teeth every day. More female students than male students brushed their teeth daily. Over 98% of female students aged 12 and above had the habit of daily tooth brushing (Figure 2-2-1-12, Tables 3-2-2-35 and 3-2-2-36).

Figure 2-2-1-12 Proportion of daily tooth brushing in students

The proportion of students flossing their teeth daily was unsatisfactory. Among male students aged 12~13 and female students aged 15 and 19~21, only approximately 10% flossed daily. In general, daily flossing accounted for a low proportion of less than 10% in other age groups. In the 19~22 year age groups, female students had a significantly higher proportion in daily flossing than male students ($P < 0.05$) (Figure 2-2-1-13, Tables 3-2-2-37 and 3-2-2-38).
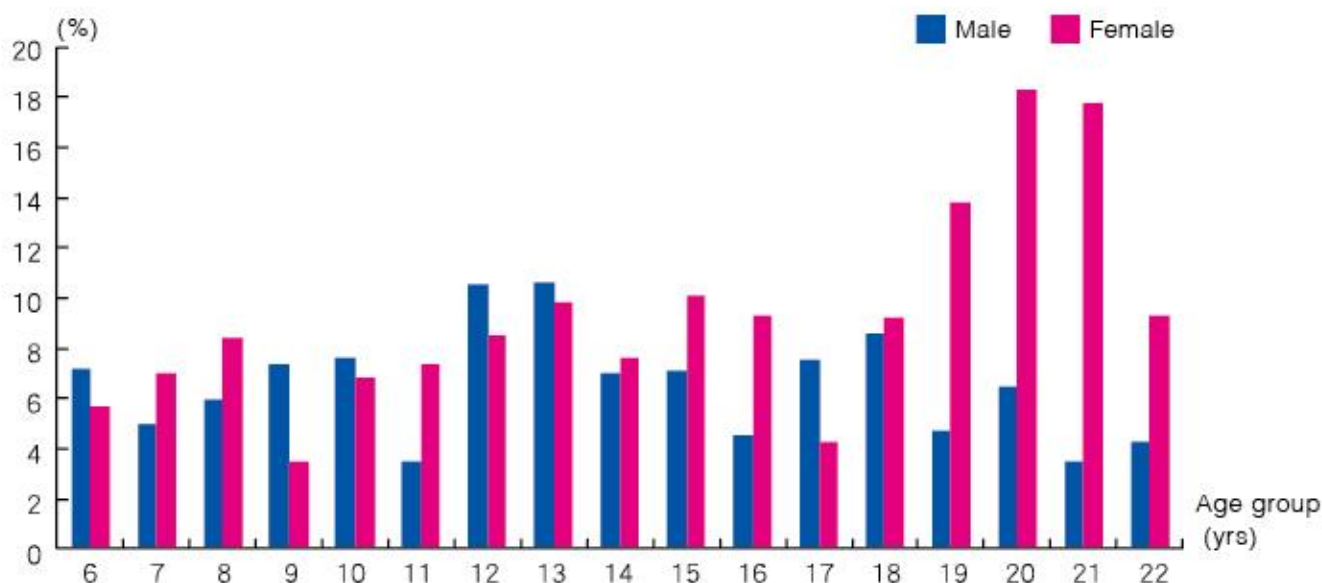
Figure 2-2-1-13 Proportion of daily flossing in students

The proportion of students going to a dental clinic in the previous year for dental examination tended to decline with advancing age. The proportion peaked at age 8, which were 68.1% and 66.7% for male and female students, respectively (Figure 2-2-1-14, Tables 3-2-2-39 and 3-2-2-40).
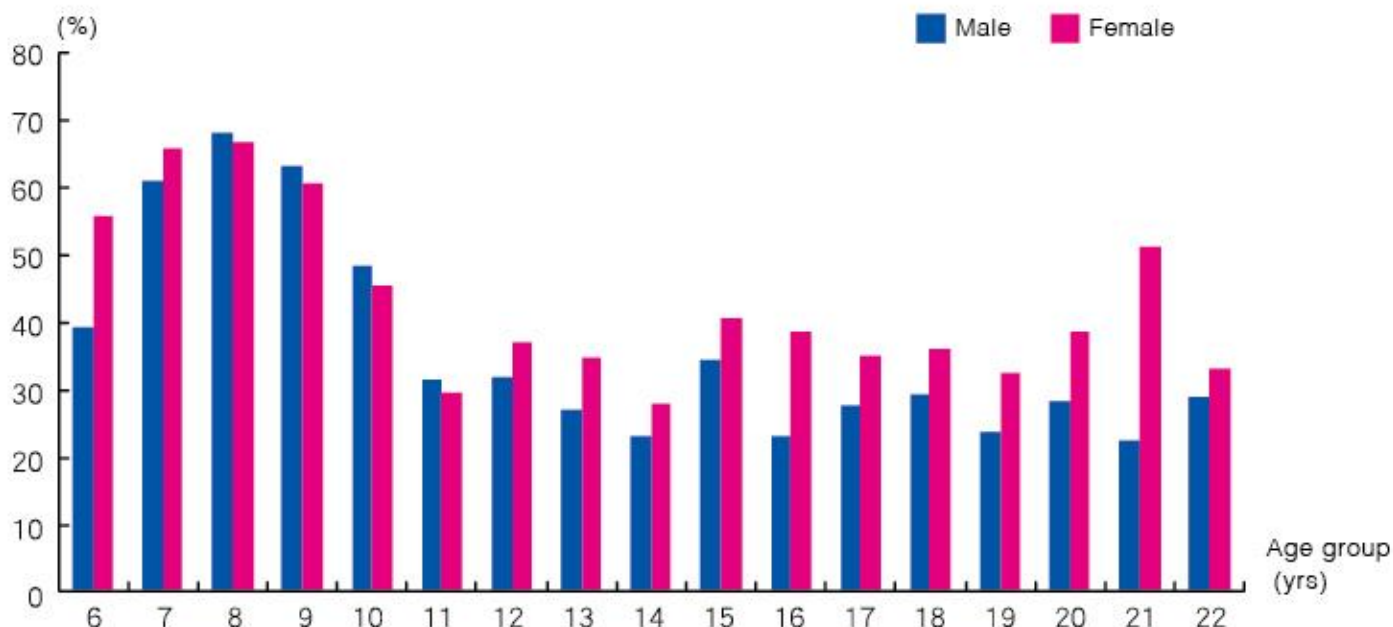
Figure 2-2-1-14 Proportion of students going to a dental clinic for dental examination within the previous year

Among student subjects, the proportion of those who had knowledge of their tooth decay increased first and then decreased with advancing age. Between ages 12~15, the proportion of students who had knowledge of their tooth decay declined; then, the proportion was on the rise at age 16. More females had better perception on their dental caries than males in all age groups except the aged 8, 9 and 11 groups. The most significant difference between genders was 17% recorded in the 16 year age group (Figure 2-2-1-15, Tables 3-2-2-41 and 3-2-2-42). As for students who had knowledge of their caries, the proportion of female students (72.8%) going to a clinic for treatment was higher than that of male students (67.5%) (Tables 3-2-2-43 and 3-2-2-44).
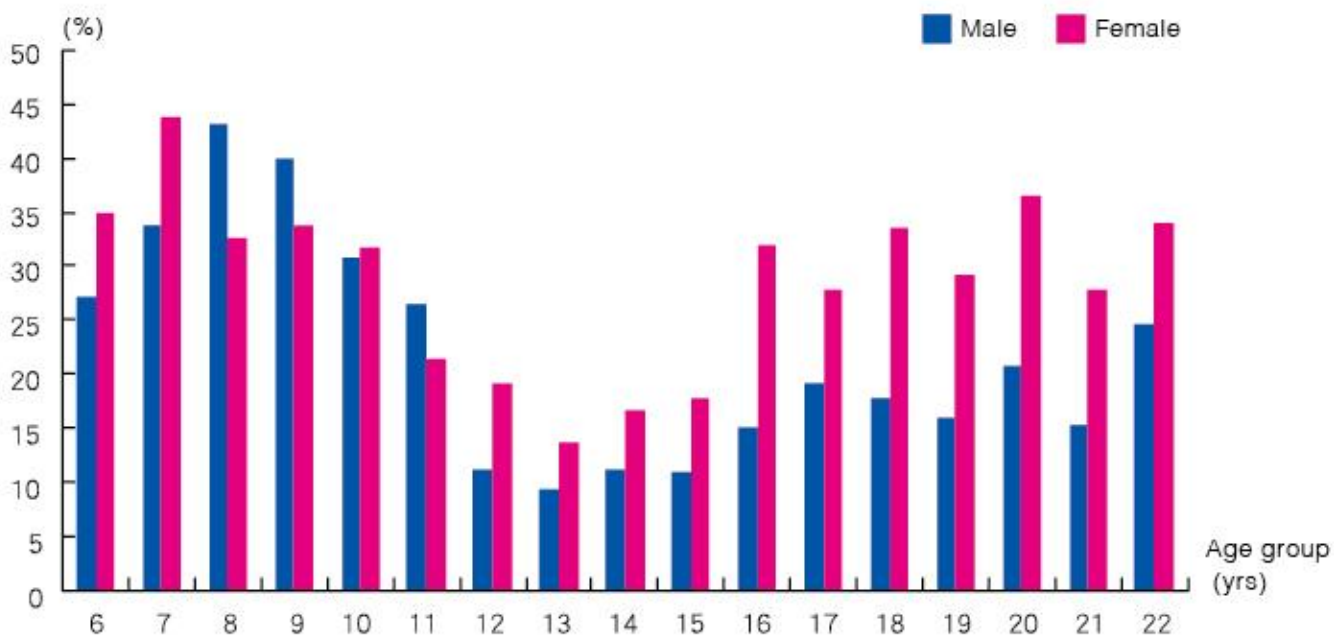
Figure 2-2-1-15 Proportion of students who had perception of their dental caries

(6) Eating Habits

The proportion of student subjects who ate breakfast 6 or more days a week kept descending with advancing age, and similar proportion was found in males and females. The lowest proportion of students having breakfast 6 or more days a week was recorded at age 22, accounting for 37.6% and 39.2% in males and females, respectively (Figure 2-2-1-16, and Tables 3-2-2-45 and 3-2-2-46).

Figure 2-2-1-16 Proportion of students having breakfast every day

In the study, student subjects having meals in the restaurants or fast food restaurants at least once a week accounted for a high proportion in each of the 6~22 age groups, in which both male and female students had a similar proportion of more than 80%. Besides, the consumption of high-fat foods and drinks was also investigated. The proportion of students consuming high-fat foods and drinks for 6 or more times a week increased first then decreased with advancing age, in which male students aged 15 and female students aged 14 contributed to the highest proportion, 32.6% and 33.3% respectively (Figures 2-2-1-17 and 2-2-1-18, Tables 3-2-2-47 to 3-2-2-50).

Figure 2-2-1-17 Proportion of students eating out at least once a week
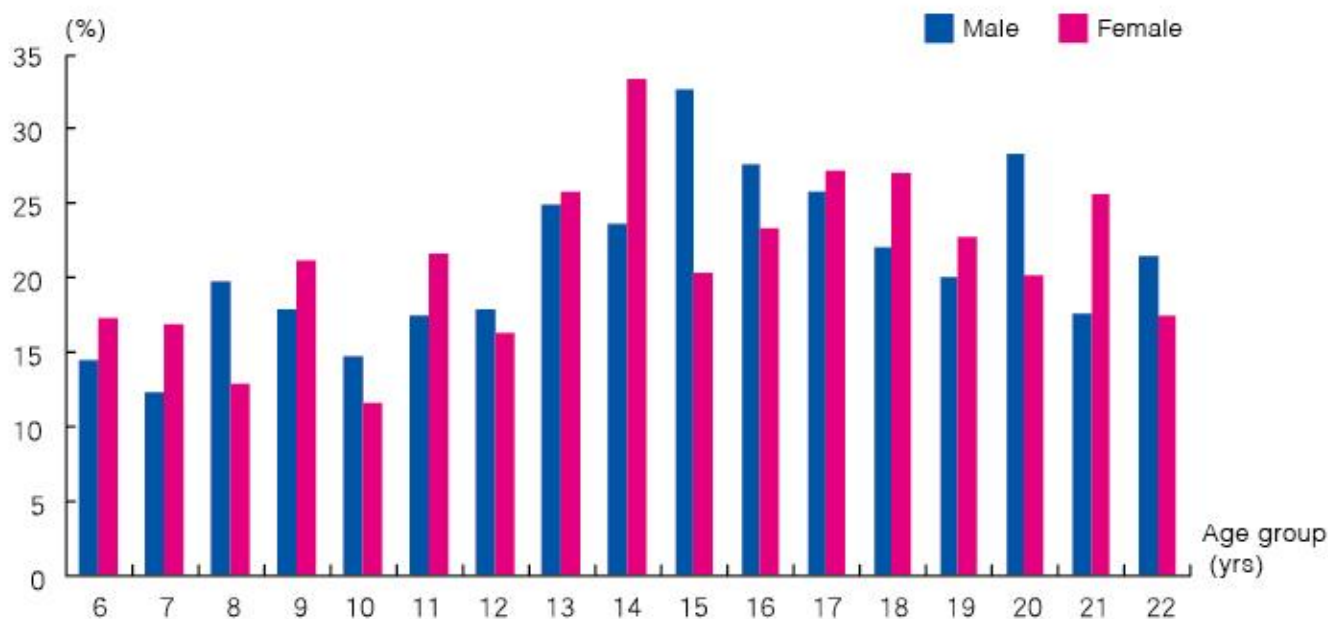
Figure 2-2-1-18 Proportion of students consuming high-fat and high-sugar snacks for 6 or more times a week

3. Anthropometric Measurements

(1) Length Indicators

The average height for male and female students ranged from 120.1~172.5cm and 117.6~160.4cm, respectively. No significant difference between genders was found in the students aged 6~12 . For ages beyond 12, the average height of male students was significantly higher than female students in the same age group, and the difference ranged from 5.7~13.1cm (P < 0.01) (Table 3-2-3-1, Figure 2-2-1-19).

The average sitting height for male and female students ranged from 66.1~91.9cm and 64.3~86.6cm, respectively. No significant difference between genders was found in the students aged 6~12. For ages beyond 12, the average height of male students was significantly higher than female students in the same age group, with the difference ranging from 1.4~5.8cm (P < 0.01) (Table 3-2-3-2, Figure 2-2-1-20).

Foot length increased with advancing age until age 14 for male and age 12 for female students. The foot length reached 25.2cm for male students at age 14, and 22.8cm for female students aged 12. The average foot length of male and female students ranged from 18.5~25.5 cm and 18.1~23.1cm, respectively. Male students had longer foot length than female students. Statistically significant difference between genders was seen in all age groups except the aged 11 group (P < 0.01) (Table 3-2-3-3, Figure 2-2-1-21).
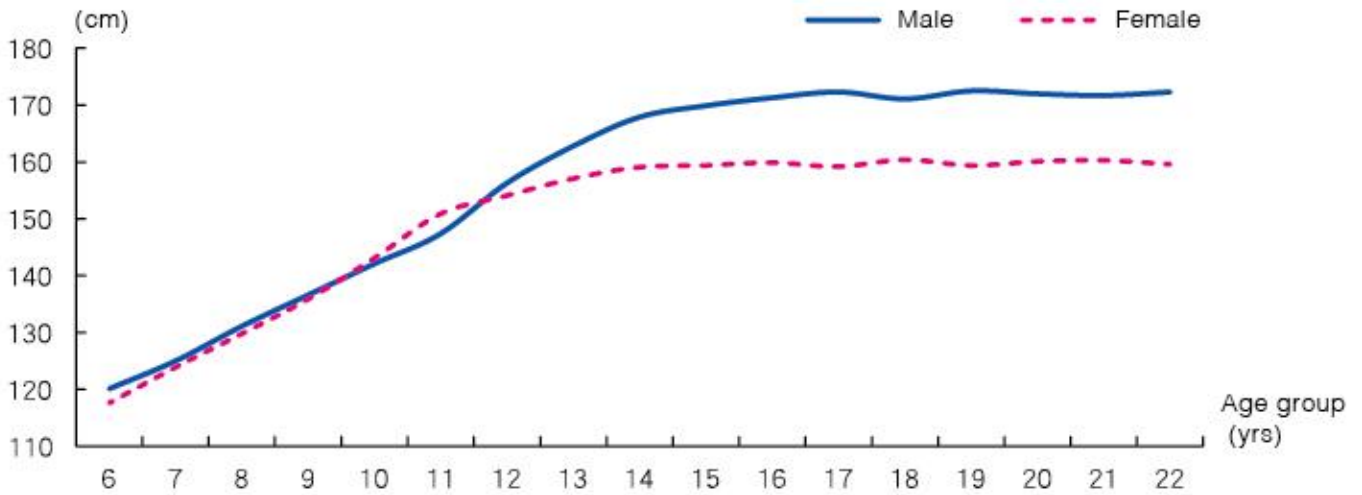
Figure 2-2-1-19 Average height of students
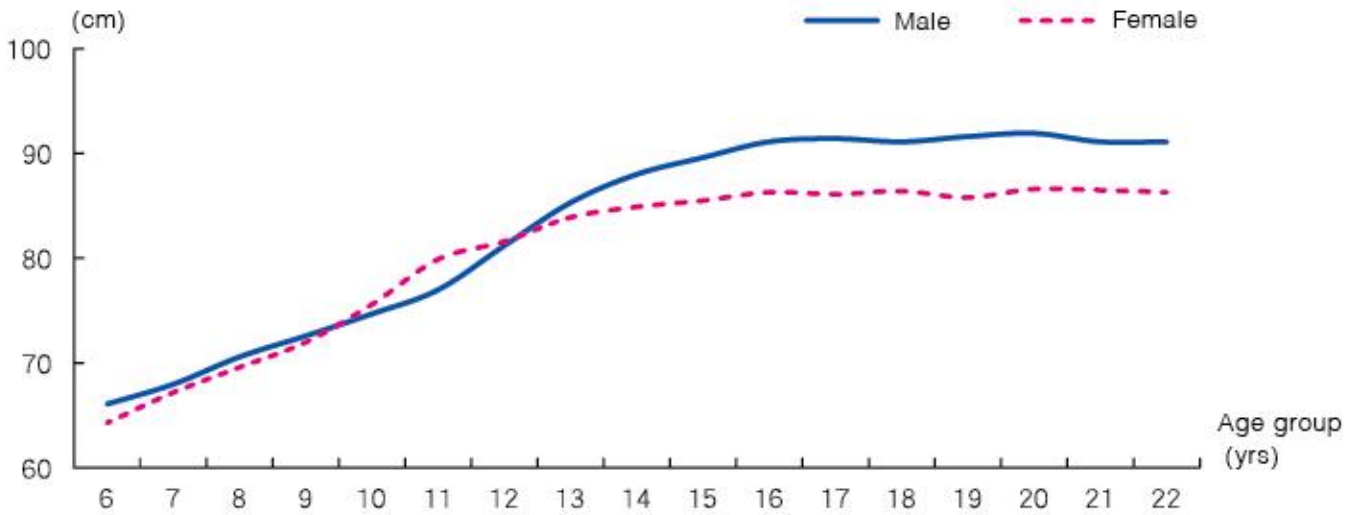
Figure 2-2-1-20 Average sitting height of students

Figure 2-2-1-21 Average foot length of students

(2) Weight and BMI

Weight of both male and female students increased rapidly before age 13. Since age 15, the weight of female students remained stable, the weight of male students fluctuated slightly. The average weight of male and female students ranged from 23.0~66.9kg and 21.1~54.4kg, respectively. After age 13, average weight of males was significantly higher than females ($P < 0.01$), with the difference ranging from 4.8~13.4kg (Table 3-2-3-4, Figure 2-2-1-22).
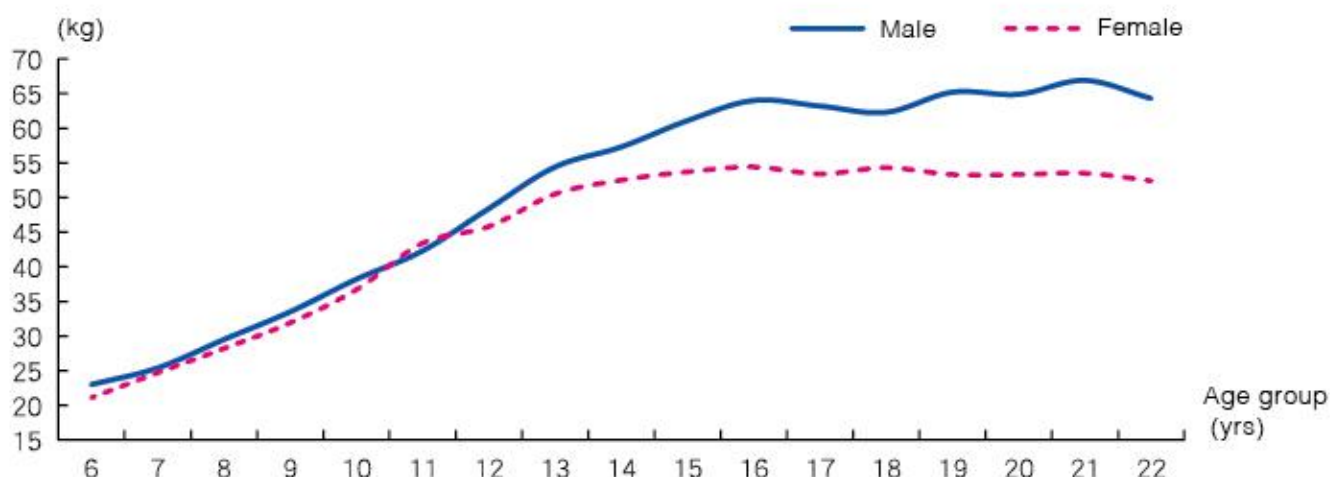
Figure 2-2-1-22 Average weight of students

BMI of students showed an upward trend with advancing age between ages 6~16; since then, BMI of male students remained stable, that of females decreased slightly. The average BMI of male and female students ranged from 15.8~22.7 and 15.2~21.3 . According to the weight-for-height standards for children and adolescents (students) in Physical Fitness Standards for the Chinese Citizens, the proportion of male students aged 6~22 who were overweight and obese ranged from 19.1%~40.8%, with the lowest proportion recorded at age 17 and the highest proportion at age 22; while the proportion of female students aged 6~22 who were overweight and obese ranged from 8.4%~35.0%, with the lowest proportion recorded at age 21 and the highest proportion at age 14 (Tables 3-2-3-5 and 3-2-3-6, Figures 2-2-1-23 and 2-2-1-24).
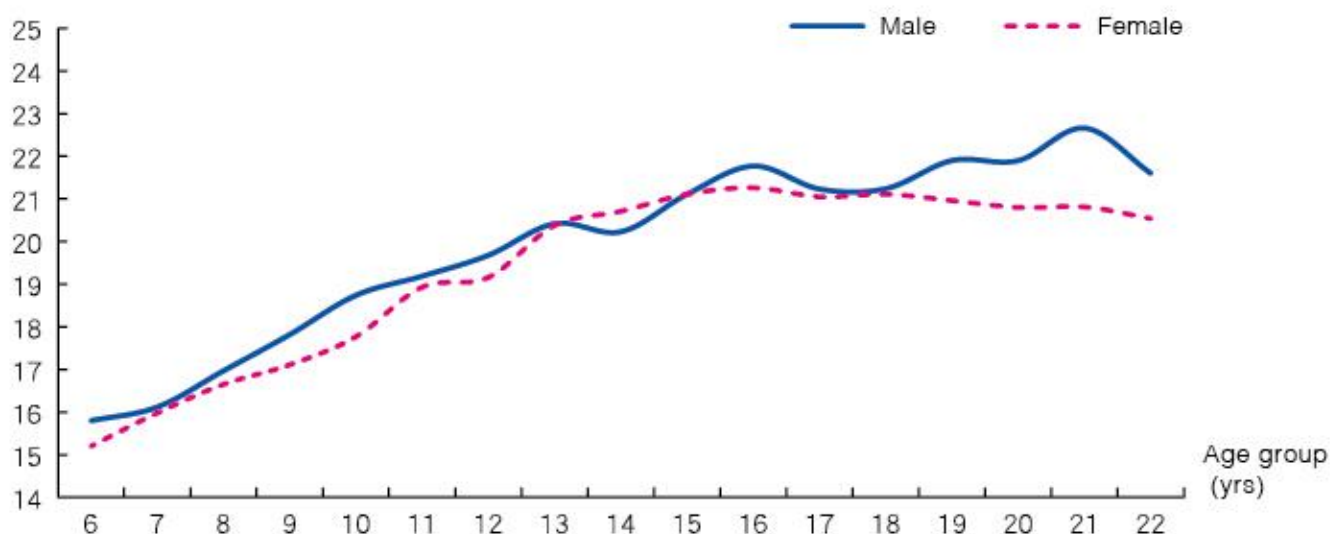
Figure 2-2-1-23 Average BMI of students
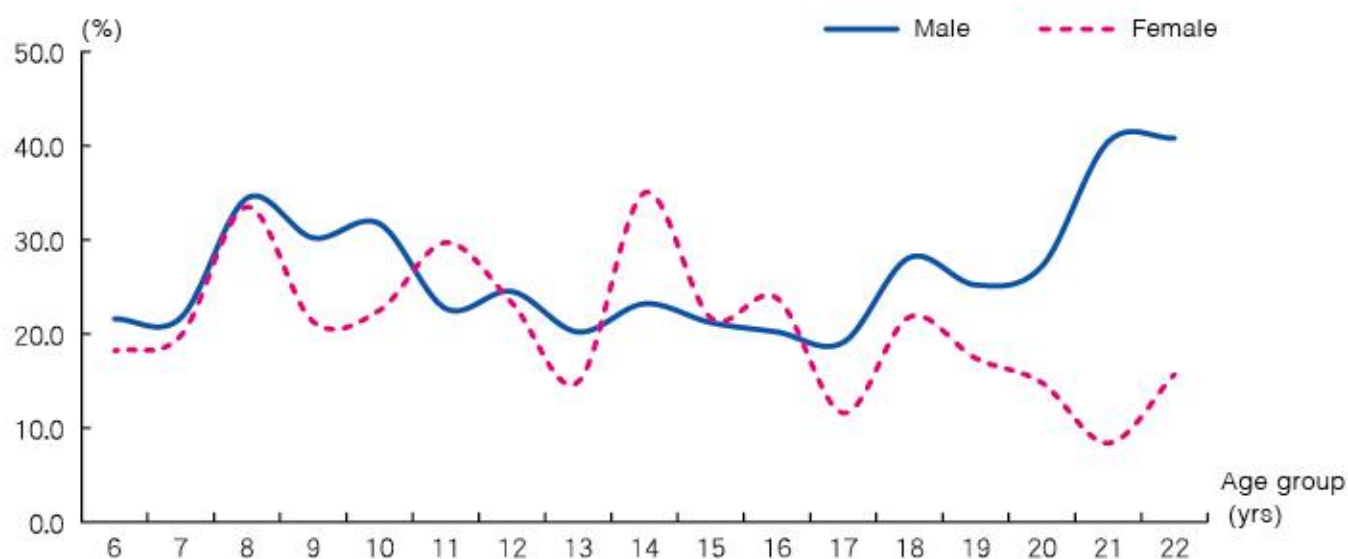
Figure 2-2-1-24 Proportion of obesity rate in students according to the weight-for-height standards

(3) Circumference Indicators

Chest, waist and hip circumferences for male and female students increased with advancing age, and circumferences of the three parts remained fairly stable after age 17. The average chest, waist and hip circumferences of male and female students ranged from 57.8~89.0cm (male) and 55.3~82.6cm (female), 54.0~78.3cm (male) and 51.2~70.5cm (female), and 61.2~92.2cm (male) and 60.8~91.4cm (female), respectively (Tables 3-2-3-7, 3-2-3-8, and 3-2-3-9).

Since age 14, the difference between male and female students in the average chest circumference became increasingly large, ranging from 3.6~6.6cm, with highly significant difference between genders (P < 0.01). In the age groups of 6~22, the average waist circumference of males was higher than that of females and the difference ranged from 1.2~8.1cm, which differed significantly between genders except at age 7. The difference in hip circumference between male and female students was not as obvious as that of the chest and waist circumferences. In the age groups of 7, 11~14 and 18, the average hip circumference of females was higher than that of males, with significant deference between genders (P < 0.01). The changing trend was basically consistent in males and femals (Figures 2-2-1-25, 2-2-1-26 and 2-2-1-27).

The waist-to-hip ratio (WHR) of male students kept stable in the age range of 6~11, decreased between the age of 12~14 and increased slightly after age 14. As for the female students, the WHR declined during the age of 6~18, and then increased slightly after age 18. The average WHR of male and female students ranged from 0.830~0.882 and 0.753~0.843, respectively. The average WHR of males was higher than that of females, with a difference ranged from 0.039~0.095, which differed significantly between genders (P < 0.01) (Table 3-2-3-10, Figure 2-2-1-28).
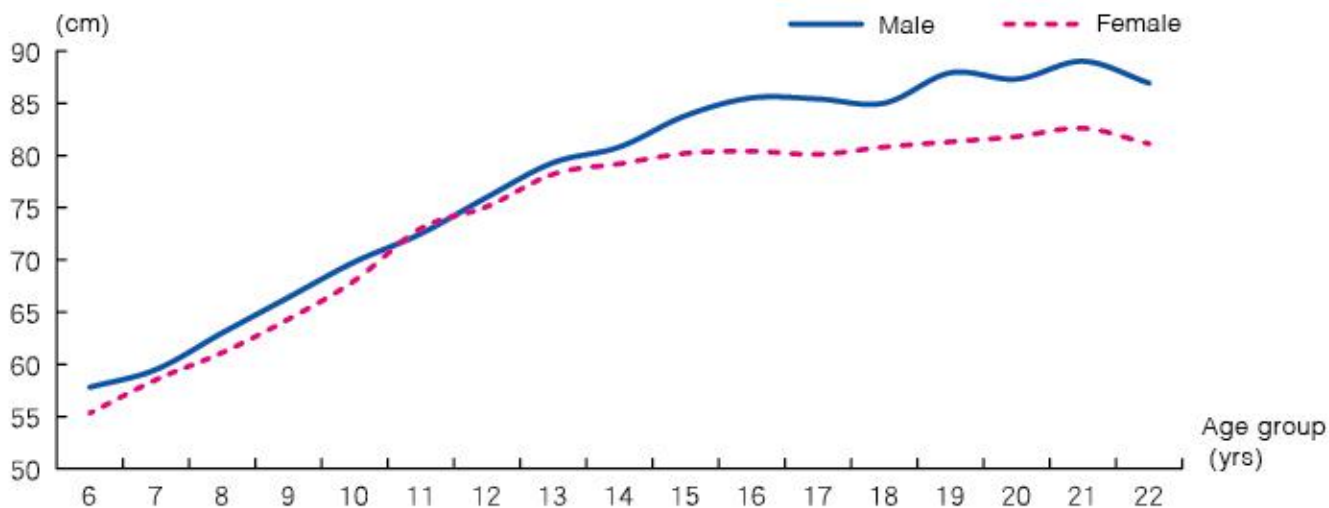
Figure 2-2-1-25 Average chest circumference of students

Figure 2-2-1-26 Average waist circumference of students
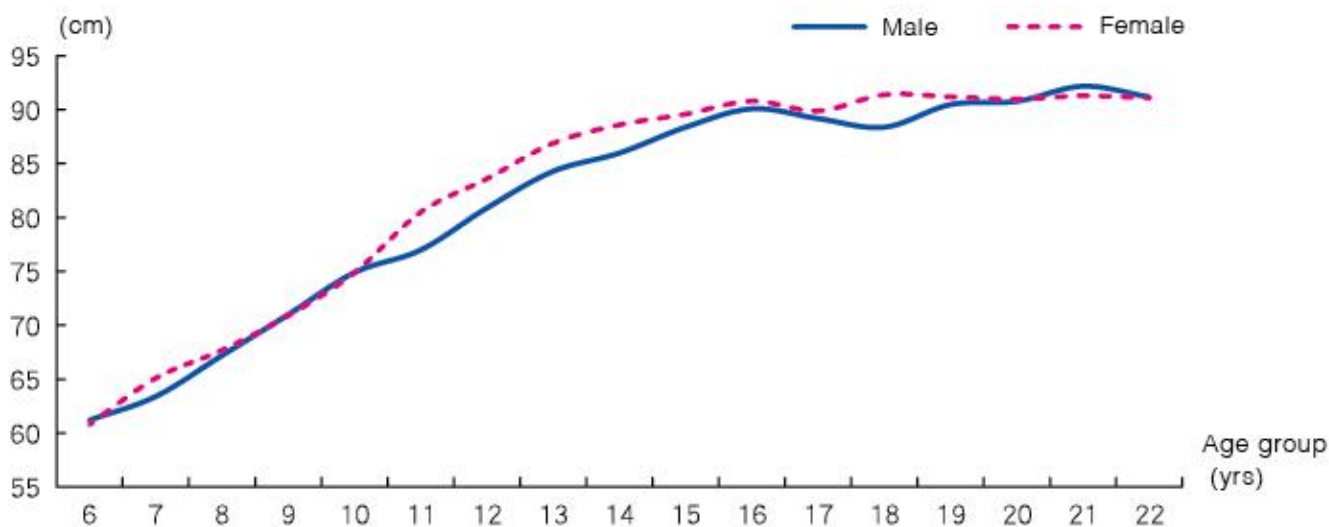
Figure 2-2-1-27 Average hip circumference of students
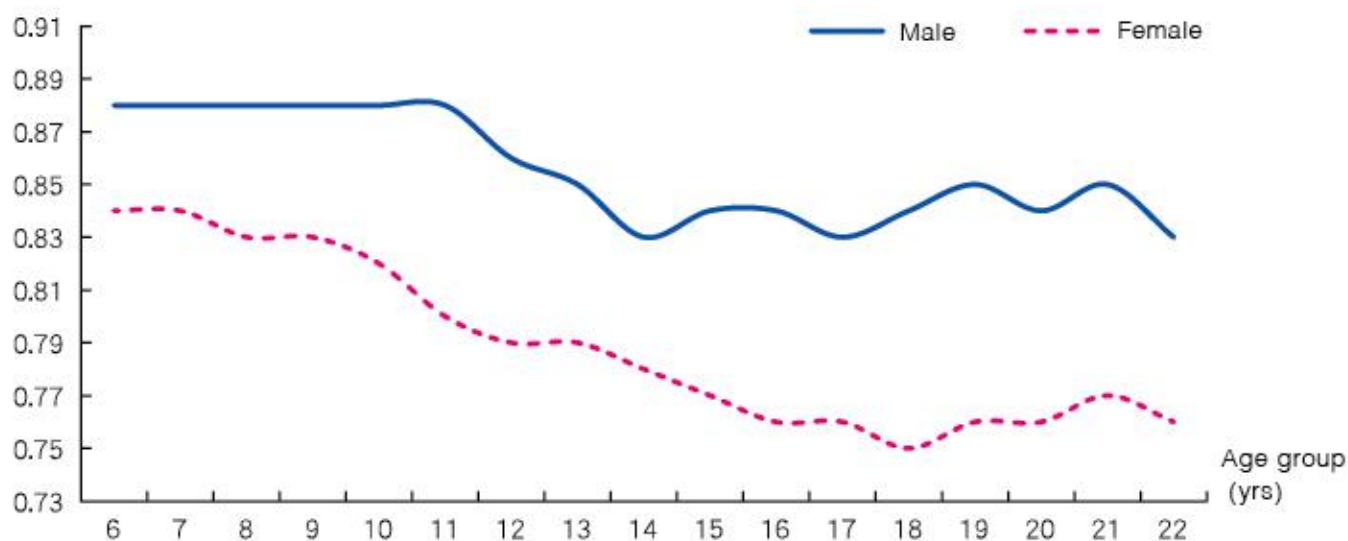
Figure 2-2-1-28 Average WHR of students

(4) Width Indicators

Shoulder width increased with advancing age between the ages of 6~14 for males and 6~12 for females, and the increase slowed down thereafter. The average shoulder width of male and female students ranged from 26.3~39.3cm and 24.7~34.6cm, respectively. After age 13, the difference between males and females increased, ranging from 1.9~5.1cm and varied significantly (P < 0.01) (Table 3-2-3-11, Figure 2-2-1-29).

Pelvis width increased with advancing age. The rate of increase was greater before age 15 for males and age 14 for females, and slowed down thereafter. The average pelvis width for males and females ranged from 19.0~27.5cm and 18.1~26.7cm, respectively. Between the ages of 15~20, the average pelvis width of males was 0.7~1.4cm higher than that of females, with significant difference between genders (Table 3-2-3-12 and Figure 2-2-1-30).

Figure 2-2-1-29 Average shoulder width of students
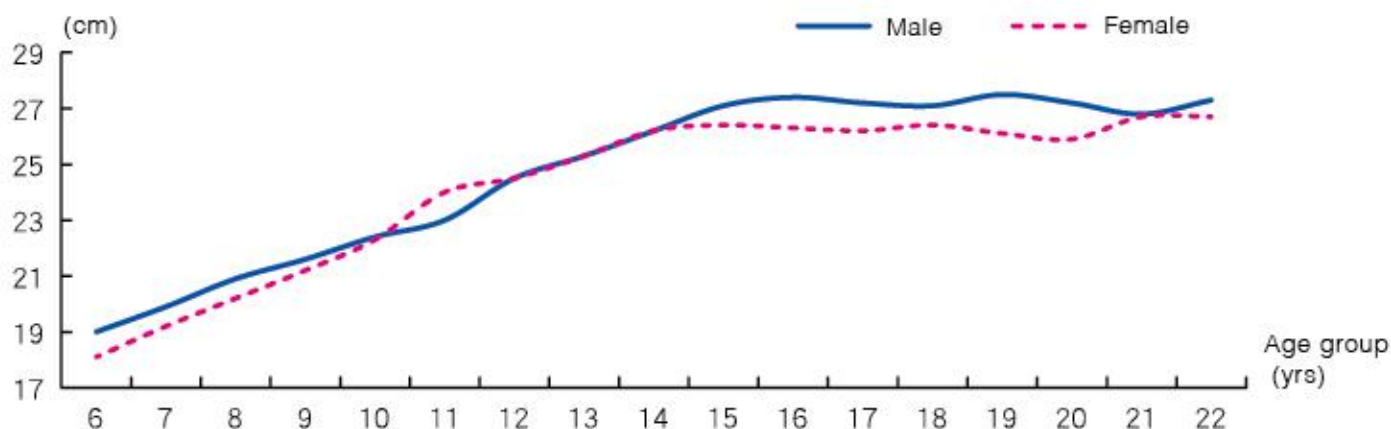
Figure 2-2-1-30 Average pelvis width of students

(5) Body Composition

For male students, the average upper arm, subscapular and abdominal skinfold thickness increased with advancing age between the ages of 6~12, then decreased afterwards and kept stable between the ages of 13~22; the average skinfold thickness of these three parts of females tended to increase with advancing age. The average skinfold thickness of upper arm, subscapular and abdomen for males and females ranged from 9.6~14.7mm (male) and 10.7~20.7mm (female), 6.1~14.9mm (male) and 6.1~17.5mm (female), and 7.4~19.3mm (male) and 8.0~24.7mm (female), respectively (Tables 3-2-3-13, 3-2-3-14 and 3-2-3-15).

No significant difference between genders in skinfold thickness of these three parts was seen between the ages of 6~12 (except specific age groups), and skinfold thickness of the three parts was higher in females than males in the age groups of 13~22. The significant differences in upper arm skinfold, subscapular skinfold and abdominal skinfold between males and females ranged from 5.6~8.7mm, 1.0~5.3mm and 4.1~7.9mm, respectively. (P $<$ 0.05) (Figures 2-2-1-31, 2-2-1-32 and 2-2-1-33).

Figure 2-2-1-31 Average upper arm skinfold thickness of students

(mm)
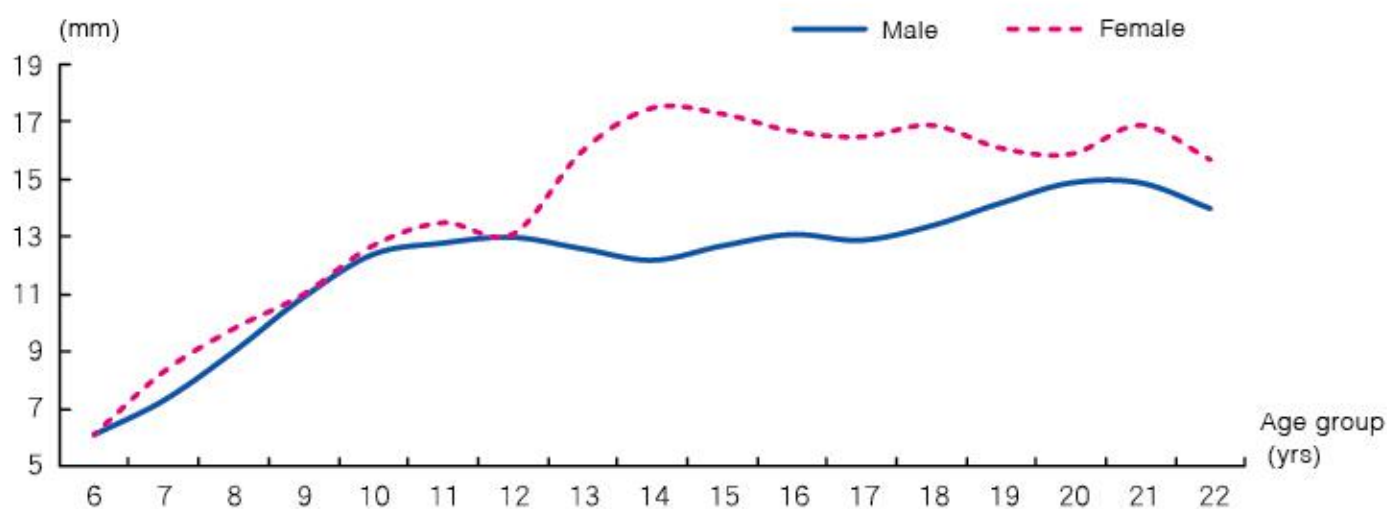
Figure 2-2-1-32 Average subscapular skinfold thickness of students

(mm)
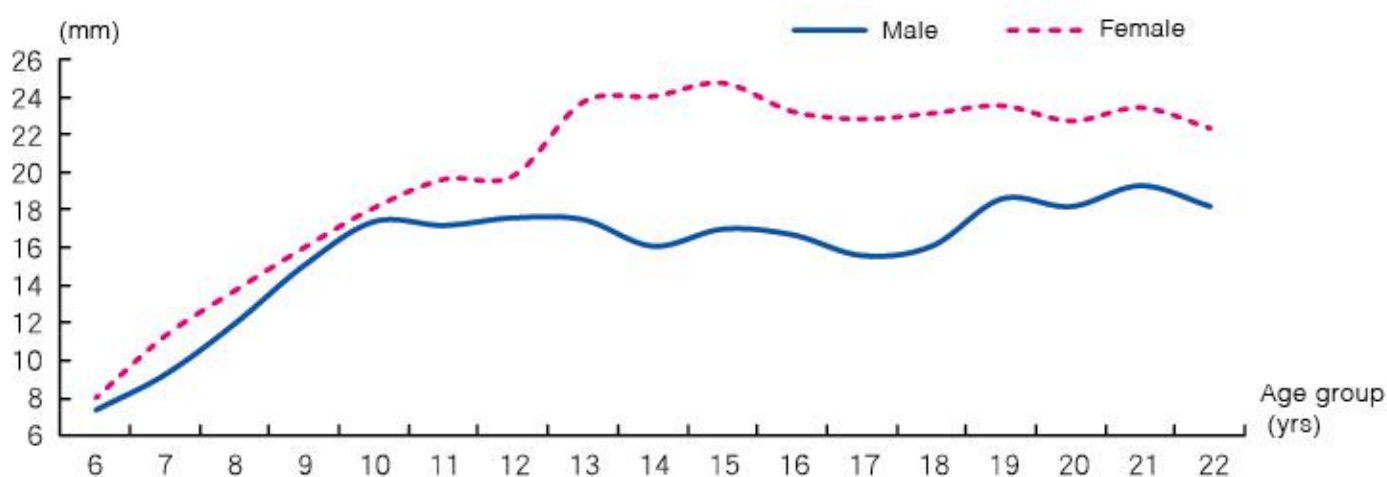
Figure 2-2-1-33 Average abdominal skinfold thickness of students

Body fat percentage and lean body mass of students aged 9 onwards were calculated by using skinfold thickness measurement and the Japanese Brozek formula. Body fat percentage reflects the proportion of body fat to weight and lean body mass refers to the amount of water, minerals and organic materials. Body fat percentage and lean body mass are commonly use to assess body composition.

Body fat percentage of male students increased slightly with advancing age between 9~11 years and decreased thereafter. Body fat percentage of male students ranged from 16.2%~20.9% between ages 12~22. Female students had a higher body fat percentage than male students, ranging from 24.0%~29.6% between ages 9~22 (Table 3-2-3-16).

Body fat percentage of female students at age 9~22 was significantly higher than males ($P < 0.05$), with the difference ranging from 3.1%~12.1%. The maximum difference in body fat percentage between males and females was between ages 14~18 (Figure 2-2-1-34).

Lean body mass increased with advancing age in males and the rate of increase accelerated before age 15 and slowed down thereafter. Lean body mass also increased with advancing age in females, and then remained stable after age 13 without apparent increase. The average lean body mass of males and females ranged from 26.0~54.7kg and 23.5~39.9kg, respectively (Table 3-2-3-17).

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Lean body mass was significantly higher in males than females between the ages of 9~22, with increasing difference since age 12. The difference in lean body mass between genders varied significantly and ranged from 0.8~2.5kg at age 9~11 and 3.4~14.8kg at age 12~22 ($P < 0.05$) (Figure 2-2-1-35).
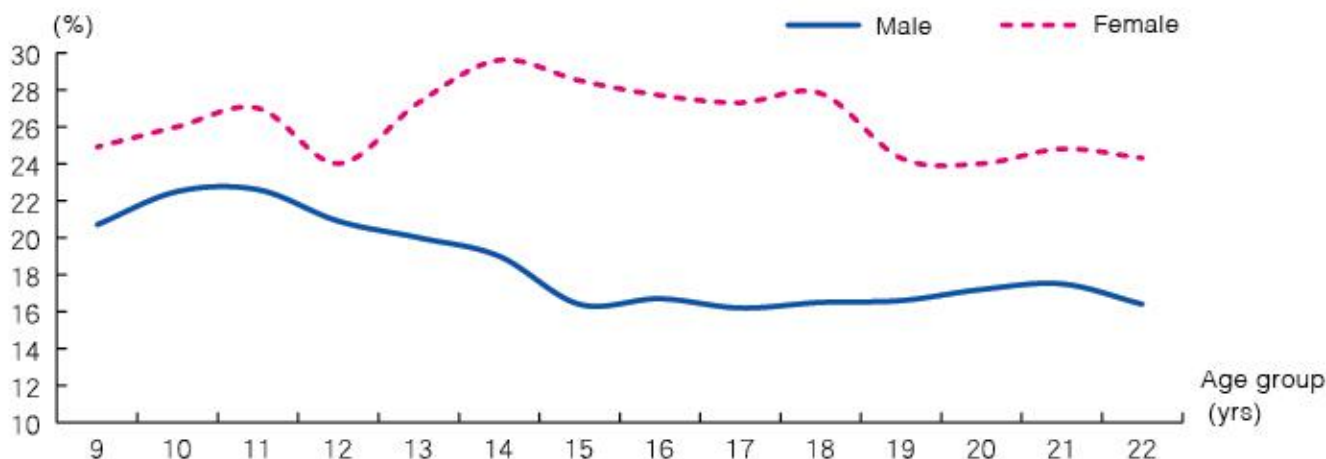
Figure 2-2-1-34 Average boby fat percentage of students
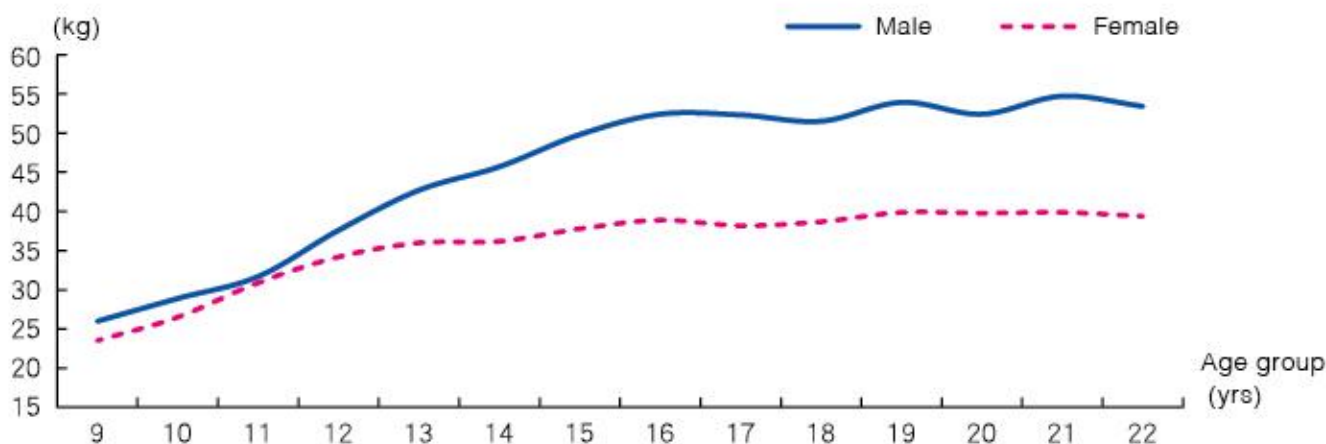
Figure 2-2-1-35 Average lean boby mass of students

4. Physiological Function

Physiological function is reflected by resting pulse, blood pressure (systolic blood pressure and diastolic blood pressure) and vital capacity.

(1) Resting Pulse

Resting pulse is a basic indicator to reflect cardiopulmonary function. Resting pulse of male and female students at age 6~22 decreased as age increased, but saw a slight increase in male students after age 20. Resting pulse for males and females ranged from 76.9~90.1bpm and 78.4~92.3bpm, respectively. The average resting pulse of females was higher than males in most age groups (Table 3-2-4-1, Figure 2-2-1-36).
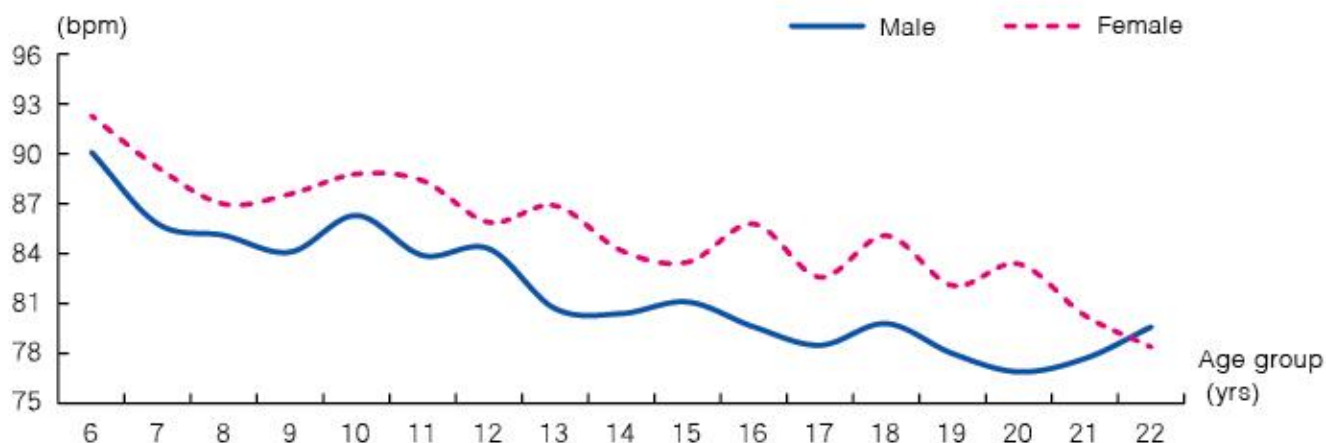
Figure 2-2-1-36 Average resting pulse of students

(2) Blood Pressure

When the ventricle contracts, the blood pressure of artery rises and the highest value is called systolic blood pressure (SBP), which reflects mainly the quantity of blood being pumped out by each pulse. When the ventricle relaxes, the blood pressure of artery descends and the lowest value is called diastolic blood pressure (DBP), which reflects mainly the outside resistance. The difference between SBP and DBP is called pressure difference, which reflects the elasticity of the artery wall.

SBP of male and female students increased with advancing age. SBP of female students showed a flat trend after age 13, while that of male student remained fairly stable after age 16. The average SBP for males and females ranged from 97.0~132.1mmHg and 94.4~111.7mmHg, respectively. After age 14, SBP of males was significantly higher than that of females (P < 0.01) (Table 3-2-4-2, Figure 2-2-1-37).

DBP of male and female students increased slowly as age increased between ages 6~22, without significant difference in growth rate among age groups. The average DBP ranged from 59.9~74.2mmHg for males and 59.9~70.6mmHg for females. DBP of males was obviously lower than that of females at age 11~12, but significantly higher than that of females at age 18~22 (P < 0.01). No significant difference between genders was seen in other age groups (Table 3-2-4-3, Figure 2-2-1-38).

The average pressure difference of male students aged 6~22 was on the rise with advancing age, and that of female students remained fairly stable after age 13. The average pressure difference ranged from 37.2~57.8mmHg for males and 34.9~42.7mmHg for females (Table 3-2-4-4, Figure 2-2-1-39).

Figure 2-2-1-37 Average SBP of students

Figure 2-2-1-38 Average DBP of students

Figure 2-2-1-39 Average pressure difference of students

(3) Vital capacity

Vital capacity refers to the maximum amount of air that can be exhaled after a maximum inhalation. This indicates the maximum working capacity of the respiratory system of human body.

The average vital capacity of students at age 6~22 increased tremendously as age increased, with a greater increase in rate between ages 6~16 for males and 6~14 for females, and the rate of increase remained fairly stable thereafter. The average vital capacity ranged from 1,089.7~4,007.0ml for males and 974.8~2,797.3ml for females, peaked at age 18 and 16 for males and females, respectively. Except at age 11, the average vital capacity of males was generally higher than that of females in the same age group ($P < 0.01$). Particularly after age 15, the average vital capacity of males was substantially higher than that of females (Table 3-2-4-5, Figure 2-2-1-40).

The average vital capacity/weight of students aged 6~22 increased slowly with advancing age. The average vital capacity/weight of males and females ranged from 48.3~65.4ml/kg and 47.0~52.8ml/kg, respectively. The average vital capacity/weight of males was significantly higher than that of females in all age groups except at age 6,10 and 11 ($P < 0.05$). The difference between genders was relatively small before age 11, and the difference tended to increase since age 12 ranging from 5.8~13.8ml/kg (Table3-2-4-6, Figure 2-2-1-41).
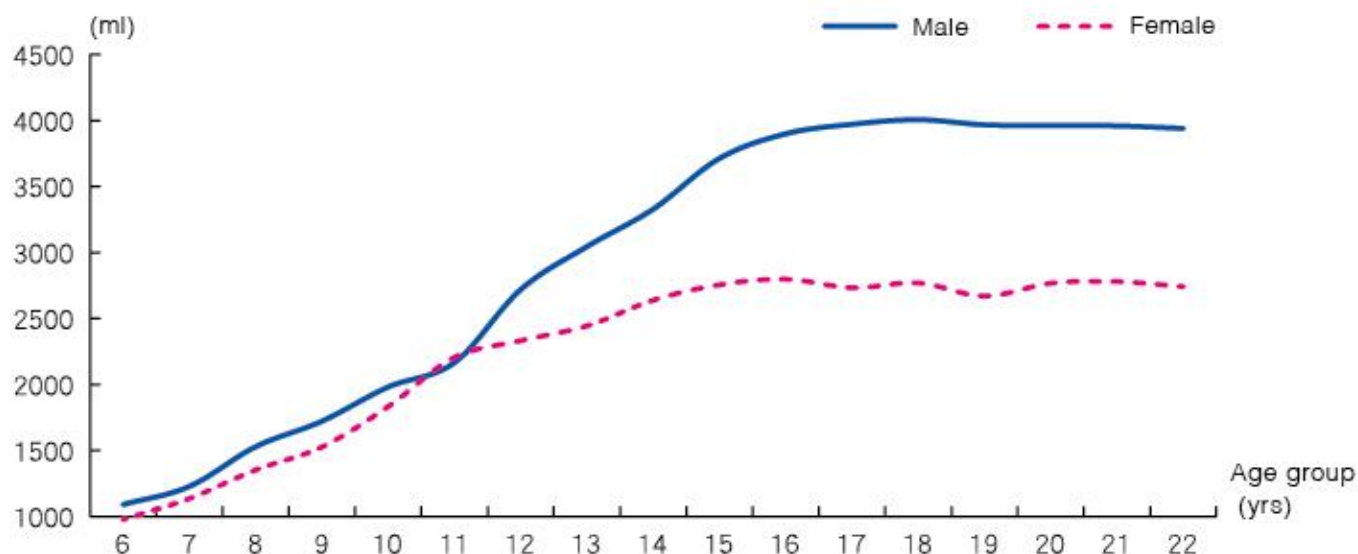
Figure 2-2-1-40 Average vital capacity of students
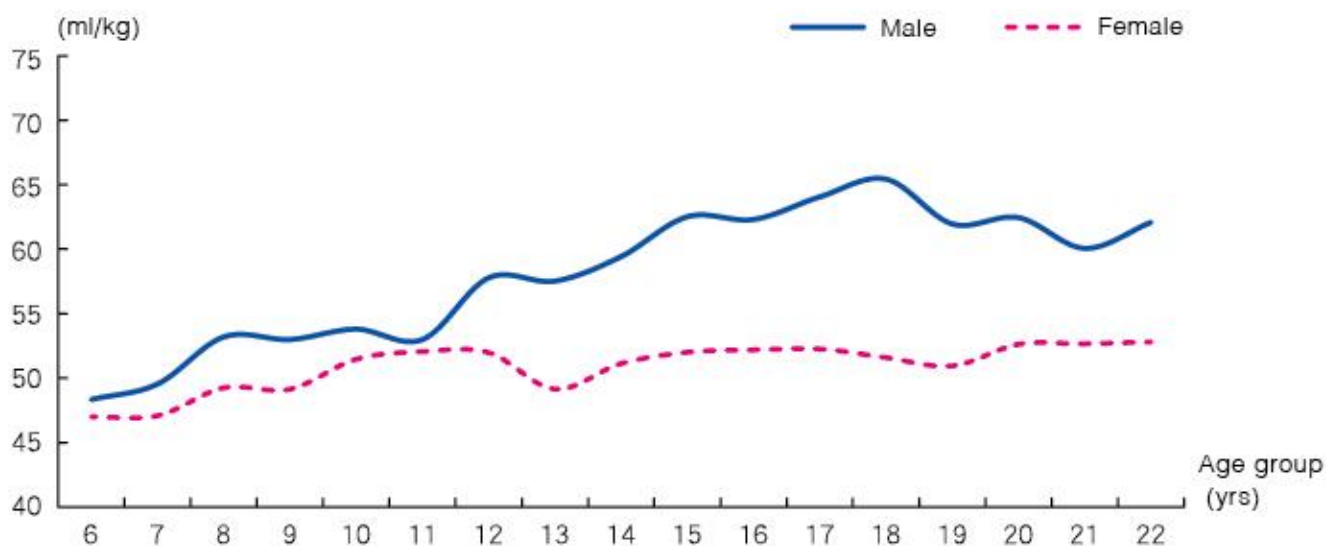
Figure 2-2-1-41 Average vital capacity/weight of students

5. Physical Fitness

(1) Speed

50m run reflects the speed of students.

Average time of 50m run for male and female students ranged from 7.8~12.2 seconds and 9.7~12.7 seconds, respectively. The longest time was at age 6 for both males and females. The fastest running speed of males and females were 7.8 seconds and 9.7 seconds, respectively, both recorded at age 18. It showed that speed of students increased with advancing age. Through comparison of data, speed of male students increased faster than that of females. Males had apparently faster speed than females, with statistically significant difference observed (P < 0.05) (Table 3-2-5-1 and Figure 2-2-1-42).
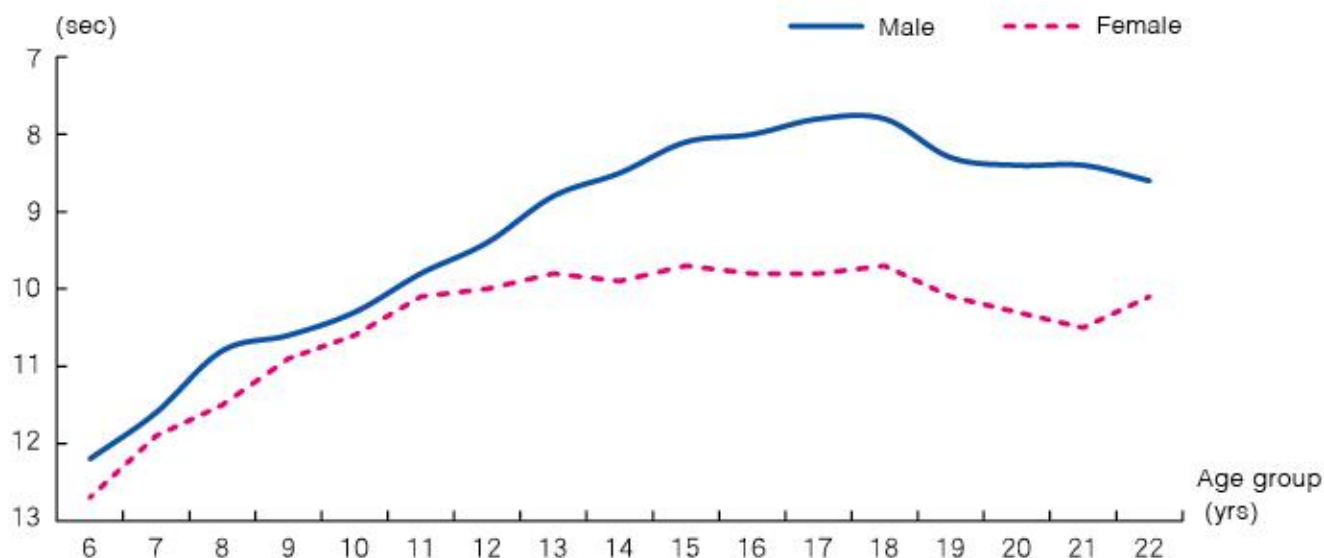
Figure 2-2-1-42 Average time of 50m run of students

(2) Strength

Standing long jump, vertical jump, pull-ups (inclined pull-ups), one-minute sit-ups, grip strength and back strength reflect the strength of students. Standing long jump and vertical jump reflect mainly explosive force; pull-ups (inclined pull-ups) and one-minute sit-ups reflect mainly endurance; grip strength and back strength reflect maximum force that the muscle can exert.

Average indicators for male students ranged as follows: standing long jump 100.6~198.9cm, vertical jump 19.7~41.7cm, pull-ups 0.6-3.8 times, inclined pull-ups 13.0~18.9 times, grip strength 8.3~41.7kg and back strength 26.0~110.7kg. Average indicators for female students ranged as follows: standing long jump 93.3~144.9cm, vertical jump 19.2~27.9cm, one-minute sit-ups 10.5~28.4 times/minute, grip strength 7.5~25.3kg and back strength 21.3~60.7kg (Tables 3-2-5-2, 3-2-5-3, 3-2-5-4, 3-2-5-5 and 3-2-5-6).

All indicators of students increased with advancing age, but the degree of increase differed in each indicator. The strength of males increased faster than that of females, and strength of females increased relatively slower with advancing age. By contrast, all aspects in strength were stronger in males than females and the rate of increase in males was greater than females. Strength and speed of male students increased rapidly before age 17 and increased slowly thereafter. Strength of females remained relatively stable between the ages of 11~13, and endurance decreased slightly after age 17 (Figures 2-2-1-43, 2-2-1-44, 2-2-1-45, 2-2-1-46 and 2-2-1-47).

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Figure 2-2-1-43 Average standing long jump of students
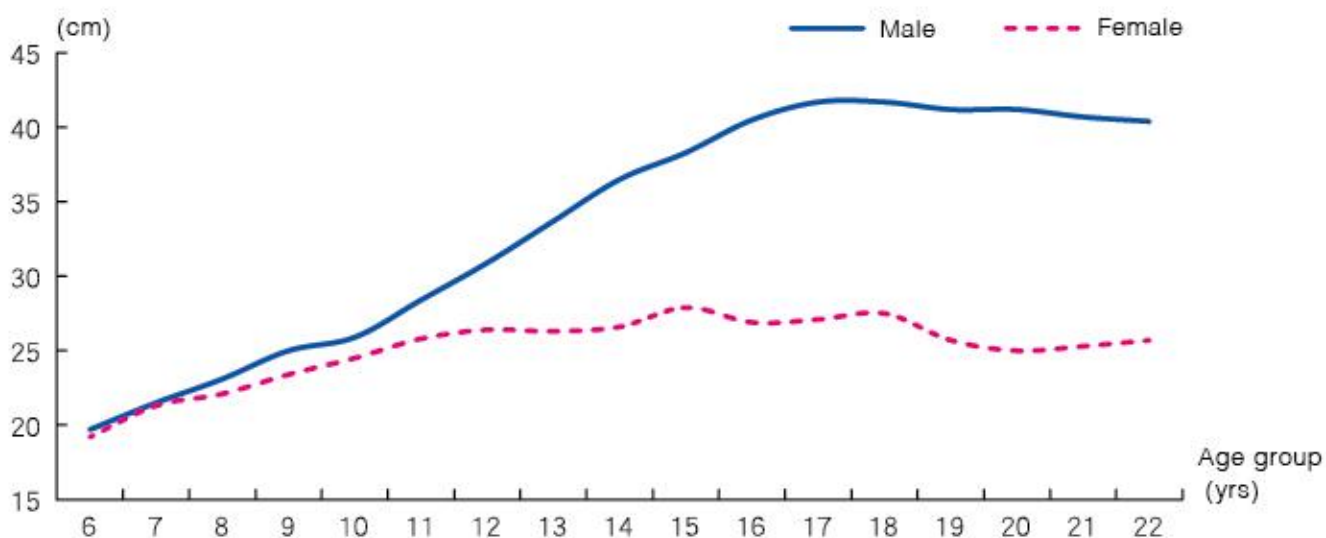
Figure 2-2-1-44 Average vertical jump of students
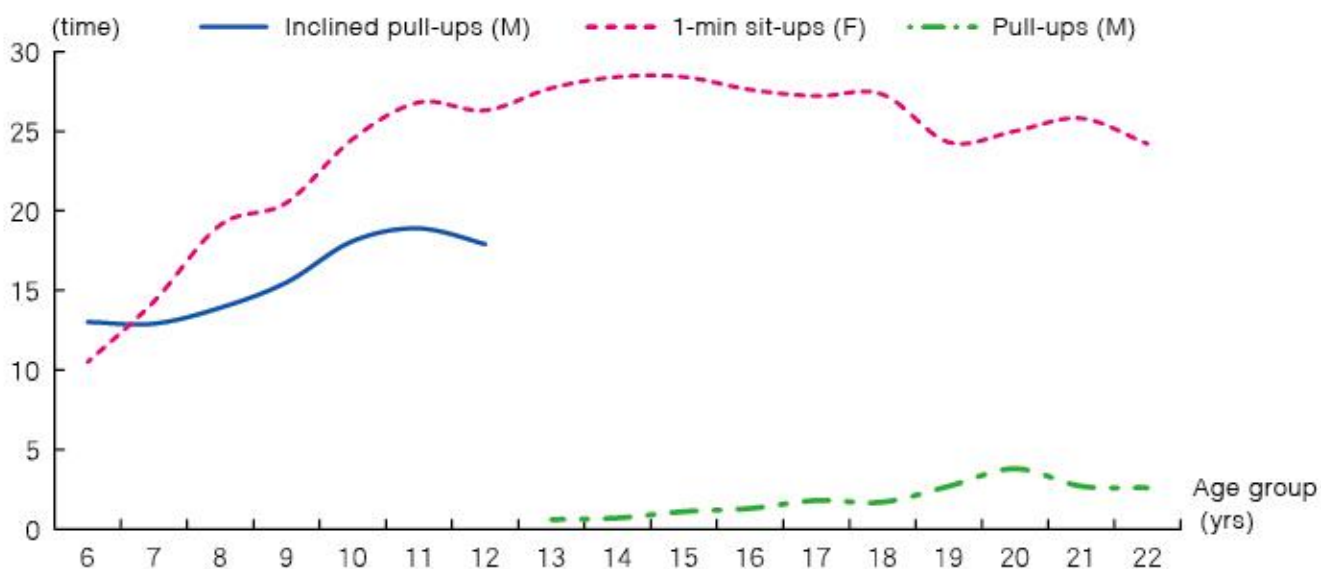
Figure 2-2-1-45 Average inclined pull-ups, pull-ups and one-minute situps of students
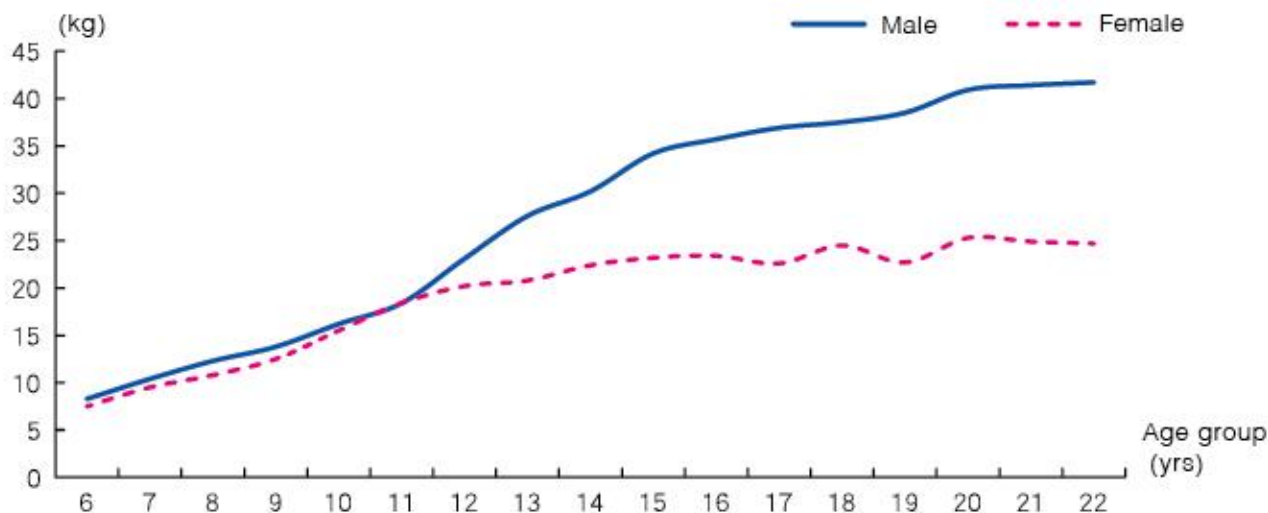
Figure 2-2-1-46 Average grip strength of students

Figure 2-2-1-47 Average back strength of students

(3) Endurance Run

The endurance of students aged 6~12 was reflected by the 50m×8 shuttle run, the endurance of male students aged 13~22 was reflected by 1,000m run and the endurance of female students aged 13~22 was reflected by 800m run.

Average time for male students to finish the 50m×8 shuttle run and 1,000m run ranged from 117.9~155.1 seconds and 279.9~325.0 seconds, respectively. Average time for female students to finish the 50m×8 shuttle run and 800 m run ranged from 127.7~159.3 seconds and 282.5~310.3 seconds, respectively (Table 3-2-5-7).

Endurance of males increased with advancing age before age 19, whereas that of females increased with advancing age before age 17. After that, endurance of both genders tended to decrease as age increased; however, it increased mildly after age 20. No statistically significant difference was seen in endurance between males and females before age 10 (Figures 2-2-1-48 and 2-2-1-49) .
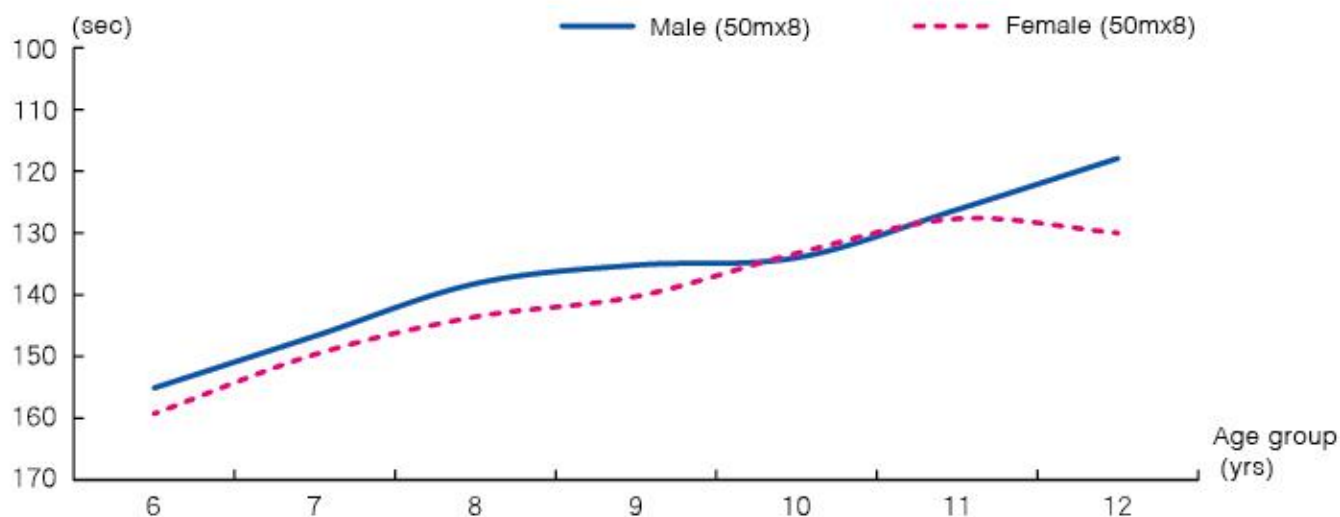
Figure 2-2-1-48 Average time of endurance run in students (children)
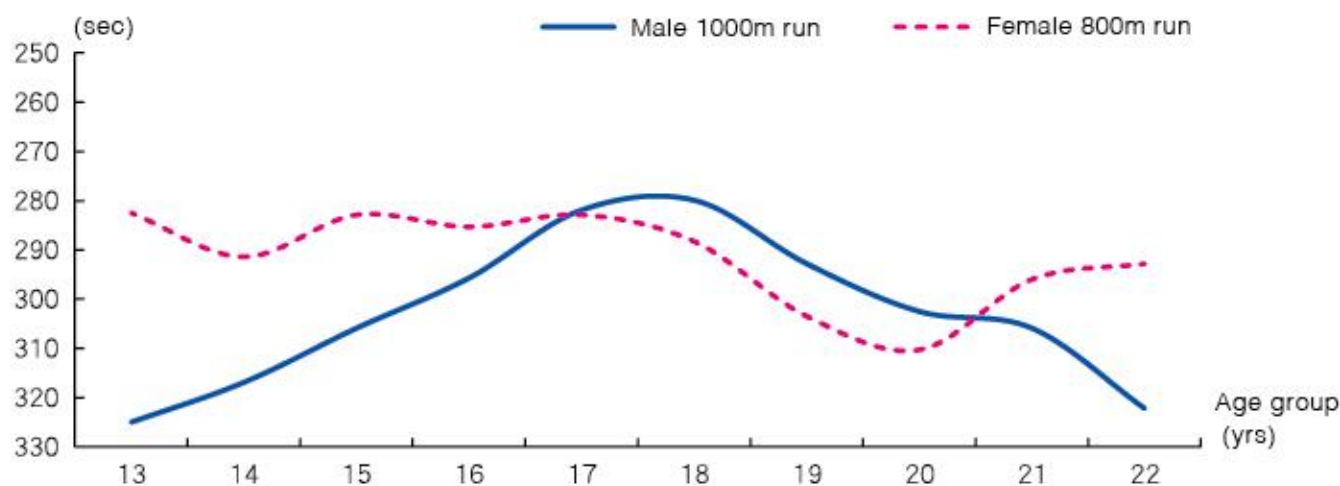
Figure 2-2-1-49 Average time of endurance run in students (adolescents)

(4) Flexibility

Sit and reach reflects flexibility.

The average sit and reach of male and female students ranged from 1.3~4.6cm and 5.1~9.7cm, respectively (Table 3-2-5-8). Flexibility of males decreased between ages 10~12, and tended to increase slightly after age 13. Flexibility of females fluctuated with advancing age and remained fairly stable. By contrast, females had better flexibility than males, with significant difference in all age groups except the aged 22 group ($P < 0.01$) (Figure 2-2-1-50).

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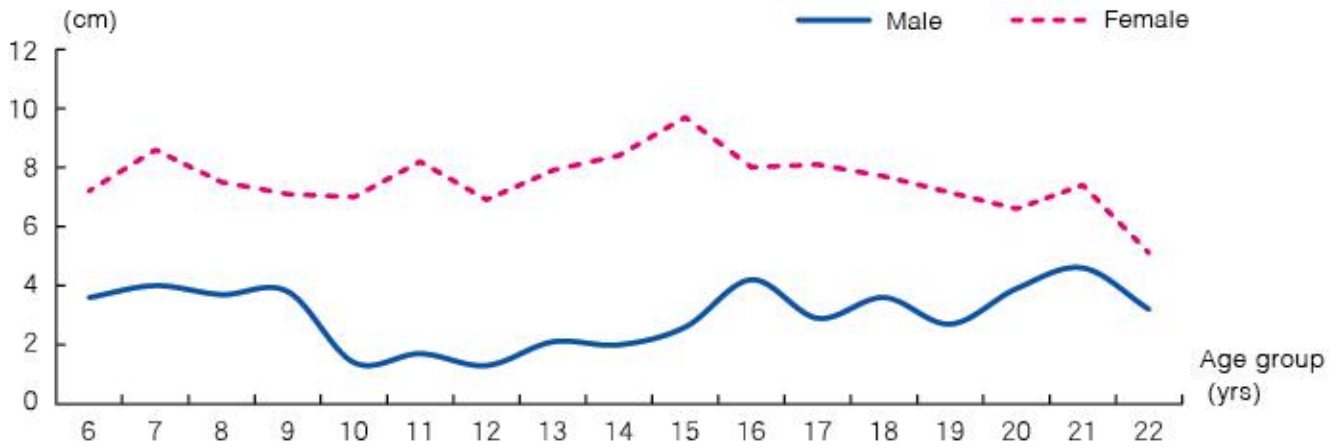
Figure 2-2-1-50 Average sit and reach of students

(5) Reaction

Choice reaction time reflects the ability to react.

Average choice reaction time of males and females ranged from 0.39~0.61 second and 0.42~0.64 second, respectively (Table 3-2-5-9). Reaction ability of both genders was improved with advancing age and remained quite stable, without obvious difference between genders since age 13 (Figure 2-2-1-51).
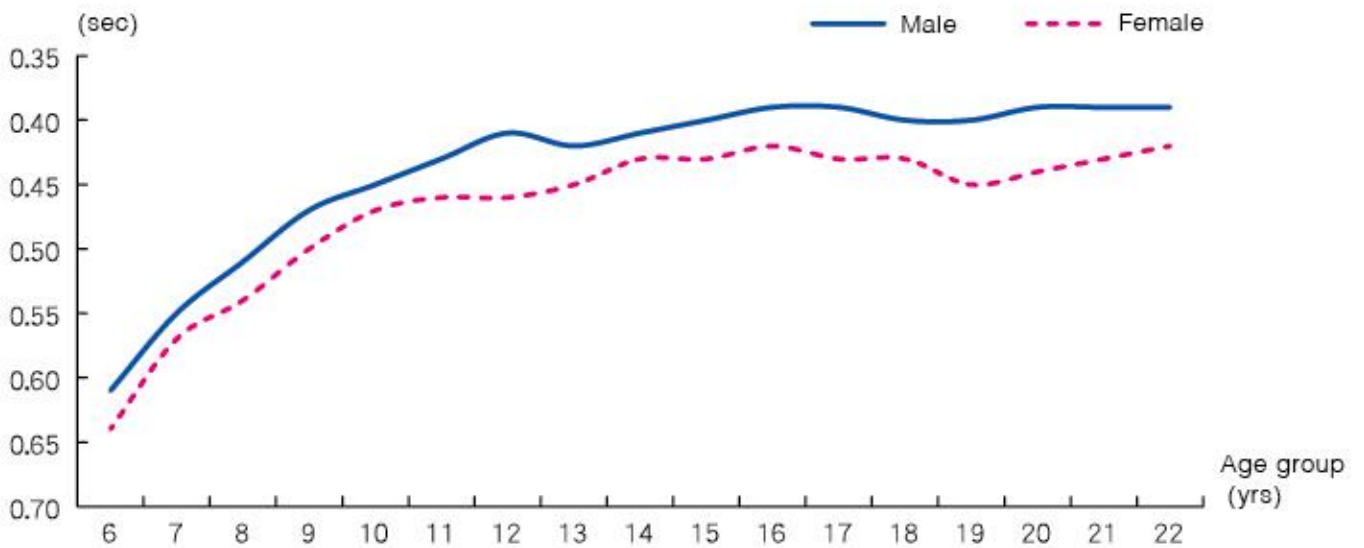
Figure 2-2-1-51 Average choice reaction time of students

(6) Balance

One foot stands with eyes closed (OFSEC) reflects balance ability.

The average time for OFSEC of males and females ranged from 13.1~54.5 seconds and 15.4~70.9 seconds, respectively (Table 3-2-5-10). Balance ability of males kept increasing to 3~4 folds with advancing age. Balance ability of females also increased with advancing age before age 17 to nearly 3 folds, reaching a peak of 70.9 seconds at age 16, and then tended to decrease gradually thereafter. By contrast, balance ability of females was slightly better than that of males, without statistically significant difference between genders in most of the age groups (Figure 2-2-1-52).
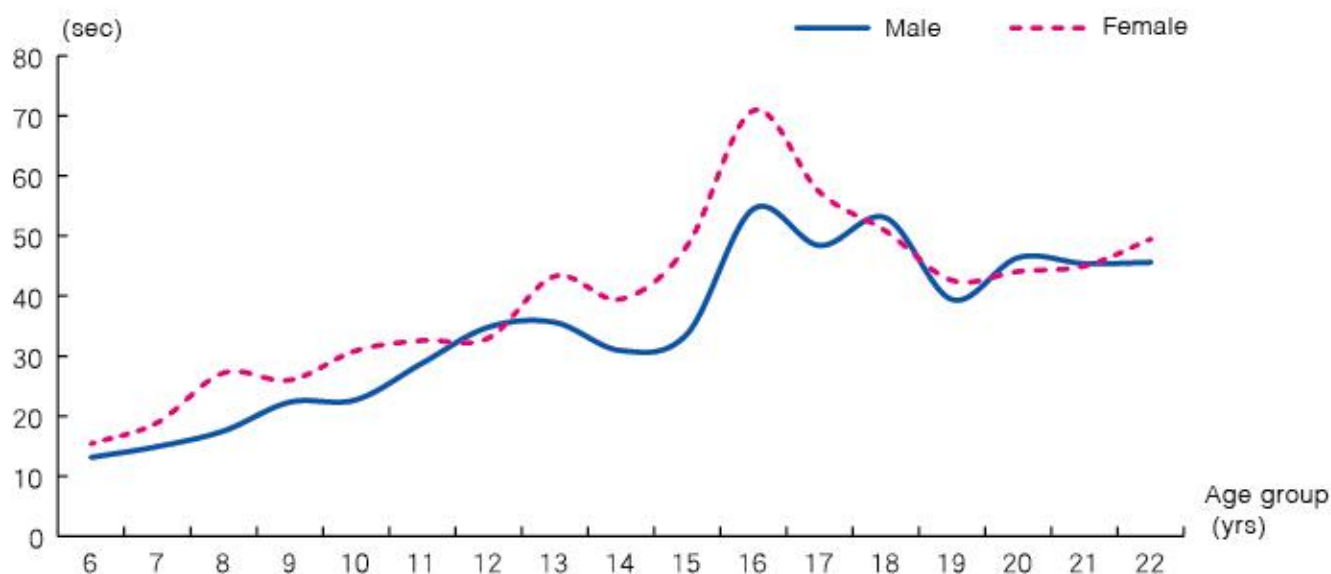
Figure 2-2-1-52 Average OFSEC time of students

6. Health

(1) Occurrence of Decayed Primary Teeth

Dental decay of primary teeth among male and female students occurred mainly between ages 6~12. With the replacement of primary teeth by permanent teeth, the prevalence of decayed primary teeth declined to nearly 0% after age 14.

The prevalence of decayed primary teeth in male and female students varied in similar ways. The prevalence of both males and females increased first and then decreased with advancing age, reaching a peak of 73.5% at age 7 for males, and a peak of 72.7% at age 8 for females. The prevalence of decayed primary teeth ranged from 0.0%~73.5% for males and 0.6%~72.7% for females (Table 3-2-6-1).

The prevalence of decayed primary teeth of male students aged 9 and 11 was significantly higher than that of females in the same age groups ($p < 0.05$), with the difference accounting for 12.1% and 13.9%, respectively. No significant difference was found in other age groups (Figure 2-2-1-53).
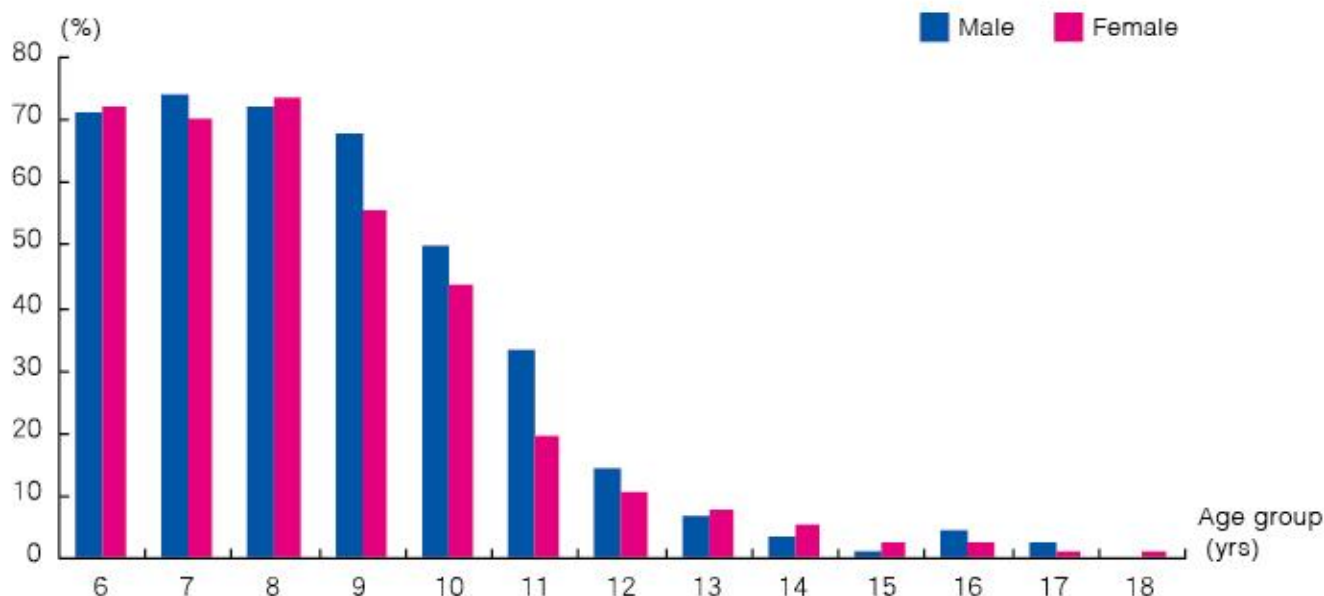
Figure 2-2-1-53 Prevalence of decayed primary teeth in students

The prevalence of filled primary teeth of students increased first and then decreased with advancing age. The prevalence in males reached a peak of 41.0% at age 8 and 33.0% in females at age 7. The prevalence of filled primary teeth in male and female students ranged from 0.0%~41.0% and 0.0%~33.0%, respectively (Table 3-2-6-1).

The prevalence of filled primary teeth of male students aged 8 was significantly higher than female students of the same age, with the difference reaching 16% (P < 0.05) (Figure 2-2-1-54).

The prevalence of missing primary teeth in male students varied irregularly between ages 6~10, reaching a peak of 4.2% at age 7 and decreasing to 0% after age 10. The prevalence in female students was 0% in all age groups except aged 7 (1.1%) and 8 (1.5%) groups (Table 3-2-6-1).

No significant difference between genders was found in each age group (Figure 2-2-1-55).
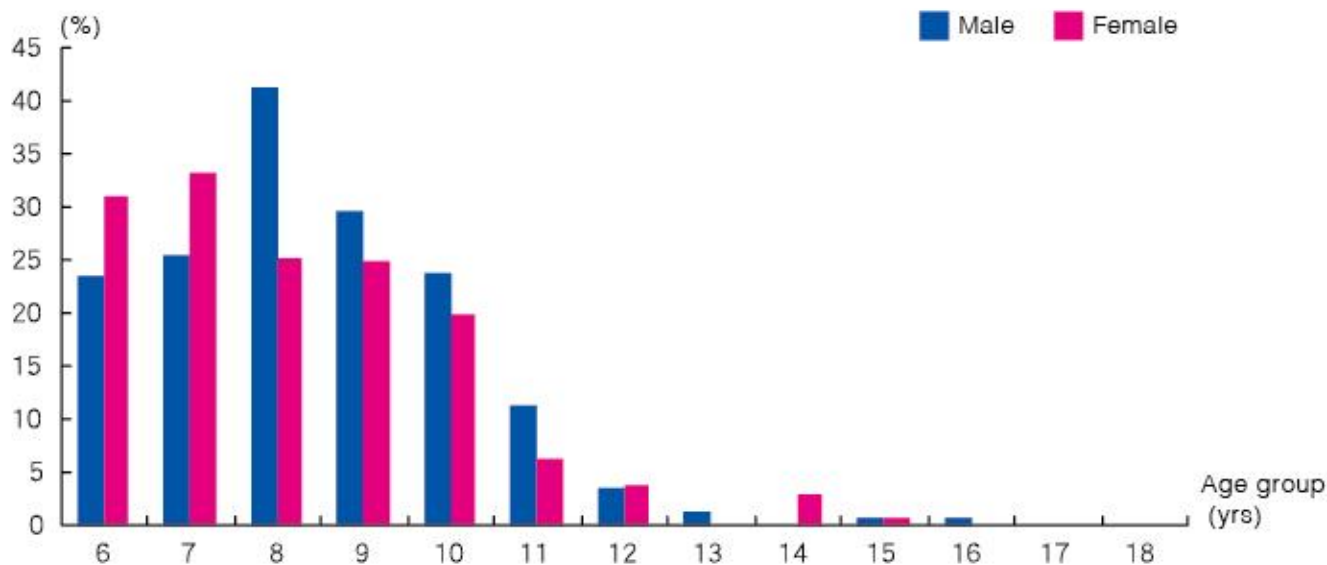
Figure 2-2-1-54 Prevalence of filled primary teeth in students
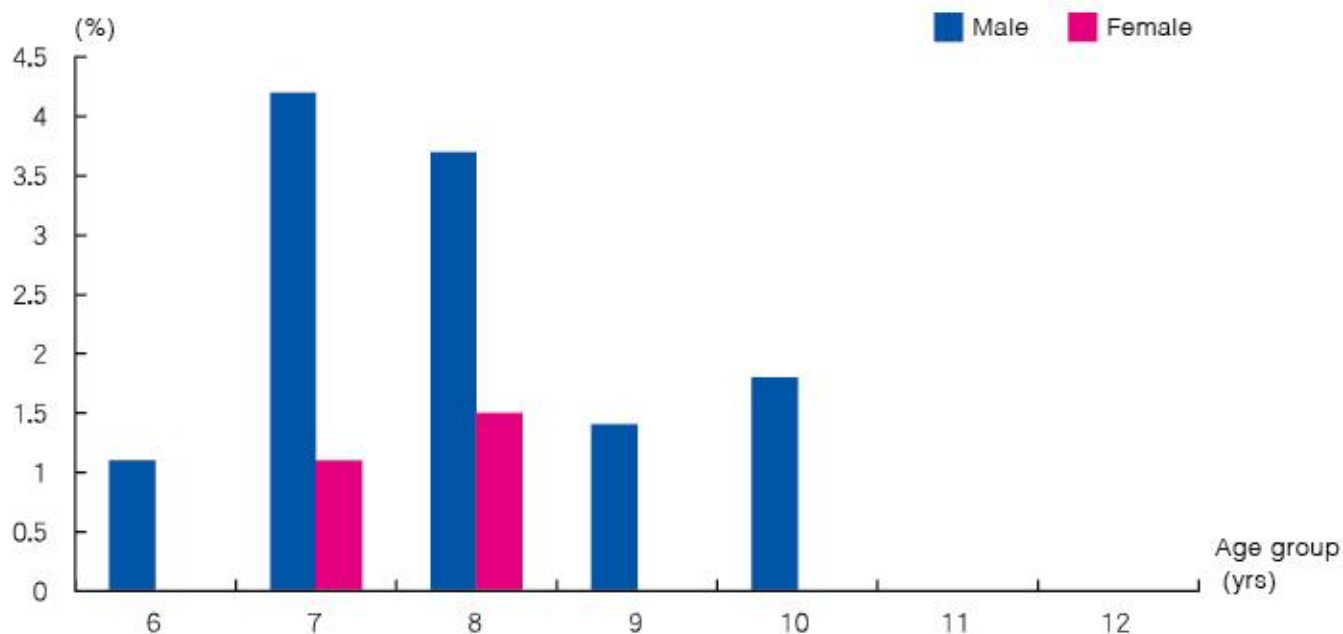
Figure 2-2-1-55 Prevalence of missing primary teeth in students

The prevalence of decayed-missing-filled primary teeth (dmf) in male students increased first and then decreased, reaching a peak of 81.9% at age 8; the prevalence in female students tended to decline with advancing age. The prevalence of dmf teeth in males and females ranged from 0.0%~81.9% and 0.6%~76.5%, respectively.

It was found that the prevalence of dmf teeth in males was significantly higher than that in females at age 9 and 11 (P < 0.05), with a difference of 13.0% and 12.9%, respectively (Figure 2-2-1-56).
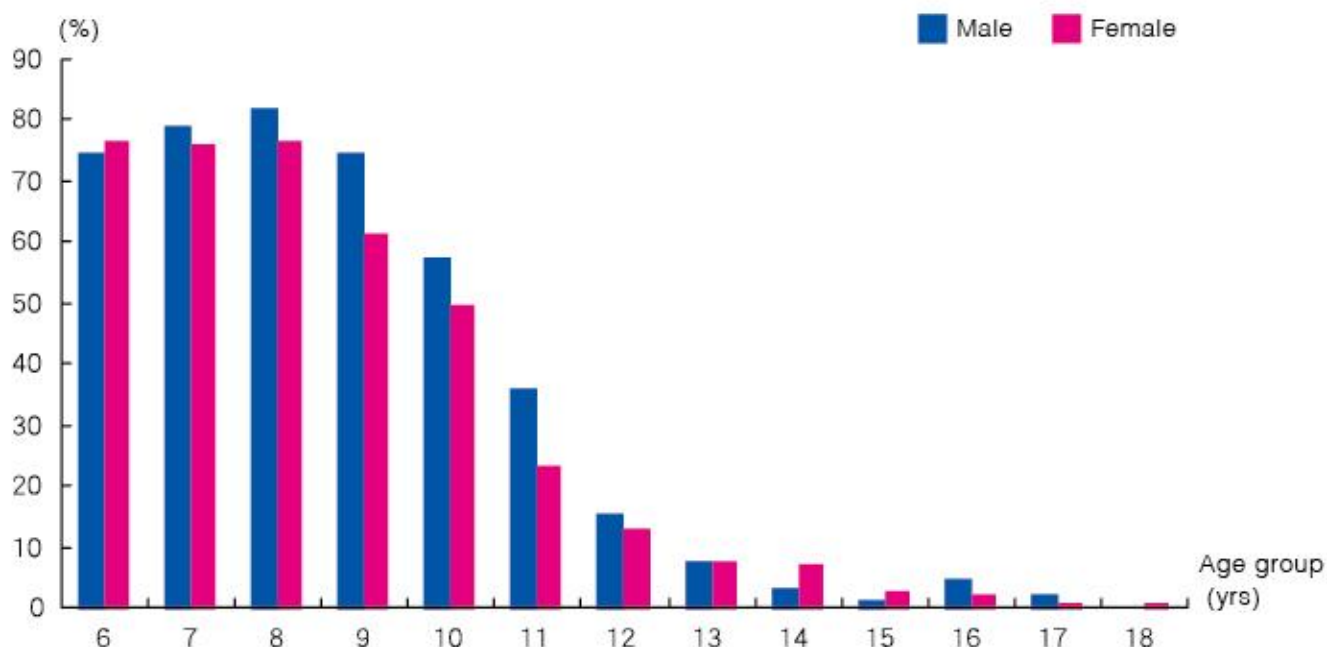
Figure 2-2-1-56 Prevalence of decayed-missing-filled (dmf) primary teeth in students

(2) Occurrence of Decayed Permanent Teeth

Occurrence of decayed permanent teeth appeared at age 6, with a rate of 7.8% and 10.7% for males and females, respectively. The incidence rate increased first and then decreased with advancing age. The rate peaked at age 16 in males and age 17 for females at 19% and 53.1%, respectively. The prevalence of decayed permanent teeth in male and female students ranged from 7.8%~49.0% and 10.7%~53.1%, respectively (Table 3-2-6-2).

Females had a significantly higher rate of dental decay in permanent teeth than males at age 10 and 12 (P < 0.05), with the difference accounting for 10.0% and 14.7%, respectively (figure 2-2-1-57).
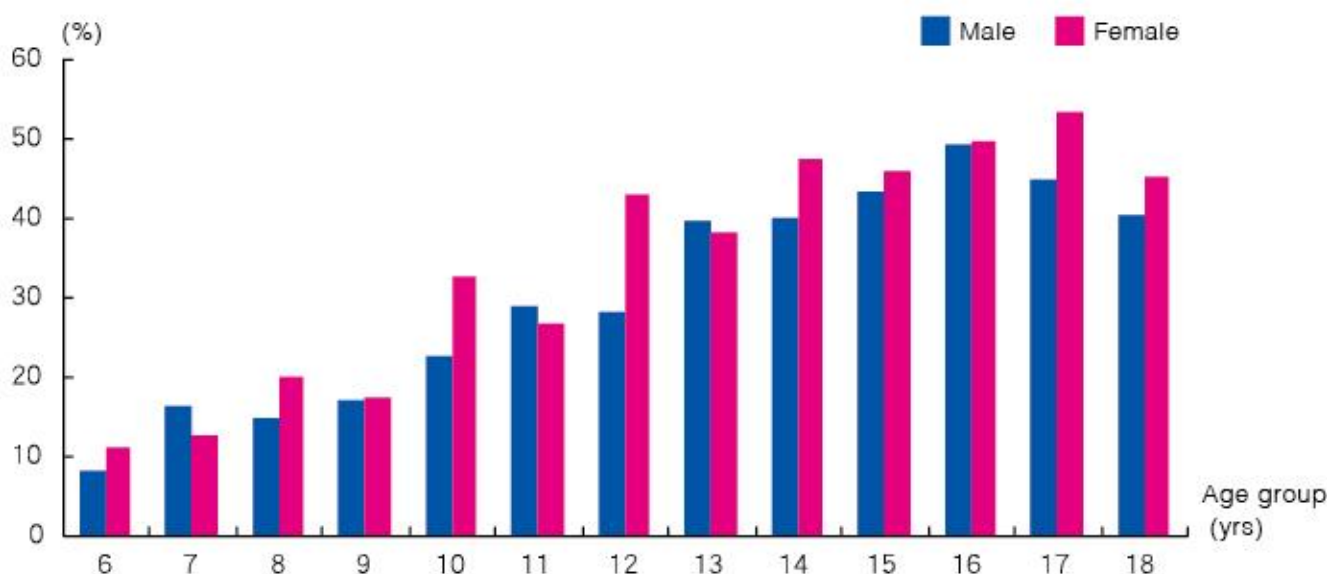
Figure 2-2-1-57 Prevalence of decayed permanent teeth in students

The prevalence of filled permanent teeth occurred at age 7 in male students and at age 6 in female students, accounting for 3.4% and 2.1%, respectively. Between ages 7~15, the prevalence in males fluctuated in an upward trend, reaching a peak of 31.5% at age 15, and tended to be stable afterwards between the ages of 16~18. The prevalence in females increased first then decreased with advancing age, fluctuating slightly and reaching a maximum of 42.6% at age 17. The prevalence of missing permanent teeth of male and female students ranged from 3.4%~31.5% and 2.1%~42.6%, respectively (Table 3-2-6-2).

The prevalence of filled permanent teeth was higher in females than males at age 12, 16 and 17 (P < 0.05), with the difference ranging from 10.1%~11.8% (Figure 2-2-1-58).
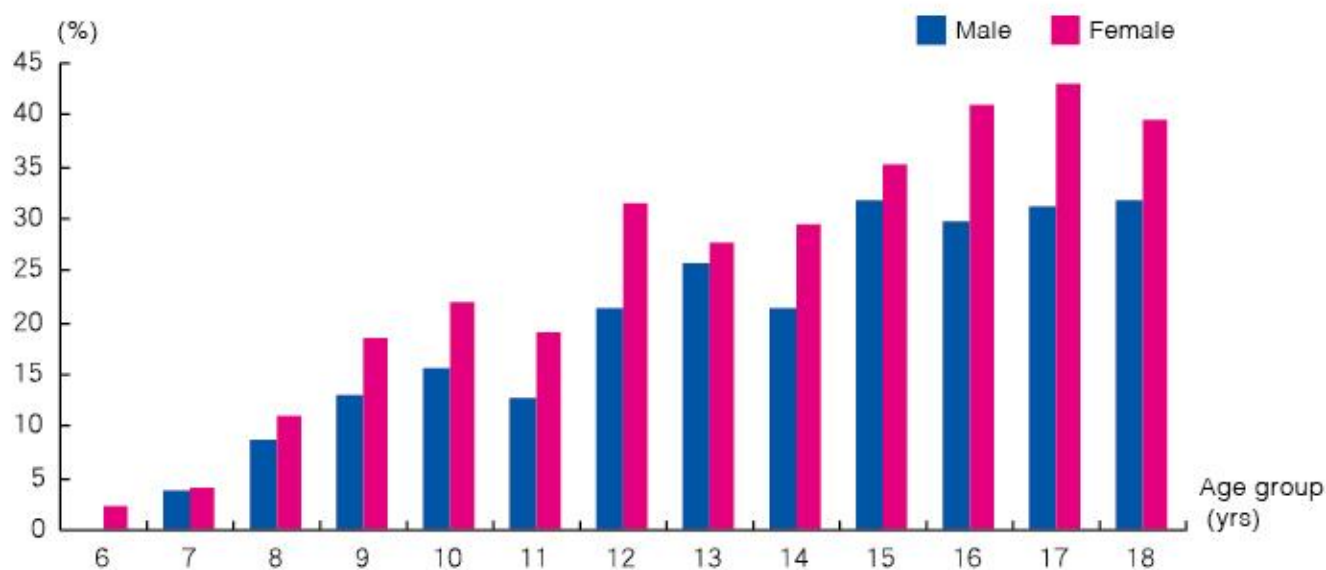
Figure 2-2-1-58 Prevalence of filled permanent teeth in students

The prevalence of missing permanent teeth occurred at age 14 among male students and at age 12 among females, accounting for 0.5% and 1.4% for males and females respectively. The prevalence in males tended to increase with advancing age, reaching a peak of 1.4% at age 17; and that of females varied irregularly. The prevalence of missing permanent teeth of male and female students ranged from 0.0%~1.4% and 0.0%~2.0%, respectively.

The prevalence of missing permanent teeth was higher in females than males at age 12 (P < 0.05) (Figure 2-2-1-59).
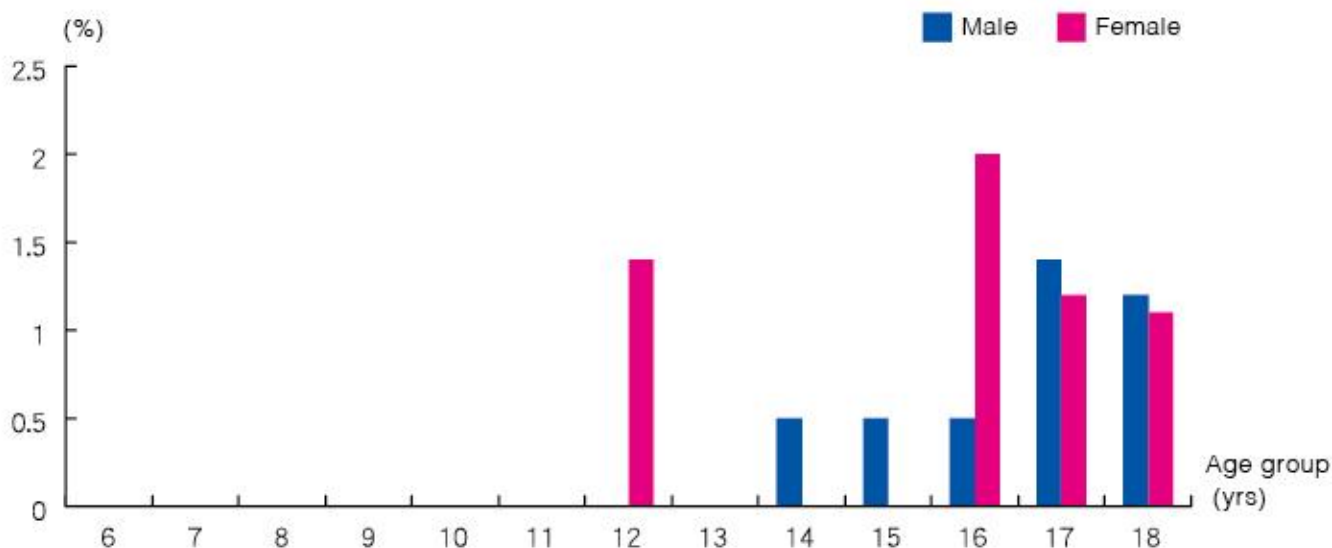
Figure 2-2-1-59 Prevalence of missing permanent teeth in students

The prevalence of decayed-missing-filled (DMF) permanent teeth occurred at age 6 for both genders, accounting for 7.8% and 11.4% for males and females, respectively. Between ages 6~16, the prevalence among males fluctuated in an upward trend with advancing age, reaching a peak of 61.5% at age 16 and then tended to be stable between ages 17~18. The prevalence among females increased first then decreased with advancing age, fluctuating slightly and reaching a peak of 72.7% at age 16. The prevalence of DMF permanent teeth of male and female students ranged from 7.8%~61.5% and 11.4%~72.7%, respectively.

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It was found that the prevalence of DMF permanent teeth was higher in females than males at age 12 and 16 (P < 0.05), with the difference accounting for 19.8% and 11.2%, respectively (Figure 2-2-1-60).

Figure 2-2-1-60 Prevalence of decayed-missing-filled (DMF) permanent teeth in students

(3) Poor Eyesight

Poor eyesight is defined as eyesight falling below 5.0 without using glasses or contact lens. Eyesight of 4.9 is considered as mild poor eyesight, eyesight within 4.6~4.8 is considered as moderate poor eyesight and eyesight below or equal to 4.5 is severe poor eyesight. Each subject was considered as a unit when doing the analysis. If the eyesight was different in both eyes, the poorer eyesight would be recorded.

The proportion of poor eyesight increased slowly from age 6~22, reaching a peak of 82.4% between ages 20~21 in males. The proportion of poor eyesight was lowest at age 7 (48.7%), and the increase was greatest at age groups 12~13 (7.8%) and 14~15 (9.8%). Poor eyesight decreased slightly at age 22, but still remained at over 75%. The proportion of poor eyesight in males ranged from 48.7%~82.4% (Table 3-2-6-3, Figure 2-2-1-61).

The proportion of mild poor eyesight for male students reached a peak of 21.7% at age 6; and the proportion of moderate poor eyesight was more than 20% at age 6, 8, 11 and 12; severe poor eyesight increased quickly with advancing age, and peaked at age 19 and 22, accounting for 61.0% and 63.4%, respectively. The proportion of mild, moderate and severe poor eyesight in males ranged from 2.6%~21.7%, 8.6%~22.9% and 11.7%~63.4%, respectively (Table 3-2-6-3).

For females, the proportion of poor eyesight was at a high level of more than 60% at age 6, and then declined slightly between ages 7~8. However, the proportion tended to increase between ages 9~22, reaching a peak of 84.5% at age 20, and remained at over 80% at age 18~22. The proportion of poor eyesight in females ranged from 50.4%~84.5% (Table 3-2-6-3, Figure 2-2-1-61).

The proportion of mild poor eyesight for female students was 27.1% at age 6 and decreased afterwards with advancing age; the proportion of moderate poor eyesight fluctuated among age groups with the maximum of 27.1% at age 6 and the minimum of 8.9% at age 21; severe poor eyesight increased quickly with advancing age, reaching the maximum of 68.9% at age 20 and remained at over 60% afterwards. The proportion of mild, moderate and severe poor eyesight in females ranged from 1.9%~27.1%, 8.9%~27.1% and 5.7%~68.9%, respectively (Table 3-2-6-3).

Females had a higher proportion of poor eyesight than males, with the exception of ages 8, 9, 15, 16 and 21. The smallest difference (0.4%) between males and females was seen at age 11, and the significantly larger difference (>10%) was found at age 12 and 14 (P < 0.05), with the difference reaching 11.4% at age 14 (Figure 2-2-1-61).
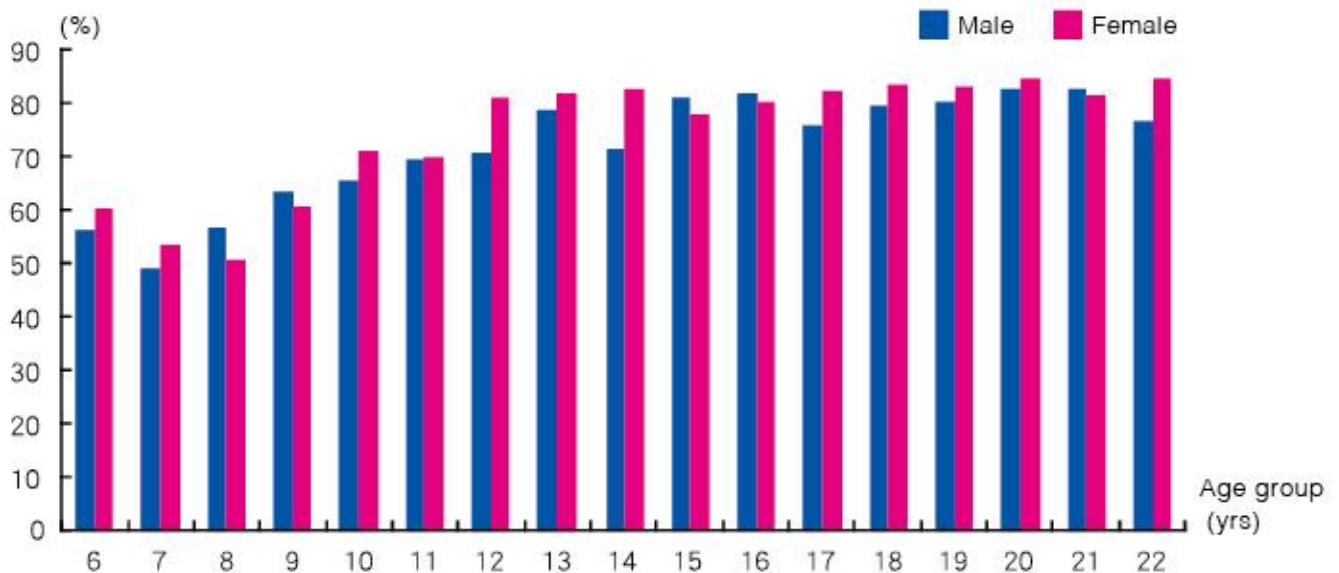
Figure 2-2-1-61 Proportion of poor eyesight in students

An array of diopteric lens is used in the refractive test for screening the poor eyesight. A subject is considered nearsighted when the eyesight decreased by imposing plus lenses and increased with minus lenses. In the study, the proportion of nearsightedness of students tended to increase with advancing age. With the exception of a small decrease between ages 6~7, the proportion of males increased constantly between ages 7~19 (except at age 14), and accelerated increase was recorded especially in the age groups of 7~8, 12~13 and 14~15. The rate of increase slowed down after reaching the peak of 81.5% at age 20; however, the proportion of nearsightedness still remained at a high of around 80%. The proportion of nearsightedness of male and female students ranged from 44.1%~81.5% and 47.0%~82.7%, respectively. Females had a significantly higher proportion of nearsightedness than males in all age groups (P < 0.05), with the exception of ages 8, 9, 15 and 16. The largest difference was found at age 12 and 14, reaching 11.5% (Figure 2-2-1-62).
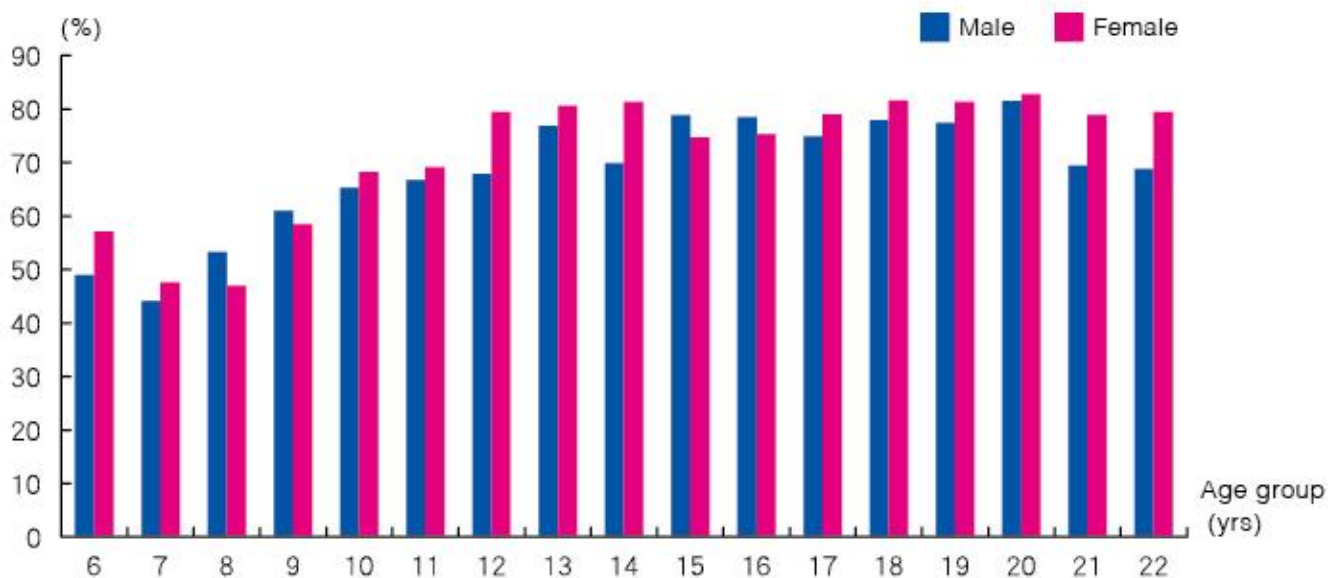
Figure 2-2-1-62 Proportion of nearsightedness in students

(4) Color Vision

Color vision reflects the children and adolescents' ability to distinguish colors.

The proportion of abnormal color vision fluctuated among age groups. The proportion in female students tended to decrease with advancing age. Large difference was found in male students among age groups. 12.2% of males had abnormal color vision at age 6, then the proportion declined with advancing age with exception observed in several age groups. For example, the proportion of males increased to 8.6% since age 18 and decreased to 3.2% at age 22. The proportion of female students with abnormal color vision was apparently lower than that of males. The proportion is almost 0% after age 10 in females (Table 3-2-6-4, Figure 2-2-1-63).
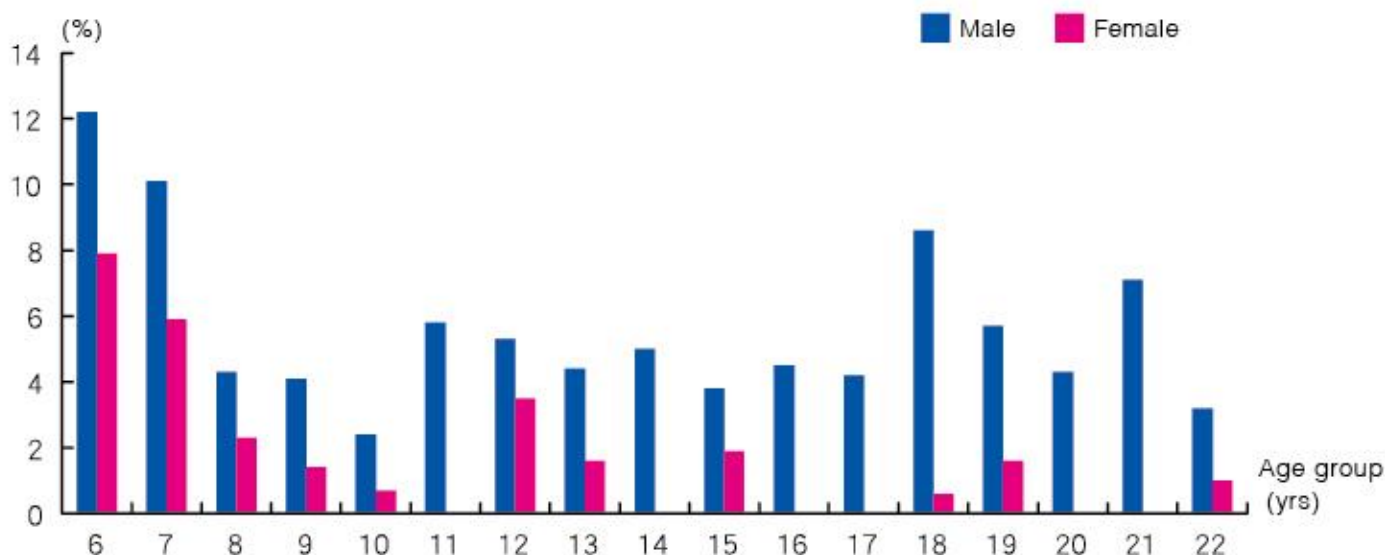
Figure 2-2-1-63 Proportion of abnormal color vision in students

(II) Comparison of 2015 and 2010 Results on the Physical Fitness Study of Macao Children and Adolescents (Students)

1. Comparison of Basic Information of the Subjects

5,235 and 5,130 subjects were drawn randomly in the 2015 and 2010 physical fitness study, respectively. The parishes in the two studies were consistent.

The 2010 and 2015 birthplace results were consistent, both showed that the birthplace order of university, secondary and primary school students were Macao, Mainland China, Hong Kong and other countries (regions). Students born in Hong Kong and Mainland China increased whereas those born in Macao decreased, and no student was born in Portugal (Table 2-2-2-1).

Table 2-2-2-1 Comparison of birthplaces of students (%)

Gender	Birthplace	Year	6~12 years (primary school)	13~18 years (secondary school)	19~22 years (university)	Total
M	Mainland China	2010	12.2	11.4	20.8	**13.1**
		2015	10.6	19.7	11.2	**14.3**
	Macao	2010	82.9	85.5	74.5	**82.7**
		2015	83.9	75.9	85.6	**81.0**
	Hong Kong	2010	2.3	1.9	4.5	**2.5**
		2015	3.2	2.4	2.1	**2.8**
	Portugal	2010	0.0	0.0	0.0	**0.0**
		2015	0.0	0.1	0.0	**0.0**
	Others	2010	2.6	1.2	0.3	**1.7**
		2015	2.2	1.9	1.1	**1.9**
F	Mainland China	2010	11.4	13.5	25.5	**14.6**
		2015	13.0	24.6	21.7	**19.0**
	Macao	2010	84.7	84.3	71.9	**82.4**
		2015	81.0	72.0	76.1	**76.7**
	Hong Kong	2010	2.5	1.5	2.6	**2.1**
		2015	3.4	2.0	1.8	**2.6**
	Others	2010	1.4	0.7	0.0	**0.9**
		2015	2.3	1.9	0.9	**1.9**

2. Comparison of Lifestyle

In this study, lifestyle information of the children and adolescents (students aged 6~22) which was examined comprised living habits, physical education at school, extracurricular physical exercise and occurrence of diseases. Comparison of results in 2010 and 2015 studies was as follows:

(1) Living Habits

For living habits of students, information regarding the following 7 aspects was examined: daily accumulated time spent commuting to and from school and major transportation means, average daily accumulated time spent on outdoor activities after school, average accumulated time spent on daily homework, average daily accumulated time of watching TV, video and playing video games, average daily accumulated sleeping hours (including naps) and participation in extracurricular activities (hobby classes).

Students spending less than 30 minutes daily commuting to and from school accounted for the highest proportion in 2015. The proportion of students spending more than 30 minutes daily commuting to and from school increased considerably with advancing grade level. Results of two studies were basically consistent except for the female university students. The proportion of male university students who spent 1~2 hours commuting daily in 2015 saw an increase of 5.5% compared with that in 2010, and the proportion of spending more than 2 hours increased by 2.4%. The proportion of female university students spending 2 hours or more increased by 2.9% (Tables 2-2-2-2 and 2-2-2-3). No significant difference was found in the transportation means of students.

Table 2-2-2-2 Comparison of commuting hours in male students (%)

School age group	Year	Less than 30 minutes	30 minutes~1 hour	1~2 hours	2 hours or more
Primary school	2015	71.2	21.8	5.7	1.3
	2010	73.2	22.2	4.1	0.5
Secondary school	2015	62.2	28.4	8.9	0.5
	2010	62.5	29.2	7.6	0.7
University	2015	46.1	35.7	15.5	2.7
	2010	51.1	38.4	10.0	0.3

Table 2-2-2-3 Comparison of commuting hours in female students (%)

School age group	Year	Less than 30 minutes	30 minutes~1 hour	1~2 hours	2 hours or more
Primary school	2015	72.0	22.8	4.2	1.0
	2010	72.7	23.1	3.7	0.5
Secondary school	2015	61.6	30.1	7.6	0.7
	2010	59.3	31.6	8.5	0.6
University	2015	37.0	42.5	16.9	3.6
	2010	44.3	37.6	17.4	0.7

Students spending less than 30 minutes daily on outdoor activities after school accounted for the highest proportion in both 2010 and 2015, and there was significant difference among university students between 2010 and 2015 (P < 0.01), as revealed by the fact that the proportion of students spending less than 30 minutes in 2015 decreased, whereas the proportion of students spending 30 minutes to 1 hour, 1~2 hours and 2 hours or more increased in varying degrees (Table 2-2-2-4).

Table 2-2-2-4 Comparison of daily hours spent on outdoor activities in university students (%)

Time spent on outdoor activities	Year	Proportion (%)
Less than 30 minutes	2015	47.3
	2010	59.1
30 minutes~1 hour	2015	29.2
	2010	23.3
1~2 hours	2015	14.1
	2010	11.2
2 hours or more	2015	9.5
	2010	6.4

The proportion of students spending 30 minutes~1 hour daily on homework accounted for the highest proportion. Significant difference was seen on time spent on doing homework among secondary students between 2010 and 2015 ($P < 0.05$), as revealed by the fact that the proportion of male students spending 2~3 hours in 2015 decreased by 4.3% compared with that in 2010 and the proportion of females spending 2 hours or more in 2015 increased by 4.6% (Table 2-2-2-5).

Table 2-2-2-5 Comparison of time spent on homework in secondary school students (%)

Year	Time spent on homework	Male students	Female students
2015	Less than 30 minutes	23.1	15.8
	30 minutes~1 hour	32.5	22.1
	1~2 hours	28.8	28.5
	2~3 hours	9.2	19.0
	3 hours or more	6.4	14.6
2010	Less than 30 minutes	21.5	12.4
	30 minutes~1 hour	32.1	26.6
	1~2 hours	24.7	32.0
	2~3 hours	13.5	16.9
	3 hours or more	8.2	12.1

Significant difference was seen in the average accumulated time spending on watching TV, video and playing video games per day of secondary school students between 2010 and 2015($P < 0.05$). By contrast, students spending 2 hours or more on electronic products decreased, whereas those spending less than 2 hours increased. Specifically, the proportion of students who spent less than 1 hour in entertainment was apparently higher, the proportion among males increased from 16.6% in 2010 to 22.9% in 2015, while the proportion among females increased from 16.6% to 23.7% (Table 2-2-2-6).

Table 2-2-2-6 Comparison of time spent on watching TV, video and playing video games in students (%)

Year	Playing time	Male students	Female students
2015	Less than 30 minutes	6.2	6.2
	30 minutes~1 hour	16.7	17.5
	1~2 hours	32.8	33.4
	2~3 hours	18.8	20.4
	3 hours or more	25.4	22.4
2010	Less than 30 minutes	3.6	2.8
	30 minutes~1 hour	13	13.8
	1~2 hours	26	29.6
	2~3 hours	26	26.9
	3 hours or more	32	26.9

Comparison of the average daily sleeping hours (including naps) of students showed that significant difference was seen in the secondary school students between 2010 and 2015 (P < 0.05). Data analysis showed that the proportion of students who had less than 8 hours of sleep increased significantly from 66.9% in 2010 to 71.2% in 2015 (Table 2-2-2-7).

Table 2-2-2-7 Comparison of sleeping hours in students (%)

School age group	Year	Sleeping hours	Proportion
Primary school	2015	Less than 8 hours	19.9
		8~10 hours	77.5
		10 hours or more	2.6
	2010	Less than 8 hours	19.2
		8~10 hours	77.7
		10 hours or more	3.1
Secondary school	2015	Less than 8 hours	71.2
		8~10 hours	27.4
		10 hours or more	1.4
	2010	Less than 8 hours	66.9
		8~10 hours	31.9
		10 hours or more	1.2
University	2015	Less than 8 hours	76.8
		8~10 hours	23.2
		10 hours or more	0.0
	2010	Less than 8 hours	78.4
		8~10 hours	20.9
		10 hours or more	0.6

(2) Physical Education at School

Information regarding physical education (PE) class at school including the weekly frequency of PE class attendance and self-perception of exercise intensity of each PE class was examined.

Comparison of weekly PE class attendance of students in the two studies showed that there was significant difference in the primary school sector. The proportion of primary school students who had 2 PE classes per week at school increased from 50.5% in 2010 to 71.9% in 2015, and those who had 1 PE class decreased from 47.9% in 2010 to 26.8% in 2015. It was worth noting that among students aged 19~22, the proportion of students who did not attend PE classes increased from 59.5% in 2010 to 66.0% in 2015.

The Proportion of students who were able to reach low exercise intensity during PE classes remained unchanged, and those who reached high exercise intensity increased from 14.9% in 2010 to 18.1% in 2015. Significant difference was found in both primary and secondary schools between two studies ($P < 0.05$) (Table 2-2-2-8).

Table 2-2-2-8 Comparison of exercise intensity in primary and secondary school students during PE classes (%)

School age group	Year	Exercise intensity	Proportion
Primary school	2015	Low intensity	23.1
		Moderate intensity	58.1
		High intensity	18.8
	2010	Low intensity	23.1
		Moderate intensity	60.7
		High intensity	16.1
Secondary school	2015	Low intensity	18.3
		Moderate intensity	63.9
		High intensity	17.8
	2010	Low intensity	21.0
		Moderate intensity	65.4
		High intensity	13.7

(3) Extracurricular Physical Exercise

In this study, four aspects on students' extracurricular physical exercise were examined, which comprised weekly frequency, average duration, intensity and main types of physical exercise.

The results showed that there was significant difference in the frequency of extracurricular physical exercise between two studies. The proportion of students who never participated in extracurricular physical exercise decreased from 35.3% in 2010 to 27.9% in 2015, and that of students participating in extracurricular physical exercise 3 or more times a week increased from 13.1% to 17.4%, with statistically significant difference ($P<0.01$). The proportion of students with self-perception of high exercise intensity increased significantly from 26.1% in 2010 to 30.7% in 2015. However, the proportion of students who exercised for less than 30 minutes declined from 19.5% in 2010 to 16.5% in 2015, and those for 30 minutes to 1 hour increased from 40.8% in 2010 to 41.8% in 2015, those exercised for more than 1 hour also saw a certain increase, indicating that the scientific concept of time on exercise was better understood.

According to information on the extracurricular physical exercise, subjects who exercised 3 or more times per week, each time for longer than 30 minutes with moderate exercise intensity were defined as "frequent exerciser". For those who exercised but could not achieve all three criteria mentioned above at the same time were defined as "occasional exerciser". Those who did not meet any of the criteria were defined as "non-exerciser". Significant difference was seen in the results between two studies. The proportion of frequent exercisers among students increased from 10.5% in 2010 to 14.5% in 2015; and the proportion of non-exercisers decreased from 35.3% to 27.9%.

(4) Occurrence of Diseases

Among student subjects, no significant difference was found in the proportion of students diagnosed by the hospital to have certain diseases in the past 5 years in primary and secondary schools in the two studies. However, significant difference between two studies was found in the proportion of university students, which decreased from 13.1% in 2010 to 9.4% in 2015 ($P < 0.01$). The types of diseases occurring among subjects were basically consistent in 2010 and 2015.

3. Comparison of Anthropometric Measurements

(1) Length Indicators

Comparison of the 2010 and 2015 data in length indicators including height and sitting height showed that the average height, sitting height and foot length all increased with advancing age; however, with no significant difference between 2010 and 2015. Height of students in all age groups varied little in 2015 compared with that in 2010. Significant difference was found in the aged 22 groups only (males: $P < 0.01$, females: $P < 0.05$) (Table 2-2-2-9).

Results of the two studies indicated that no significant difference was found in sitting height between 2010 and 2015. The difference in average sitting height between male and female students in all age groups was below 0.1, except in the 13, 16 and 22 year age groups of males, as well as the 11, 13 and 22 year age groups of females. However, significant difference was seen in the 15~17, 19 and 21 year age groups of male students, while only the female students aged 13 differed significantly ($P < 0.05$). Little change was found in other age groups (Table2-2-2-10).

In 2015, foot length of female students was significantly longer than that in 2010 in the 11, 14, 16 and 18~22 year age groups ($P < 0.05$), with the difference ranging from 0.2~0.5cm. Foot length of male students in all ages changed little between two studies. Foot length of male students aged 18 in 2015 decreased by 0.3cm compared with that in 2010, with significant difference ($P < 0.05$) (Table 2-2-2-11).

Length indicators including height, sitting height and foot length remained fairly stable between two studies, which showed that physical development of Macao students showed a stable trend during the past five years.

Table 2-2-2-9 Comparison of average height in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	119.6	120.1	0.5	119.3	117.6	-1.7
7 years	124.7	125.0	0.3	123.5	123.9	0.4
8 years	130.9	131.1	0.2	129.9	129.8	-0.1
9 years	135.7	136.6	0.9	136.6	135.9	-0.7
10 years	140.2	142.1	1.9	142.9	143.1	0.2
11 years	146.8	147.4	0.6	148.8	150.9	2.1
12 years	154.9	156.3	1.4	153.8	154.1	0.3
13 years	161.5	162.8	1.3	156.3	157.1	0.8
14 years	166.0	167.9	1.9	157.8	159.1	1.3
15 years	168.8	169.9	1.1	159.2	159.4	0.2
16 years	170.5	171.3	0.8	159.4	159.9	0.5
17 years	171.9	172.3	0.4	159.7	159.2	-0.5
18 years	172.0	171.1	-0.9	158.9	160.4	1.5
19 years	171.2	172.5	1.3	158.9	159.4	0.5
20 years	172.1	172.0	-0.1	159.1	160.1	1.0
21 years	172.5	171.7	-0.8	159.2	160.3	1.1
22 years	172.2	172.3	0.1**	157.8	159.6	1.8*

Note: difference equals to data in 2015 minus data in 2010, and * means $p<0.05$, ** means $p<0.01$, which apply to subsequent tables.

Table 2-2-2-10 Comparison of average sitting height in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	65.6	66.1	0.5	65.2	64.3	-0.9
7 years	67.9	68.0	0.1	66.9	67.2	0.3
8 years	70.7	70.6	-0.1	69.5	69.6	0.1
9 years	72.1	72.6	0.5	72.7	72.0	-0.7
10 years	73.9	74.7	0.8	75.5	75.6	0.1
11 years	77.0	77.0	0.0	78.7	79.9	1.2
12 years	80.7	81.2	0.5	81.6	81.6	0.0
13 years	84.2	85.3	1.1	82.9	83.9	1.0*
14 years	87.2	88.0	0.8	84.1	84.9	0.8
15 years	89.2	89.6	0.4*	85.0	85.5	0.5
16 years	90.1	91.1	1.0*	85.4	86.3	0.9
17 years	91.3	91.4	0.1*	85.6	86.1	0.5
18 years	91.2	91.1	-0.1	85.7	86.4	0.7
19 years	91.5	91.6	0.1*	85.6	85.8	0.2
20 years	92.2	91.9	-0.3	85.8	86.6	0.8
21 years	91.7	91.1	-0.6*	86.0	86.5	0.5
22 years	92.1	91.1	-1.0	85.2	86.3	1.1

Table 2-2-2-11 Comparison of average foot length in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	18.7	18.5	-0.2	18.2	18.1	-0.1
7 years	19.4	19.3	-0.1	18.9	19.1	0.2
8 years	20.3	20.3	0.0	19.9	20.0	0.1
9 years	21.1	21.1	0.0	20.8	20.8	0.0
10 years	21.8	22.1	0.3	21.6	21.7	0.1
11 years	22.8	22.8	0.0	22.2	22.6	0.4*
12 years	23.9	24.0	0.1	22.5	22.8	0.3
13 years	24.6	24.6	0.0	22.7	22.8	0.1
14 years	25.1	25.2	0.1	22.7	23.1	0.4*
15 years	25.2	25.2	0.0	22.9	23.0	0.1
16 years	25.3	25.2	-0.1	22.8	23.1	0.3*
17 years	25.4	25.4	0.0	22.9	22.9	0.0
18 years	25.5	25.2	-0.3*	22.8	23.1	0.3*
19 years	25.2	25.3	0.1	22.6	22.8	0.2*
20 years	25.3	25.3	0.0	22.5	23.0	0.5*
21 years	25.3	25.5	0.2	22.6	23.1	0.5*
22 years	25.3	25.5	0.2	22.5	22.9	0.4*

(2) Weight and BMI

Comparison of the 2010 and 2015 data found that there was no obvious change in weight and BMI of students in most of the age groups. However, the average weight and BMI tended to increase. In 2015, the average weight of male students in the aged 10, 13, 15~17 and 19 groups was higher than that in 2010. The increase ranging from 2.4~4.9kg differed significantly (P < 0.05). As for female students, the average weight in the 11, 13, 14, 16, 18 and 21~22 year age groups increased in 2015 compared with that in 2010. The increase ranging from 2.2~3.1kg also differed significantly (P < 0.05) (Table 2-2-2-12).

The average BMI of male students in the 6, 8 and 22 year age groups and female students aged 6 was lower in 2015 than that in 2010, and the average BMI in other age groups was higher than 2010, of which significant difference was seen in males of the 10, 13, 15~16 and 19 year age groups as well as in females of the 11, 16 and 18 year age groups (P<0.05) (Table 2-2-2-13).

According to the weight-for-height standards, the obesity rate of male students in 2015 was higher than that in 2010, with no statistically significant difference observed in all age groups between two studies. The obesity rate of female students in 2015 was also higher than that in 2010, with no statistically significant difference observed in all age groups (Table 2-2-2-14).

Table 2-2-2-12 Comparison of average weight in students (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	22.9	23.0	0.1	22.0	21.1	-0.9
7 years	25.2	25.4	0.2	24.4	24.7	0.3
8 years	30.2	29.5	-0.7	27.9	28.2	0.3
9 years	32.0	33.5	1.5	32.0	31.9	-0.1
10 years	35.2	38.2	3.0*	36.6	36.7	0.1
11 years	40.5	42.3	1.8	40.3	43.4	3.1*
12 years	46.6	48.4	1.8	45.6	45.8	0.2
13 years	51.2	54.4	3.2*	47.9	50.5	2.6*
14 years	55.3	57.3	2.0	50.2	52.5	2.3*
15 years	56.8	61.1	4.3*	52.1	53.7	1.6
16 years	59.1	64.0	4.9*	51.8	54.4	2.6*
17 years	60.8	63.2	2.4*	52.6	53.4	0.8
18 years	62.0	62.3	0.3	51.6	54.3	2.7*
19 years	60.9	65.2	4.3*	51.5	53.3	1.8
20 years	63.3	64.9	1.6	51.8	53.3	1.5
21 years	64.7	66.9	2.2	50.8	53.5	2.7*
22 years	66.3	64.3	-2.0	50.2	52.4	2.2*

Table 2-2-2-13 Comparison of average BMI in students

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	15.9	15.8	-0.1	15.3	15.2	-0.1
7 years	16.1	16.1	0.0	15.9	16.0	0.1
8 years	17.4	17.0	-0.4	16.4	16.7	0.3
9 years	17.2	17.8	0.6	17.0	17.1	0.1
10 years	17.7	18.7	1.0*	17.7	17.8	0.1
11 years	18.6	19.2	0.6	18.1	18.9	0.8*
12 years	19.2	19.7	0.5	19.2	19.2	0.0
13 years	19.5	20.4	0.9*	19.6	20.4	0.8
14 years	20.0	20.2	0.2	20.1	20.7	0.6
15 years	19.9	21.1	1.2*	20.6	21.1	0.5
16 years	20.3	21.8	1.5*	20.4	21.3	0.9*
17 years	20.5	21.2	0.7	20.6	21.1	0.5
18 years	20.9	21.2	0.3	20.4	21.1	0.7*
19 years	20.8	21.9	1.1*	20.4	21.0	0.6
20 years	21.3	21.9	0.6	20.5	20.8	0.3
21 years	21.8	22.7	0.9	20.1	20.8	0.7
22 years	22.3	21.6	-0.7	20.1	20.5	0.4

Table 2-2-2-14 Comparison of obesity rate in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	17.3	20.0	2.7	11.7	13.9	2.2
7 years	12.4	16.4	4.0	14.5	16.6	2.1
8 years	25.0	29.3	4.3	17.8	21.7	3.9
9 years	19.3	23.2	3.9	16.1	16.9	0.8
10 years	22.0	26.2	4.2	17.7	20.5	2.8
11 years	14.8	16.7	1.9	14.6	17.5	2.9
12 years	18.4	21.8	3.4	11.4	15.2	3.8
13 years	10.8	13.4	2.6	11.9	14.6	2.7
14 years	14.2	17.9	3.7	17.0	20.3	3.3
15 years	11.7	14.9	3.2	12.5	14.2	1.7
16 years	11.1	14.6	3.5	10.7	13.3	2.6
17 years	11.3	15.4	4.1	7.4	10.6	3.2
18 years	14.7	17.7	3.0	5.9	9.2	3.3
19 years	13.7	16.9	3.2	4.7	9.8	5.1
20 years	19.8	24.6	4.8	8.1	11.5	3.4
21 years	23.2	26.7	3.5	3.0	6.1	3.1
22 years	33.3	37.4	4.1	7.5	9.9	2.4

(3) Circumference Indicators

It was found that the chest circumference of male students in 2015 was less than that in 2010 in the 6~8, 14, 18, 20 and 22 year age groups, but greater than that in 2010 in other age groups, of which significant difference was found in the 10, 15~16, 19 and 22 year age groups (P<0.05). The chest circumference of female students in 2015 was less than that in 2010 in the 6 and 8~10 year age groups, but greater in other age groups, of which significant difference was found in the 11, 13 and 20~22 year age groups (P < 0.05) (Table 2-2-2-15).

Table 2-2-2-15 Comparison of average chest circumference in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	58.4	57.8	-0.6	56.2	55.3	-0.9
7 years	59.8	59.5	-0.3	58.4	58.5	0.1
8 years	64.4	63.0	-1.4	61.5	61.1	-0.4
9 years	65.3	66.4	1.1	64.8	64.3	-0.5
10 years	67.4	69.8	2.4*	68.4	68.0	-0.4
11 years	71.0	72.5	1.5	70.9	73.0	2.1*
12 years	74.9	76.0	1.1	74.4	75.1	0.7
13 years	77.7	79.3	1.6	75.8	78.2	2.4*
14 years	80.9	80.8	-0.1	78.1	79.2	1.1
15 years	81.6	83.8	2.2*	79.4	80.2	0.8
16 years	83.0	85.5	2.5*	79.5	80.4	0.9
17 years	84.9	85.4	0.5	79.9	80.1	0.2
18 years	86.2	85.0	-1.2	79.8	80.8	1.0
19 years	85.8	87.9	2.1*	80.6	81.3	0.7
20 years	87.8	87.3	-0.5	80.2	81.8	1.6*
21 years	88.2	89.0	0.8	80.0	82.6	2.6*
22 years	89.6	86.9	-2.7*	79.8	81.1	1.3*

According to the comparison of two studies, waist circumference of male students in 2015 tended to increase except the age groups of 6~8, 18 and 22, of which significant difference was found in the 15 and 22 year age groups (P < 0.05), whereas waist circumference of most female students decreased slightly in 2015, with no significant difference (Table 2-2-2-16).

Table 2-2-2-16 Comparison of average waist circumference in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	54.3	54.0	-0.3	52.4	51.2	-1.2
7 years	56.1	55.8	-0.3	54.3	54.6	0.3
8 years	60.7	59.1	-1.6	56.5	56.7	0.2
9 years	61.8	62.7	0.9	59.7	59.2	-0.5
10 years	64.4	66.5	2.1	62.3	61.7	-0.6
11 years	66.8	67.9	1.1	63.2	64.8	1.6
12 years	69.4	69.9	0.5	66.3	66.1	-0.2
13 years	70.0	71.8	1.8	66.8	68.4	1.6
14 years	71.9	71.9	0.0	68.7	68.8	0.1
15 years	71.1	74.4	3.3*	69.6	69.2	-0.4
16 years	72.9	75.7	2.8	70.1	69.3	-0.8
17 years	73.8	74.2	0.4	70.1	68.4	-1.7
18 years	75.1	74.3	-0.8	69.7	68.9	-0.8
19 years	74.1	77.3	3.2	69.6	69.2	-0.4
20 years	76.3	76.4	0.1	70.2	69.6	-0.6
21 years	77.0	78.3	1.3	69.9	70.5	0.6
22 years	80.0	75.8	-4.2*	69.9	69.1	-0.8

Hip circumference of students remained stable in two studies. In 2015, the hip circumference of males in the 8, 17 and 18 year age groups decreased by 2.5cm, 1.9cm and 2.8cm, respectively, which differed significantly (P < 0.05); whereas, the hip circumference of females in the age groups of 11, 16, 18, 19 and 22 increased by 2.1cm, 1.5cm, 2.3cm, 2.2cm and 2.6cm, respectively, which also differed significantly (P < 0.05) (Table 2-2-2-17).

Table 2-2-2-17 Comparison of average hip circumference in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	61.2	61.2	0	61.5	60.8	-0.7
7 years	64.1	63.4	-0.7	63.9	65.1	1.2
8 years	69.7	67.2	-2.5*	66.8	67.7	0.9
9 years	71.2	71.0	-0.2	70.8	70.9	0.1
10 years	74.0	74.9	0.9	75.0	74.9	-0.1
11 years	77.6	77.0	-0.6	78.4	80.5	2.1*
12 years	81.8	80.9	-0.9	83.2	83.6	0.4
13 years	84.0	84.3	0.3	85.4	86.9	1.5
14 years	87.1	86.0	-1.1	87.3	88.6	1.3
15 years	87.7	88.4	0.7	89.2	89.6	0.4
16 years	89.3	90.1	0.8	89.3	90.8	1.5*
17 years	91.1	89.2	-1.9*	90.0	89.9	-0.1
18 years	91.2	88.4	-2.8*	89.1	91.4	2.3*
19 years	90.0	90.5	0.5	89.0	91.2	2.2*
20 years	90.4	90.8	0.4	89.8	91.0	1.2
21 years	91.3	92.2	0.9	89.7	91.3	1.6
22 years	92.8	91.2	-1.6	88.5	91.1	2.6*

The WHR of male students in 2015 increased whereas that of female students decreased compared with that in 2010. The WHR of males was higher than that in 2010 in the 10~13, 15~17 and 19 year age groups, but lower than that in 2010 in the age group of 22, which all differed significantly (P<0.05). The WHR of female students in 2015 was lower than that in 2010 in the 16~20 and 22 year age groups, with significant difference (P<0.05) (Table 2-2-2-18).

Table 2-2-2-18 Comparison of average WHR in students

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	0.888	0.882	-0.006	0.853	0.843	-0.010
7 years	0.874	0.878	0.004	0.848	0.838	-0.010
8 years	0.868	0.876	0.008	0.844	0.835	-0.009
9 years	0.866	0.880	0.014	0.841	0.834	-0.007
10 years	0.868	0.884	0.016*	0.828	0.822	-0.006
11 years	0.858	0.879	0.021*	0.805	0.804	-0.001
12 years	0.845	0.862	0.017*	0.795	0.791	-0.004
13 years	0.832	0.848	0.016*	0.780	0.785	0.005
14 years	0.822	0.834	0.012	0.786	0.775	-0.011
15 years	0.809	0.837	0.028*	0.779	0.771	-0.008
16 years	0.814	0.837	0.023*	0.784	0.763	-0.021*
17 years	0.811	0.830	0.019*	0.777	0.759	-0.018*
18 years	0.825	0.840	0.015	0.781	0.753	-0.028*
19 years	0.821	0.853	0.032*	0.782	0.758	-0.024*
20 years	0.843	0.841	-0.002	0.781	0.764	-0.017*
21 years	0.843	0.848	0.005	0.780	0.772	-0.008
22 years	0.862	0.830	-0.032*	0.789	0.757	-0.032*

The circumference indicators varied little in 2010 and 2015 studies, which showed that the growth in circumference indicators of Macao children and adolescents remained stable in the past five years. However, the WHR differed significantly in male students after age 9 and female students after age 15 ($P < 0.05$). The WHR of male students tended to increase notably whereas that of females decreased. WHR is one of the key indicators used to reflect central obesity. The male students aged 10 onwards having increasingly large WHR showed a greater tendency to central obesity, which should draw immediate attention from all parties.

(4) Width Indicators

Analysis of shoulder and pelvis width in 2010 and 2015 showed that the shoulder width of male students in all age groups in 2015 was higher than that in 2010 (except in the age group of 22), of which significant difference between the two studies was found except for the 18, 20 and 22 year age groups. For female students, shoulder width in 2015 was lower than that in 2010, of which significant difference was found in the 6~10, 12 and 17~18 year age group ($P<0.05$) (Table 2-2-2-19).

Table 2-2-2-19 Comparison of average shoulder width in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	25.7	26.3	0.6*	25.7	24.7	-1.0*
7 years	26.4	27.2	0.8*	26.7	26.3	-0.4*
8 years	27.6	28.5	0.9*	28.2	27.3	-0.9*
9 years	28.4	29.7	1.3*	29.5	28.7	-0.8*
10 years	29.6	30.7	1.1*	30.5	29.4	-1.1*
11 years	31.1	31.9	0.8*	31.7	31.4	-0.3
12 years	33.0	33.7	0.7*	33.2	32.6	-0.6*
13 years	34.5	35.7	1.2*	33.8	33.8	0.0
14 years	35.7	36.8	1.1*	34.3	34.2	-0.1
15 years	36.6	38.0	1.4*	34.5	34.4	-0.1
16 years	37.1	38.5	1.4*	34.7	34.6	-0.1
17 years	37.5	38.7	1.2*	34.8	33.9	-0.9*
18 years	38.2	38.6	0.4	34.5	34.0	-0.5*
19 years	37.9	39.2	1.3*	34.5	34.1	-0.4
20 years	38.8	39.3	0.5	34.4	34.3	-0.1
21 years	37.9	38.9	1.0*	34.8	34.5	-0.3
22 years	38.8	38.4	-0.4	34.4	34.3	-0.1

The changing trend was similar in shoulder and pelvis width. Shoulder and pelvis width of male students in 2015 increased compared with 2010 data, with significant difference between two studies (except in the 11 and 17 year age groups); pelvis width of female students in 2015 decreased mildly in the 6~9, 12~13, 17 and 19~20 year age groups whereas increased slightly in other age groups, of which significant difference was found in the 6, 11, 14 and 18 year age groups (P<0.05) (Table 2-2-2-20).

Table 2-2-2-20 Comparison of average pelvis width in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	18.5	19.0	0.5*	18.7	18.1	-0.6*
7 years	19.0	19.9	0.9*	19.3	19.2	-0.1
8 years	20.2	20.9	0.7*	20.3	20.2	-0.1
9 years	20.6	21.6	1.0*	21.5	21.2	-0.3
10 years	21.4	22.4	1.0*	22.2	22.3	0.1
11 years	22.6	23.0	0.4	23.0	24.0	1.0*
12 years	23.9	24.5	0.6*	24.6	24.5	-0.1
13 years	24.7	25.3	0.6*	25.4	25.3	-0.1
14 years	25.5	26.2	0.7*	25.7	26.2	0.5*
15 years	25.8	27.1	1.3*	26.1	26.4	0.3
16 years	26.2	27.4	1.2*	26.3	26.3	0.0
17 years	26.3	27.2	0.9	26.5	26.2	-0.3
18 years	26.5	27.1	0.6*	26.0	26.4	0.4*
19 years	26.4	27.5	1.1*	26.2	26.1	-0.1
20 years	26.3	27.2	0.9*	26.2	25.9	-0.3
21 years	26.2	26.8	0.6*	26.5	26.7	0.2
22 years	26.7	27.3	0.6*	26.3	26.7	0.4

Analysis of width indicators showed that shoulder and pelvis width of majority of male students at all ages increased slightly in 2015; on the contrary, those of female students decreased.

(5) Body Composition

Comparison of the upper arm skinfold thickness in two studies showed that the upper arm skinfold thickness of male students in 2015 was greater than that in 2010, of which significant difference was found in the 6~7, 9~10 and 12~21 year age groups (P<0.05). The upper arm skinfold thickness of males ranged from 1.5mm~4.6mm. The upper arm skinfold thickness of female students in 2015 changed little after age 12. The skinfold thickness of females in 2015 was notably higher than that in 2010 in the 7~9 and 11 year age groups, with the difference ranging from 2.0~2.9mm (P<0.05) (Table 2-2-2-21).

Table 2-2-2-21 Comparison of average upper arm skinfold thickness in students (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	8.1	9.6	1.5*	10.1	10.7	0.6
7 years	8.3	10.5	2.2*	11.0	13.1	2.1*
8 years	11.1	12.2	1.1	12.4	15.0	2.6*
9 years	10.7	13.4	2.7*	13.9	15.9	2.0*
10 years	12.2	14.7	2.5*	14.5	16.1	1.6
11 years	13.2	14.4	1.2	14.0	16.9	2.9*
12 years	13.1	14.6	1.5*	16.0	16.6	0.6
13 years	10.2	13.3	3.1*	17.9	18.9	1.0
14 years	9.2	12.0	2.8*	17.8	20.7	2.9
15 years	8.2	12.0	3.8*	20.8	20.6	-0.2
16 years	8.3	12.0	3.7*	20.6	19.9	-0.7
17 years	9.7	11.5	1.8*	20.2	19.5	-0.7
18 years	8.9	11.4	2.5*	19.3	20.0	0.7
19 years	8.8	11.9	3.1*	18.4	19.6	1.2
20 years	9.7	12.6	2.9*	19.0	19.1	0.1
21 years	8.5	13.1	4.6*	18.8	19.6	0.8
22 years	10.5	11.6	1.1	18.5	19.8	1.3

Subscapular skinfold thickness of male and female students was greater in 2015 than that in 2010 except the aged 22 male students, of which significant difference was found in the 7, 9~11 and 13~21 year age groups of males and the 7~8, 10~11, 13~15 and 17~22 year age groups of females (P<0.05) (Table 2-2-2-22).

Table 2-2-2-22 Comparison of average subscapular skinfold thickness in students (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	5.1	6.1	1.0	5.9	6.1	0.2
7 years	4.7	7.3	2.6*	5.9	8.3	2.4*
8 years	8.0	9.0	1.0	7.2	9.8	2.6*
9 years	7.7	10.9	3.2*	9.6	11.0	1.4
10 years	9.0	12.4	3.4*	9.9	12.7	2.8*
11 years	10.3	12.8	2.5*	10.4	13.5	3.1*
12 years	11.8	13.0	1.2	11.8	13.1	1.3
13 years	9.9	12.6	2.7*	12.5	16.0	3.5*
14 years	9.7	12.2	2.5*	13.1	17.5	4.4*
15 years	8.5	12.7	4.2*	15.5	17.3	1.8*
16 years	9.3	13.1	3.8*	15.5	16.7	1.2
17 years	10.8	12.9	2.1*	14.7	16.5	1.8*
18 years	10.7	13.4	2.7*	14.1	16.9	2.8*
19 years	11.3	14.2	2.9*	13.8	16.1	2.3*
20 years	12.1	14.9	2.8*	13.1	15.9	2.8*
21 years	11.7	14.9	3.2*	13.8	16.9	3.1*
22 years	14.5	14.0	-0.5	13.6	15.7	2.1*

Abdominal skinfold thickness of students in 2015 was greater than that in 2010 in all age groups except the males aged 22 and females aged 6, of which significant difference was found in the 7, 9~10, 13~16 18~19 and 21 year age groups of males and the 7~11, 13~15, 18~19 and 21 age groups of females (P<0.05) (Table 2-2-2-23).

Table 2-2-2-23 Comparison of average abdominal skinfold thickness in students (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	6.7	7.4	0.7	8.6	8.0	-0.6
7 years	6.5	9.3	2.8*	9.1	11.3	2.2*
8 years	11.1	12.0	0.9	10.9	13.7	2.8*
9 years	11.3	15.1	3.8*	13.5	16.0	2.5*
10 years	12.9	17.4	4.5*	15.6	18.1	2.5*
11 years	15.7	17.2	1.5	15.9	19.6	3.7*
12 years	17.4	17.6	0.2	18.5	19.8	1.3
13 years	13.6	17.5	3.9*	19.7	23.7	4.0*
14 years	12.8	16.1	3.3*	20.0	24.0	4.0*
15 years	11.1	17.0	5.9*	22.5	24.7	2.2*
16 years	11.9	16.7	4.8*	22.1	23.2	1.1
17 years	13.8	15.6	1.8	21.7	22.8	1.1
18 years	13.7	16.1	2.4*	20.6	23.1	2.5*
19 years	15.0	18.6	3.6*	20.3	23.5	3.2*
20 years	16.4	18.2	1.8	21.7	22.7	1.0
21 years	15.8	19.3	3.5*	21.2	23.4	2.2*
22 years	18.3	18.2	-0.1	20.9	22.3	1.4

In regards to body composition, skinfold thickness of students in 2015 increased in comparison of 2010 data, with similar increase recorded in students from primary school, secondary school and university. The obesity of Macao children and adolescents was worsening during the past five years.

Body fat percentage of male and female students in 2015 was higher than that in 2010, of which significant difference was found in the aged 15 male students (P < 0.01) and the 11, 13, 14 and 19 year age groups of female students (P < 0.05). Body fat percentage of males increased faster than that of females among age groups. Lean body mass of all age groups in 2015 varied slightly compared with that in 2010 (Tables 2-2-2-24 and 2-2-2-25).

Table 2-2-2-24 Comparison of average body fat percentage in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
9 years	17.8	20.7	2.9	22.9	24.9	2.0
10 years	19.3	22.5	3.2	23.6	26.0	2.4
11 years	20.3	22.6	2.3	23.3	27.0	3.7*
12 years	19.5	20.9	1.4	22.7	24.0	1.3
13 years	17.0	20.0	3.0	24.4	27.3	2.9*
14 years	16.3	19.0	2.7	24.7	29.6	4.9*
15 years	11.8	16.4	4.6**	27.5	28.5	1.0
16 years	12.2	16.7	4.5	27.4	27.7	0.3
17 years	14.0	16.2	2.2	26.6	27.3	0.7
18 years	13.4	16.5	3.1	25.5	27.8	2.3
19 years	13.9	16.6	2.7	22.4	24.3	1.9*
20 years	14.6	17.2	2.6	22.4	24.0	1.6
21 years	13.8	17.5	3.7	22.6	24.8	2.2
22 years	16.0	16.4	0.4	22.3	24.3	2.0

Table 2-2-2-25 Comparison of average lean body mass in students (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
9 years	26.1	26.0	-0.1	24.2	23.5	-0.7
10 years	28.1	28.9	0.8	27.5	26.5	-1.0
11 years	31.6	31.7	0.1	30.3	30.9	0.6
12 years	36.5	37.6	1.1	34.6	34.2	-0.4
13 years	41.9	42.7	0.8	35.6	36.0	0.4
14 years	45.8	45.7	-0.1	37.2	36.2	-1.0
15 years	49.6	49.8	0.2	37.2	37.8	0.6
16 years	51.3	52.4	1.1	37.1	38.9	1.8
17 years	51.8	52.3	0.5	38.0	38.2	0.2
18 years	53.2	51.5	-1.7	37.9	38.7	0.8
19 years	52.2	53.9	1.7	39.7	39.9	0.2
20 years	53.5	52.4	-1.1	39.8	39.8	0.0
21 years	55.5	54.7	-0.8	39.1	39.9	0.8
22 years	55.4	53.4	-2.0	38.6	39.4	0.8

4. Comparison of Physiological Function

Physiological function is reflected by resting pulse, blood pressure (systolic blood pressure and diastolic blood pressure) and vital capacity.

(1) Resting Pulse

Resting pulse is a basic indicator to reflect the functions of the circulatory system. In comparison of the resting pulse in 2015 with 2010, the resting pulse of male students in each age group remained fairly stable in 2015, of which significant difference was only found in the 10, 14 and 21 year age groups (P < 0.05); however, the resting pulse of female students was on the rising trend, of which significant difference was seen in the 7, 8, 10~11, 13 and 16~22 age groups, with the difference ranging from 0.6~6.3bpm (P < 0.05) (Table 2-2-2-26).

Table 2-2-2-26 Comparison of average resting pulse in students (bpm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	88.3	90.1	1.8	87.9	92.3	4.4
7 years	85.9	85.8	-0.1	86.9	89.2	2.3*
8 years	86.5	85.1	-1.4	86.4	87.0	0.6*
9 years	85.0	84.1	-0.9	85.0	87.6	2.6
10 years	83.0	86.3	3.3*	84.9	88.8	3.9*
11 years	82.7	83.9	1.2	84.2	88.4	4.2*
12 years	83.6	84.3	0.7	83.8	85.9	2.1
13 years	82.0	80.7	-1.3	81.8	86.9	5.1*
14 years	82.9	80.4	-2.5*	81.7	84.2	2.5
15 years	81.3	81.1	-0.2	83.6	83.5	-0.1
16 years	78.4	79.6	1.2	81.4	85.8	4.4*
17 years	79.1	78.5	-0.6	79.4	82.6	3.2*
18 years	79.4	79.8	0.4	78.8	85.1	6.3*
19 years	77.7	78.0	0.3	77.1	82.1	5.0*
20 years	75.2	76.9	1.7	77.7	83.4	5.7*
21 years	74.8	77.7	2.9*	76.4	80.3	3.9*
22 years	77.2	79.6	2.4	76.1	78.4	2.3*

(2) Blood Pressure

When the ventricle contracts, the blood pressure of artery rises and the highest value is called systolic blood pressure (SBP), which reflects mainly the quantity of blood pumped out by each pulse. When the ventricle relaxes, the blood pressure of artery descends and the lowest value is called diastolic blood pressure (DBP), which reflects mainly the outside resistance. The difference between SBP and DBP is called pressure difference, which reflects the elasticity of the artery wall.

Comparison of the blood pressure in 2010 and 2015 showed that the SBP of male students increased in the 6~7 and 14~21 year age groups, which differed significantly (P < 0.05), with the increase ranging from 2.4~13.2mmHg. The SBP of female students increased in the aged 6, 7 and 8 groups by 4.5mmHg, 4.6mmHg and 4.7mmHg, respectively, with significant difference (P < 0.05). The SBP of females decreased in the aged 10 and 12 groups by 3.8 mmHg and 3.4 mmHg, respectively, with significant difference (P < 0.05) (Table 2-2-2-27).

Table 2-2-2-27 Comparison of average SBP in students (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	92.2	97.0	4.8*	89.9	94.4	4.5*
7 years	94.8	100.8	6.0*	94.2	98.8	4.6*
8 years	100.7	102.7	2.0	96.3	101.0	4.7*
9 years	103.0	101.9	-1.1	102.3	100.9	-1.4
10 years	104.8	103.0	-1.8	104.4	100.6	-3.8*
11 years	105.9	105.4	-0.5	104.9	105.6	0.7
12 years	109.5	107.4	-2.1	107.9	104.5	-3.4*
13 years	113.5	114.0	0.5	110.0	110.1	0.1
14 years	115.4	117.8	2.4*	111.0	111.3	0.3*
15 years	116.0	120.8	4.8*	110.6	109.4	-1.2
16 years	118.1	125.3	7.2*	110.8	110.8	0
17 years	119.7	125.2	5.5*	111.4	109.9	-1.5
18 years	118.2	125.6	7.4*	110.5	111.7	1.2
19 years	117.7	126.5	8.8*	110.1	109.4	-0.7
20 years	118.3	126.5	8.2*	111.1	109.3	-1.8
21 years	118.9	132.1	13.2*	109.5	110.1	0.6
22 years	124.6	127.3	2.7	108.8	110.1	1.3

Significant difference was seen in the DBP of male students in the 6~8, 12~14, 17 and 22 age groups, as well as females in the 6~8 age groups (P<0.05) (Table 2-2-2-28).

Table 2-2-2-28 Comparison of average DBP in students (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	57.4	59.9	2.5*	57.3	59.9	2.6*
7 years	58.9	61.6	2.7*	58.8	62.1	3.3*
8 years	60.5	63.3	2.8*	58.6	63.9	5.3*
9 years	63.4	63.6	0.2	62.9	64.7	1.8
10 years	64.8	64.3	-0.5	64.0	64.3	0.3
11 years	64.9	64.2	-0.7	65.5	67.1	1.6
12 years	67.3	63.8	-3.5*	67.5	66.8	-0.7
13 years	68.8	65.7	-3.1*	68.7	67.4	-1.3
14 years	71.2	68.3	-2.9*	69.5	69.0	-0.5
15 years	70.7	70.6	-0.1	69.9	68.4	-1.5
16 years	72.0	71.9	-0.1	69.8	70.1	0.3
17 years	73.9	71.2	-2.7*	70.9	69.3	-1.6
18 years	73.2	72.9	-0.3	70.2	70.6	0.4
19 years	72.5	72.6	0.1	69.1	69.1	0.0
20 years	75.0	74.2	-0.8	70.1	69.7	-0.4
21 years	74.9	74.0	-0.9	69.1	68.5	-0.6
22 years	78.4	73.9	-4.5*	68.2	69.7	1.5

The changing trend was basically consistent in pressure difference and DBP of male students in the past five years. Pressure difference of male students was significantly higher in 2015 than 2010 in the 7 and 13~21 age groups, with the difference ranging from 3.4~13.7mmHg (P < 0.05). Pressure difference of female students in 2015 declined slightly in the 9, 10 and 12 age groups, which differed significantly (P < 0.05) (Table 2-2-2-29).

Table 2-2-2-29 Comparison of average pressure difference in students (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	34.8	37.2	2.4	32.6	34.9	2.3
7 years	35.9	39.3	3.4*	35.4	36.8	1.4
8 years	40.1	39.4	-0.7	37.7	37.1	-0.6
9 years	39.6	38.3	-1.3	39.4	36.1	-3.3*
10 years	40.0	38.9	-1.1	40.5	36.3	-4.2*
11 years	41.0	41.2	0.2	39.5	38.5	-1.0
12 years	42.2	43.5	1.3	40.4	37.8	-2.6*
13 years	44.7	48.3	3.6*	41.3	42.7	1.4
14 years	44.1	49.5	5.4*	41.4	42.3	0.9
15 years	45.3	50.2	4.9*	40.7	41.0	0.3
16 years	46.1	53.4	7.3*	40.9	40.8	-0.1
17 years	45.8	54.0	8.2*	40.4	40.6	0.2
18 years	45.0	52.8	7.8*	40.3	41.2	0.9
19 years	45.2	54.2	9.0*	41.0	40.3	-0.7
20 years	43.3	52.3	9.0*	41.0	39.7	-1.3
21 years	44.1	57.8	13.7*	40.5	41.6	1.1
22 years	46.2	53.4	7.2	40.6	40.3	-0.3

(3) Vital Capacity

Vital capacity refers to the maximum amount of air that can be exhaled after a maximum inhalation. This indicates the maximum working capacity of the respiratory system of the human body.

Comparison of the two studies showed that, vital capacity of male students in 2015 increased by 132.7ml in the aged 12 group, but decreased by 190.7ml in the aged 22 group, which both differed significantly (P < 0.05). Vital capacity of males fluctuated in other age groups without significant difference. As for female students, vital capacity in 2015 increased in the 11 and 16 year age groups by 124.1ml and 161.8ml, respectively and decreased by 98.0ml in the aged 9 group, which all differed significantly (P < 0.05). There was no statistically significant difference seen in other age groups (Table 2-2-2-30).

Table 2-2-2-30 Comparison of average vital capacity in students (ml)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	1068.7	1089.7	21.0	987.5	974.8	-12.7
7 years	1255.3	1227.4	-27.9	1179.0	1134.5	-44.5
8 years	1517.4	1528.1	10.7	1351.0	1351.1	0.1
9 years	1741.0	1721.7	-19.3	1623.5	1525.5	-98.0*
10 years	1924.8	1980.7	55.9	1830.2	1831.8	1.6
11 years	2162.8	2166.3	3.5	2080.8	2204.9	124.1*
12 years	2586.6	2719.3	132.7*	2311.4	2331.6	20.2
13 years	2969.9	3045.6	75.7	2448.4	2443.8	-4.6
14 years	3432.2	3329.8	-102.4	2624.7	2638.3	13.6
15 years	3660.0	3714.1	54.1	2669.6	2755.3	85.7
16 years	3793.1	3900.4	107.3	2635.5	2797.3	161.8*
17 years	4036.0	3972.5	-63.5	2843.6	2732.4	-111.2
18 years	3915.8	4007.0	91.2	2706.1	2768.9	62.8
19 years	3997.0	3968.2	-28.8	2713.2	2669.3	-43.9
20 years	4147.4	3963.9	-183.5	2751.7	2766.8	15.1
21 years	4170.9	3960.6	-210.3	2688.4	2779.2	90.8
22 years	4131.6	3940.9	-190.7*	2636.5	2741.1	104.6

Comparison of vital capacity/weight index in 2010 and 2015 showed that the index of students was lower in 2015 than 2010 in most of the age groups, of which significant difference was found in the 9, 14, 16~17 and 19~21 age groups for male students and in the 9, 13 and 17 age groups for female students (P<0.05) (Table 2-2-2-31). The vital capacity/weight index is the key indicator to reflect lung function of human body. Relevant data indicated that lung function of Macao children and adolescents tended to decline.

Table 2-2-2-31 Comparison of average vital capacity/weight in students (ml/kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	48.3	48.3	0.0	46.2	47.0	0.8
7 years	51.1	49.5	-1.6	48.9	47.1	-1.8
8 years	52.0	53.2	1.2	49.9	49.2	-0.7
9 years	56.1	53.0	-3.1*	52.4	49.1	-3.3*
10 years	56.6	53.8	-2.8	51.6	51.5	-0.1
11 years	55.4	53.0	-2.4	52.7	52.1	-0.6
12 years	57.7	57.8	0.1	51.7	52.0	0.3
13 years	59.2	57.5	-1.7	51.9	49.1	-2.8*
14 years	63.7	59.4	-4.3*	53.0	51.1	-1.9
15 years	65.4	62.5	-2.9	51.9	52.0	0.1*
16 years	65.5	62.3	-3.2*	51.5	52.2	0.7
17 years	67.4	64.1	-3.3*	54.8	52.3	-2.5*
18 years	64.3	65.4	1.1	53.1	51.6	-1.5
19 years	66.3	62.0	-4.3*	53.4	51.0	-2.4
20 years	66.9	62.5	-4.4*	53.9	52.6	-1.3
21 years	65.4	60.1	-5.3*	53.4	52.7	-0.7
22 years	63.1	62.1	-1.0	53.2	52.8	-0.4

5. Comparison of Physical Fitness

(1) Speed

50m run reflects the speed of students.

Through comparison of the 50m run results, it was found that the 50m run results of male students in 2015 remained stable, only a decrease of 0.4 second was found in the aged 8 group, which differed significantly (P < 0.01); the results of 50m run of female students in the 6, 7, 15, 17 and 18 year age groups decreased by 0.3~0.8 second which differed significantly, indicating that speed of female students was improved (P < 0.01). There was no significant difference found in other age groups (Table 2-2-2-32).

Table 2-2-2-32 Comparison of average time for 50m run in students (sec)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	12.6	12.2	-0.4	13.5	12.7	-0.8**
7 years	11.8	11.6	-0.2	12.5	11.9	-0.6**
8 years	11.2	10.8	-0.4**	11.6	11.5	-0.1
9 years	10.7	10.6	-0.1	11.2	10.9	-0.3
10 years	10.2	10.3	0.1	10.7	10.6	-0.1
11 years	9.9	9.8	-0.1	10.3	10.1	-0.2
12 years	9.5	9.4	-0.1	10.2	10.0	-0.2
13 years	8.8	8.8	0.0	10.1	9.8	-0.3
14 years	8.6	8.5	-0.1	10.0	9.9	-0.1
15 years	8.2	8.1	-0.1	10.0	9.7	-0.3**
16 years	8.1	8.0	-0.1	9.7	9.8	0.1
17 years	8.0	7.8	-0.2	10.1	9.8	-0.3**
18 years	7.8	7.8	0.0	10.1	9.7	-0.4**
19 years	8.1	8.3	0.2	10.3	10.1	-0.2
20 years	8.3	8.4	0.1	10.2	10.3	0.1
21 years	8.3	8.4	0.1	10.2	10.5	0.3
22 years	8.4	8.6	0.2	10.2	10.1	-0.1

(2) Strength

Standing long jump, vertical jump, pull-ups (inclined pull-ups), one-minute sit-ups, grip strength and back strength reflect the strength of students. Standing long jump and vertical jump reflect mainly explosive force, pull-ups (inclined pull-ups) and one-minute sit-ups reflects mainly endurance. Grip strength and back strength reflect maximum force that the muscle can exert.

Comparison of grip strength in 2010 and 2015 data showed that grip strength of both male and female students tended to increase in 2015. Significant difference was found in all age groups except the 18, 19 and 21~22 year age groups for males and the 18~19 year age groups for females (P<0.05). The increase of males and females ranged from 0.6~3.8kg and 0.5~3.2kg, respectively (Table 2-2-2-33).

Table 2-2-2-33 Comparison of average grip strength in students (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	7.7	8.3	0.6*	7.0	7.5	0.5*
7 years	9.3	10.4	1.1*	8.1	9.5	1.4*
8 years	10.4	12.3	1.9*	9.7	10.8	1.1*
9 years	11.9	13.8	1.9*	11.1	12.5	1.4*
10 years	13.5	16.2	2.7*	13.4	15.5	2.1*
11 years	16.4	18.4	2.0*	15.7	18.4	2.7*
12 years	19.7	23.1	3.4*	17.5	20.2	2.7*
13 years	24.1	27.6	3.5*	18.7	20.8	2.1*
14 years	27.7	30.2	2.5*	20.0	22.4	2.4*
15 years	30.4	34.2	3.8*	20.6	23.2	2.6*
16 years	32.9	35.7	2.8*	20.6	23.4	2.8*
17 years	34.7	36.9	2.2*	21.7	22.6	0.9*
18 years	36.2	37.5	1.3	21.8	24.5	2.7
19 years	37.9	38.5	0.6	22.0	22.7	0.7
20 years	38.9	40.9	2.0*	22.1	25.3	3.2*
21 years	42.5	41.4	-1.1	22.5	24.9	2.4*
22 years	40.9	41.7	0.8	22.7	24.7	2.0*

Comparison of pull-ups or inclined pull-ups for male students in two studies showed that results of male students were generally lower in 2015 than 2010, of which there was significant difference in the 6, 7, 14~16 and 18 year age groups (P<0.05). However, results of sit-ups of female students increased in 2015 in all age groups except the 19 and 20 year age groups, of which significant difference was seen in the 8 and 10~18 year age groups (P<0.05) (Table 2-2-2-34).

Table 2-2-2-34 Comparison of average strength endurance in students#

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	16.8	13.0	-3.8*	9.3	10.5	1.2
7 years	16.7	12.9	-3.8*	13.7	14.3	0.6
8 years	16.2	13.9	-2.3	16.9	19.1	2.2*
9 years	14.3	15.5	1.2	18.6	20.5	1.9
10 years	17.7	18.1	0.4	20.3	24.5	4.2*
11 years	21.3	18.9	-2.4	22.6	26.8	4.2*
12 years	19.5	17.9	-1.6	23.9	26.3	2.4*
13 years	0.8	0.6	-0.2	24.3	27.7	3.4*
14 years	1.1	0.7	-0.4*	25.1	28.4	3.3*
15 years	1.6	1.1	-0.5*	25.2	28.4	3.2*
16 years	2.0	1.3	-0.7*	25.6	27.6	2.0*
17 years	2.2	1.8	-0.4	23.4	27.2	3.8*
18 years	2.9	1.7	-1.2*	23.7	27.3	3.6*
19 years	2.7	2.7	0.0	24.7	24.3	-0.4
20 years	2.8	3.8	1.0	25.4	25.0	-0.4
21 years	3.0	2.7	-0.3	23.8	25.8	2.0
22 years	2.5	2.6	0.1	21.9	24.2	2.3

Note: strength endurance testing of students#: inclined pull-ups (times) is used for male students aged 6~12, and pull-ups (times) is used for male students aged 13~22, while one-minute sit-ups (times/minute) is used for female students aged 6~22.

Back strength of male and female students both increased in 2015. Obvious increase was recorded in most of the age groups, especially in the secondary school sector. The increase of male and female students ranged from 7.4~12.4kg and 4.7~11.8kg, respectively, with significant difference (P < 0.01) (Table 2-2-2-35).

Table 2-2-2-35 Comparison of average back strength in students (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	24.0	26.0	2.0*	19.7	21.3	1.6
7 years	27.4	31.2	3.8*	22.2	27.8	5.6*
8 years	30.7	36.9	6.2*	25.9	31.1	5.2*
9 years	34.3	43.2	8.9*	30.7	35.9	5.2*
10 years	38.6	46.6	8.0*	33.1	41.8	8.7*
11 years	44.9	49.5	4.6*	38.5	45.8	7.3*
12 years	52.6	61.3	8.7*	41.4	49.1	7.7*
13 years	64.5	74.6	10.1**	44.9	53.0	8.1**
14 years	74.5	81.9	7.4**	47.2	53.9	6.7**
15 years	79.9	91.7	11.8**	47.9	59.7	11.8**
16 years	86.7	99.1	12.4**	49.0	60.2	11.2**
17 years	91.9	102.1	10.2**	50.7	55.4	4.7**
18 years	95.5	100.6	5.1	50.7	58.7	8.0**
19 years	98.5	100.7	2.2	53.6	51.3	-2.3
20 years	100.3	109.4	9.1*	50.9	55.2	4.3*
21 years	108.9	110.7	1.8	53.9	60.7	6.8*
22 years	104.8	107.9	3.1	55.7	60.7	5.0*

Results of the two studies showed that standing long jump of male students in 2015 varied irregularly. Specifically, a decrease of 4.9cm was recorded at age 6 and an increase of 4.6cm was recorded at age 9, which both differed significantly (P < 0.05). Results of female students in 2015 increased in all age groups except for the 19 and 21 year age groups, of which significant difference was seen in the 9, 11~13, 15 and 17~18 year age groups (P<0.05) (Table 2-2-2-36).

Table 2-2-2-36 Comparison of average standing long jump in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	105.5	100.6	-4.9*	92.0	93.3	1.3
7 years	112.0	109.5	-2.5	102.2	104.1	1.9
8 years	121.9	123.1	1.2	112.9	115.5	2.6
9 years	129.5	134.1	4.6*	121.3	126.3	5.0*
10 years	137.2	138.1	0.9	127.7	132.0	4.3
11 years	147.0	151.6	4.6	130.5	137.8	7.3*
12 years	152.4	156.8	4.4	130.4	135.6	5.2*
13 years	166.6	169.6	3.0	131.9	140.3	8.4*
14 years	178.1	180.1	2.0	136.5	137.8	1.3
15 years	184.9	188.7	3.8	136.0	142.4	6.4*
16 years	193.2	191.7	-1.5	137.4	141.5	4.1
17 years	198.0	198.5	0.5	135.5	142.4	6.9*
18 years	201.3	198.1	-3.2	137.1	144.9	7.8*
19 years	203.7	197.7	-6.0	139.4	135.0	-4.4
20 years	207.6	198.9	-8.7	139.4	140.1	0.7
21 years	202.0	194.0	-8.0	145.1	141.2	-3.9
22 years	197.5	197.6	0.1	141.3	141.8	0.5

Results of vertical jump of male students in 2015 varied little, only an increase of 1.9cm was recorded in the aged 12 group which differed significantly (P < 0.05). Results of vertical jump of female students in 2015 had an obvious increase compared with 2010, of which significant difference was found in the 6~7, 11~13, 15, 17~18 and 22 year age groups (P<0.05), with the increase ranging from 1.3~2.3cm (Table 2-2-2-37).

Table 2-2-2-37 Comparison of average vertical jump in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	19.3	19.7	0.4	16.9	19.2	2.3*
7 years	21.1	21.5	0.4	19.5	21.3	1.8*
8 years	22.7	23.1	0.4	21.7	22.1	0.4
9 years	24.3	25.0	0.7	22.7	23.4	0.7
10 years	25.9	25.9	0.0	24.0	24.5	0.5
11 years	27.4	28.4	1.0	24.4	25.8	1.4*
12 years	29.0	30.9	1.9*	24.1	26.4	2.3*
13 years	33.6	33.7	0.1	25.0	26.3	1.3*
14 years	35.9	36.5	0.6	26.1	26.6	0.5
15 years	37.9	38.3	0.4	25.8	27.9	2.1*
16 years	39.6	40.5	0.9	26.0	26.9	0.9
17 years	41.7	41.7	0.0	25.4	27.1	1.7*
18 years	42.5	41.7	-0.8	25.5	27.5	2.0*
19 years	42.1	41.2	-0.9	25.8	25.7	-0.1
20 years	42.2	41.2	-1.0	25.0	25.0	0.0
21 years	40.3	40.7	0.4	25.5	25.3	-0.2
22 years	40.9	40.4	-0.5	24.3	25.7	1.4*

(3) Endurance Run

Endurance of students aged 6~12 was reflected by 50m×8 shuttle run, endurance of male students aged 13~22 by 1,000m run and endurance of female students aged 13~22 by 800m run. Comparison and analysis of the 2010 and 2015 data on endurance run showed that the average time to finish 50m×8 shuttle run in 2015 was shorter than 2010 for both male and female students, indicating that endurance of students was improved in 2015.

The results of 1,000m run for male students in 2015 decreased in the 8 and 17 year age groups by 8.4 and 12.1 seconds, respectively, whereas increased in the aged 20 group by 15.9 seconds, which all differed significantly (P < 0.05). The results of 800m run for female students in 2015 in the 13 year age group decreased by 12.5 seconds, and increased in the 14 and 19~20 age groups by 16.8 and 21.6 seconds, respectively, which also differed significantly (P < 0.05) (Table 2-2-2-38).

Table 2-2-2-38 Comparison of average time of endurance run in students (sec) #

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	152.8	155.1	2.3	159.2	159.3	0.1
7 years	147.3	146.7	-0.6	152.1	149.7	-2.4
8 years	146.6	138.2	-8.4*	147.3	143.6	-3.7
9 years	138.5	135.2	-3.3	142.9	140.3	-2.6
10 years	131.9	134.0	2.1	136.1	133.3	-2.8
11 years	127.4	126.2	-1.2	128.3	127.7	-0.6
12 years	119.2	117.9	-1.3	129.1	130.0	0.9
13 years	333.1	325.0	-8.1	295.0	282.5	-12.5*
14 years	316.0	316.9	0.9	281.3	291.4	10.1*
15 years	298.2	305.9	7.7	283.7	282.9	-0.8
16 years	289.8	295.7	5.9	280.6	285.3	4.7
17 years	294.0	281.9	-12.1*	285.3	282.9	-2.4
18 years	288.5	279.9	-8.6	288.2	288.3	0.1
19 years	293.6	292.8	-0.8	286.7	303.5	16.8*
20 years	286.6	302.5	15.9*	288.7	310.3	21.6*
21 years	296.0	305.9	9.9	287.4	296.0	8.6
22 years	311.2	322.2	11.0	284.9	292.8	7.9

Note: endurance run of students#: 50 m×8 shuttle run was used for students aged 6~12. For students aged 13~22, 1000-m run and 800-m run were used for males and females, respectively.

(4) Flexibility

Sit and reach reflects flexibility. Comparison and analysis of the 2010 and 2015 results on sit and reach showed that, the results in 2015 were lower than 2010 in the 6~7, 14~20 and 22 year age groups of male students, of which there was significant difference in the 9, 17~18 and 22 year age groups ($P<0.05$). For female students, the results in 2015 were lower than 2010 only in the 18 and 20 year age groups, with significant increase found in the 7 and 9~11 age groups ($P<0.05$) (Table 2-2-2-39).

Table 2-2-2-39 Comparison of average sit and reach in students (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	4.8	3.6	-1.2	6.8	7.2	0.4
7 years	4.5	4.0	-0.5	7.3	8.6	1.3*
8 years	3.5	3.7	0.2	6.8	7.5	0.7
9 years	2.0	3.8	1.8*	5.4	7.1	1.7*
10 years	0.5	1.4	0.9	4.4	7.0	2.6*
11 years	0.4	1.7	1.3	4.1	8.2	4.1*
12 years	0.1	1.3	1.2	5.6	6.9	1.3
13 years	2.0	2.1	0.1	6.9	7.9	1.0
14 years	2.9	2.0	-0.9	6.8	8.4	1.6
15 years	3.7	2.6	-1.1	8.7	9.7	1.0
16 years	5.1	4.2	-0.9	6.6	8.0	1.4
17 years	4.9	2.9	-2.0*	7.2	8.1	0.9
18 years	6.3	3.6	-2.7*	8.1	7.7	-0.4
19 years	4.5	2.7	-1.8	6.8	7.1	0.3
20 years	4.1	3.9	-0.2	7.8	6.6	-1.2
21 years	2.7	4.6	1.9	6.6	7.4	0.8
22 years	5.8	3.2	-2.6*	5.1	5.1	0.0

(5) Reaction

Comparison of the choice reaction time in 2010 and 2015 showed that the average choice reaction time of male students in 2015 increased with significant difference in all age groups except for the aged 21~22 groups. The average time of female students in 2015 was higher than 2010 in the 6~15, 17, 19 and 20 year age groups, but lower in the 16, 18 and 22 year age groups, which all differed significantly ($P<0.05$) (Table 2-2-2-40).

Table 2-2-2-40 Comparison of average choice reaction time in students (sec)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	0.57	0.61	0.04*	0.62	0.64	0.02*
7 years	0.54	0.55	0.01*	0.56	0.57	0.01*
8 years	0.49	0.51	0.02*	0.51	0.54	0.03*
9 years	0.45	0.47	0.02*	0.48	0.50	0.02*
10 years	0.44	0.45	0.01*	0.47	0.47	0.0
11 years	0.42	0.43	0.01*	0.45	0.46	0.01*
12 years	0.41	0.41	0.0	0.45	0.46	0.01*
13 years	0.41	0.42	0.01*	0.44	0.45	0.01*
14 years	0.40	0.41	0.01*	0.43	0.43	0.0
15 years	0.39	0.40	0.01*	0.42	0.43	0.01*
16 years	0.38	0.39	0.01*	0.43	0.42	-0.01*
17 years	0.37	0.39	0.02*	0.42	0.43	0.01*
18 years	0.38	0.40	0.02*	0.44	0.43	-0.01*
19 years	0.39	0.40	0.01*	0.44	0.45	0.01*
20 years	0.39	0.39	0.0	0.43	0.44	0.01*
21 years	0.40	0.39	-0.01*	0.43	0.43	0.0
22 years	0.40	0.39	-0.01*	0.43	0.42	-0.01*

(6) Balance

One foot stands with eyes closed (OFSEC) reflects balance ability. Comparison of the average time for OFSEC results in 2010 and 2015 showed that, the average time of male students in 2015 was lower than 2010 in the 6, 11, 13~15 and 17~22 year age groups, but higher in 2015 in other age groups, of which significant difference was found in the 14, 15, 19 and 21 year age groups (P<0.05). The average time of female students in 2015 was lower than 2010 in the 14 and 18~22 year age groups, but higher in 2015 in other age groups, of which significant difference was found in the 16, 17 and 19 year age groups (P<0.05) (Table 2-2-2-41).

Table 2-2-2-41 Comparison of average OFSEC time in students (sec)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	14.5	13.1	-1.4	14.7	15.4	0.7
7 years	14.5	14.9	0.4	16.4	18.9	2.5
8 years	16.4	17.5	1.1	22.5	27.2	4.7
9 years	19.2	22.3	3.1	22.7	26.0	3.3
10 years	21.6	22.7	1.1	29.3	30.9	1.6
11 years	31.9	28.8	-3.1	27.7	32.6	4.9
12 years	30.2	34.8	4.6	31.7	33.0	1.3
13 years	36.5	35.6	-0.9	36.7	43.3	6.6
14 years	42.2	30.9	-11.3*	41.0	39.5	-1.5
15 years	51.0	33.7	-17.3*	44.6	48.4	3.8
16 years	45.9	54.5	8.6	42.5	70.9	28.4*
17 years	48.9	48.4	-0.5	42.2	57.3	15.1*
18 years	60.5	53.0	-7.5	54.7	50.8	-3.9
19 years	56.5	39.4	-17.1*	60.5	42.6	-17.9*
20 years	54.6	46.4	-8.2	53.7	44.1	-9.6
21 years	62.7	45.4	-17.3*	58.3	45.0	-13.3
22 years	52.1	45.6	-6.5	55.8	49.5	-6.3

6. Comparison of Health Status

(1) Occurrence of Decayed Primary Teeth

Dental decay of primary teeth among male and female students occurred mainly between ages 6~12. With the substitution of primary teeth by permanent teeth, the prevalence of decayed primary teeth decreased gradually to 0%.

The prevalence of decayed primary teeth in male students in 2015 was higher than that in 2010 except the 10, 12, 13 and 14 year age groups, of which significant difference was found in the 6 and 16 year age groups (P < 0.05). The prevalence of decayed primary teeth in female students in 2015 was higher than that in 2010 except the 9 and 11 year age groups, of which significant difference was found in the 6, 12, 13, 16 and 17 age groups (P < 0.05) (Table 2-2-2-42).

Table 2-2-2-42 Comparison of decayed primary teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	52.9	70.6	17.7*	54.3	71.4	17.1*
7 years	63.2	73.5	10.3	64.8	69.7	4.9
8 years	61.0	71.3	10.3	71.9	72.7	0.8
9 years	65.3	67.0	1.7	60.6	54.9	-5.7
10 years	54.3	49.4	-4.9	38.1	43.2	5.1
11 years	28.9	32.7	3.8	21.9	18.8	-3.1
12 years	13.8	13.7	-0.1	8.0	9.9	1.9*
13 years	9.7	6.1	-3.6	5.0	7.3	2.3*
14 years	4.3	3.0	-1.3	4.0	4.9	0.9
15 years	0.0	0.5	0.5	0.0	1.9	1.9
16 years	0.0	4.0	4.0*	0.0	2.0	2.0*
17 years	0.0	1.9	1.9	0.0	0.6	0.6*
18 years	0.0	0.0	0.0	0.0	0.6	0.6

The prevalence of filled primary teeth of male students was higher in 2015 than that in 2010 in the 6, 8, 9, 11, 15 and 16 year age groups, but lower in the 7, 10, 12, 13 and 14 year age groups, of which significant difference was found in the aged 6 and 16 groups (P < 0.05). The prevalence of filled primary teeth of female students was higher in 2015 than that in 2010 in the 6, 7, 9, 10, 12, 14 and 15 year age groups, but lower in the 8 and 11 year age groups, with significant difference in the aged 6 group (P < 0.05). The difference for males ranged from -2.7~19.5%, reaching a peak at age 8; and the difference for females ranged from -9.9~16.0%, reaching a peak at age 7 (Table 2-2-2-43).

Table 2-2-2-43 Comparison of filled primary teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	15.4	23.3	7.9*	18.1	30.7	12.6*
7 years	27.9	25.2	-2.7	17.0	33.0	16.0
8 years	21.5	41.0	19.5	34.9	25.0	-9.9
9 years	28.7	29.4	0.7	24.5	24.6	0.1
10 years	23.7	23.5	-0.2	15.6	19.6	4.0
11 years	7.4	11.1	3.7	10.6	6.0	-4.6
12 years	5.1	3.2	-1.9	2.3	3.5	1.2
13 years	1.6	1.1	-0.5	0.0	0.0	0.0
14 years	1.9	0.0	-1.9	0.6	2.8	2.2
15 years	0.0	0.5	0.5	0.0	0.6	0.6
16 years	0.0	0.5	0.5*	0.0	0.0	0.0
17 years	0.0	0.0	0.0	0.0	0.0	0.0
18 years	0.0	0.0	0.0	0.0	0.0	0.0

Comparison of the prevalence of missing primary teeth in two studies showed that the prevalence in 2015 was generally lower than that in 2010 except in male students aged 7 and 10, of which significant difference was found in both male and female students aged 6 (P < 0.05). In the 2015 study, the prevalence of missing primary teeth became 0 in male students aged 10 onwards and female students aged 8 onwards. Through comparison, the difference in male and female students ranged from -2.6%~1.2% and -4.3%~0%, respectively, with the largest difference at age 6 (Table 2-2-2-44).

Table 2-2-2-44 Comparison of missing primary teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	2.9	1.1	-1.8*	4.3	0.0	-4.3*
7 years	4.0	4.2	0.2	5.0	1.1	-3.9
8 years	4.1	3.7	-0.4	5.5	1.5	-4.0
9 years	4.0	1.4	-2.6	3.9	0.0	-3.9
10 years	0.6	1.8	1.2	0.0	0.0	0.0
11 years	1.3	0.0	-1.3	0.0	0.0	0.0
12 years	0.5	0.0	-0.5	0.6	0.0	-0.6
13 years	0.0	0.0	0.0	0.0	0.0	0.0
14 years	0.0	0.0	0.0	0.0	0.0	0.0

(2) Occurrence of Decayed Permanent Teeth

The prevalence of decayed permanent teeth in male students in 2015 was lower than that in 2010 in the 8, 9, 13, 14 and 15 year age groups, but higher in other age groups, with significant difference in the 6 and 16 year age groups (P < 0.05). The prevalence of decayed permanent teeth in female students in 2015 was higher in the 6, 10, 12, 16 and 17 age groups, but lower in other age groups, of which significant difference was seen in the 6, 13, 16 and 17 year age groups (P < 0.05). The difference ranged from -9.4%~10.1% for male students and -8.3%~9.6% for female students (Table 2-2-2-45).

Table 2-2-2-45 Comparison of decayed permanent teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	2.9	7.8	4.9*	1.1	10.7	9.6*
7 years	9.5	16.0	6.5	14.5	12.4	-2.1
8 years	23.8	14.4	-9.4	21.2	19.7	-1.5
9 years	18.3	16.5	-1.8	25.2	16.9	-8.3
10 years	22.0	22.4	0.4	29.9	32.4	2.5
11 years	25.5	28.7	3.2	30.5	26.2	-4.3
12 years	27.6	27.9	0.3	36.6	42.6	6.0
13 years	40.5	39.2	-1.3	45.3	37.9	-7.4*
14 years	46.3	39.7	-6.6	51.7	47.2	-4.5
15 years	47.9	42.9	-5.0	50.3	45.6	-4.7
16 years	38.9	49.0	10.1*	41.7	49.3	7.6*
17 years	43.5	44.4	0.9	48.3	53.1	4.8*
18 years	37.8	39.9	2.1	46.2	44.8	-1.4

The prevalence of filled permanent teeth in male students in 2015 was lower than that in 2010 except the 8, 9 and 15 year age groups, of which significant difference was found in the aged 16 group (P < 0.05). The prevalence of filled permanent teeth in female students in 2015 was higher than that in 2010 in the 6, 8, 9, 10, 12 and 13 age groups, but lower in other age groups, of which significant difference was seen in the 6, 13, 16 and 17 year age groups (P < 0.05). The difference ranged from -9.0%~4.9% for male students and -9.3%~8.7% for female students (Table 2-2-2-46).

The prevalence of missing permanent teeth in 2015 was generally lower than that in 2010 except in female students aged 16, of which significant difference was found in male students aged 16 and female students aged 13, 16 and 17 (P < 0.05) (Table 2-2-2-47).

Table 2-2-2-46 Comparison of filled permanent teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	0.0	0.0	0.0	0.0	2.1	2.1*
7 years	4.0	3.4	-0.6	6.9	3.8	-3.1
8 years	6.4	8.5	2.1	6.8	10.6	3.8
9 years	10.4	12.8	2.4	14.8	18.3	3.5
10 years	16.2	15.3	-0.9	12.9	21.6	8.7
11 years	18.8	12.3	-6.5	23.2	18.8	-4.4
12 years	22.4	21.1	-1.3	25.7	31.2	5.5
13 years	26.5	25.4	-1.1	27.0	27.4	0.4*
14 years	23.5	21.1	-2.4	34.1	29.2	-4.9
15 years	26.6	31.5	4.9	43.2	34.8	-8.4
16 years	34.0	29.5	-4.5*	49.2	40.7	-8.5*
17 years	39.8	30.8	-9.0	42.9	42.6	-0.3*
18 years	35.7	31.3	-4.4	48.4	39.1	-9.3

Table 2-2-2-47 Comparison of missing permanent teeth in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	0.0	0.0	0.0	0.0	0.0	0.0
7 years	0.0	0.0	0.0	0.0	0.0	0.0
8 years	0.0	0.0	0.0	0.7	0.0	-0.7
9 years	0.0	0.0	0.0	0.0	0.0	0.0
10 years	0.0	0.0	0.0	0.0	0.0	0.0
11 years	1.3	0.0	-1.3	0.0	0.0	0.0
12 years	0.5	0.0	-0.5	3.4	1.4	-2.0
13 years	1.1	0.0	-1.1	1.3	0.0	-1.3*
14 years	1.9	0.5	-1.4	2.8	0.0	-2.8
15 years	1.1	0.5	-0.6	2.4	0.0	-2.4
16 years	1.2	0.5	-0.7*	1.1	2.0	0.9*
17 years	1.6	1.4	-0.2	2.5	1.2	-1.3*
18 years	2.8	1.2	-1.6	4.3	1.1	-3.2

(3) Poor Eyesight

Poor eyesight is defined as eyesight falling below 5.0 without using glasses or contact lens. Eyesight of 4.9 is considered as mild poor eyesight, eyesight within 4.6~4.8 is considered as moderate poor eyesight and eyesight below or equal to 4.5 is severe poor eyesight. Each subject was considered as a unit when doing the analysis. If the eyesight was different in both eyes, the one with poorer eyesight was used.

Comparison of the proportion of poor eyesight in 2010 and 2015 showed that the proportion of poor eyesight in primary school students in 2015 was lower than that in 2010 in all age groups except in the 6 (male and female), 9 (male), 10 (female) and 12 (female) year age groups, of which significant difference was seen in male students of the 6, 8, 10 and 12 age groups (P < 0.05), as well as in female students of the 6, 8, 9 and 12 age groups (P < 0.05). It indicated that the eye sights of primary school students were better in 2015 than 2010. However, in the 13~18 year age groups, the proportion of poor eyesight in 2015 was higher than 2010 in all age groups except in the 14 (male), 17 (male) and 15~17 (female) year age groups, of which significant difference was found in male students except for the males aged 17 (P < 0.05), as well as in female students with the exception in the 14 and 17 year age groups (P < 0.05). Among the university age groups, the proportion of poor eyesight in 2015 was lower than 2010 in the 19 (male), 20 (male), 21 (female) and 22 (female) year age groups, but higher in other age groups, of which significant difference was observed in all age groups except in the aged 19 group (Table 2-2-2-48).

Table 2-2-2-48 Comparison of poor eyesight in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	46.2	56.1	9.9*	38.3	60.0	21.7*
7 years	50.7	48.7	-2.0	54.7	53.3	-1.4
8 years	58.7	56.4	-2.3*	60.3	50.4	-9.9*
9 years	61.9	63.1	1.2	68.4	60.6	-7.8*
10 years	71.5	65.3	-6.2*	65.3	70.7	5.4
11 years	70.5	69.4	-1.1	72.8	69.8	-3.0
12 years	75.0	70.5	-4.5*	77.7	80.9	3.2*
13 years	74.5	78.3	3.8*	75.5	81.5	6.0*
14 years	73.3	71.2	-2.1*	82.4	82.6	0.2
15 years	79.3	81.0	1.7*	86.3	77.8	-8.5*
16 years	74.7	81.5	6.8*	82.9	80.0	-2.9*
17 years	76.8	75.7	-1.1	83.7	82.1	-1.6
18 years	69.9	79.1	9.2*	80.5	83.3	2.8*
19 years	80.4	80.0	-0.4	82.0	82.9	0.9
20 years	86.5	82.4	-4.1*	82.8	84.5	1.7*
21 years	72.6	82.4	9.8*	84.4	81.1	-3.3*
22 years	72.4	76.3	3.9*	86.5	84.4	-2.1*

In comparison of the proportion of moderate and severe poor eyesight in 2015 with 2010, it showed that the proportion of severe poor eyesight in 2015 decreased in the 7, 11, 12, 14, 15, 17, 19 and 20 year age groups, with the difference ranging from -0.2% to -3.6%, but increased in other age groups. Significant difference was found in the 7, 10, 13, 15~19. 21 and 22 year age groups (P < 0.05). The proportion of moderate poor eyesight was generally higher in 2015 than 2010 in all age groups except in the 7~10, 15, 16 and 20~22 year age groups, of which significant difference was seen in the 6, 8, 10, 12, 16, 17, 21 and 22 year age groups (P < 0.05) (Table 2-2-2-49).

Table 2-2-2-49 Comparison of moderate and severe poor eyesight in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	13.1	24.7	11.6*	9.1	9.1	0.0
7 years	19.2	17.6	-1.6	18.6	16.4	-2.2*
8 years	22.6	20.1	-2.5*	23.3	23.8	0.5
9 years	20.7	20.1	-0.6	30.3	30.9	0.6
10 years	20.1	16.7	-3.4*	36.7	45.1	8.4*
11 years	16.0	18.2	2.2	46.3	45.5	-0.8
12 years	18.9	20.8	1.9*	51.5	50.8	-0.7
13 years	17.8	18.4	0.6	50.1	54.9	4.8*
14 years	15.1	15.8	0.7	56.1	55.6	-0.5
15 years	16.6	14.9	-1.7	60.1	58.2	-1.9*
16 years	16.0	12.0	-4.0*	58.7	63.7	5.0*
17 years	11.6	13.6	2.0*	63.4	59.8	-3.6*
18 years	11.6	13.1	1.5	60.4	63.2	2.8*
19 years	11.3	12.3	1.0	66.5	64.0	-2.5*
20 years	15.4	14.4	-1.0	65.1	64.9	-0.2
21 years	18.8	13.7	-5.1*	56.5	60.6	4.1*
22 years	21.6	11.6	-10.0*	55.7	63.5	7.8*

(4) Color Vision

Color vision reflects the children and adolescents' ability to distinguish colors. Through comparison of results in the two studies, it was found that the proportion of abnormal color vision in 2015 was lower than that in 2010. Significant difference was found in male students of the 8~10 and 21 year age groups (P < 0.05), as well as female students of the aged 7~11 groups (P < 0.05). It indicated that color vision of students in 2015 was better than students in 2010 except for students aged 6 and 18~19, and female students aged 12 and 22 (Table 2-2-2-50).

Table 2-2-2-50 Comparison of abnormal color vision in students (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
6 years	11.5	12.2	0.7	7.5	7.9	0.4
7 years	15.7	10.1	-5.6	23.3	5.9	-17.4*
8 years	28.7	4.3	-24.4*	18.5	2.3	-16.2*
9 years	15.8	4.1	-11.7*	9.7	1.4	-8.3*
10 years	8.1	2.4	-5.7*	6.1	0.7	-5.4*
11 years	6.0	5.8	-0.2	4.0	0.0	-4.0*
12 years	9.2	5.3	-3.9	3.4	3.5	0.1
13 years	7.6	4.4	-3.2	3.8	1.6	-2.2
14 years	8.1	5.0	-3.1	1.7	0.0	-1.7
15 years	5.9	3.8	-2.1	3.0	1.9	-1.1
16 years	6.2	4.5	-1.7	2.1	0.0	-2.1
17 years	5.9	4.2	-1.7	2.0	0.0	-2.0
18 years	4.2	8.6	4.4	0.5	0.6	0.1
19 years	2.9	5.7	2.8	0.0	1.6	1.6
20 years	6.3	4.3	-2.0	0.0	0.0	0.0
21 years	17.0	7.1	-9.9*	1.0	0.0	-1.0
22 years	4.6	3.2	-1.4	0.0	1.0	1.0

(III) Summary

1. Summary of 2015 Results on the Physical Fitness Study of Children and Adolescents (Students)

In conclusion, a majority of primary and secondary school students commuted to and from school on foot, approximately 60% of students spent less than 30 minutes daily in commuting. Most students spent less than 30 minutes daily on outdoor activities. In the PE classes, 61.0% of students reached moderate exercise intensity. The proportion of students reaching moderate and high exercise intensity tended to increase with advancing age. In respect of the extracurricular physical exercise, 14.5% were frequent exercisers, with male students accounting for a higher proportion than females.

Children and adolescents in Macao had a high prevalence of dental caries, especially between the ages of 6~11. The awareness of dental hygiene should be further enhanced. Although over 90% of children and adolescents brushed their teeth every day, they ignored the importance of daily flossing. In respect to eating habits, the proportion of students having breakfast every day tended to drop after age 12. Relatively high proportion of students was recorded in taking high-fat foods and drinks. The above results revealed that efforts should be made to promote healthy eating in children and adolescents.

In respect to anthropometric measurements of children and adolescents, physical growth and development in length, circumference and width indicators increased substantially between ages 6~12, and slowed down thereafter. The overweight and obesity rate of each age group was approximately 20%, with great fluctuation found in several age groups. Female students had higher skinfold thickness of the upper arm, subscapular and abdomen, and higher body fat percentage but lower lean body mass than male students, which could be attributed to the physiological difference between genders.

In respect of physical functions, the cardiopulmonary function of children and adolescents was improved consistently with advancing age, as shown by the increase in vital capacity and the decrease in resting heart rate. Male students had higher average vital capacity/weight index than female students, indicating that lung function of males was greater than that of females. The difference between genders also tended to increase with advancing age.

Our study showed that the overall physical fitness of children and adolescents tended to increase with advancing age, the most significant increment was recorded in the strength of students. Male and female students had fairly similar balance ability and reaction. Females had better flexibility than males and their balance ability was comparable to that of males. However, other indicators of females were generally lower than those of males, especially in strength. Each indicator of strength for female students remained quite stable after puberty;however, endurance declined mildly, whereas strength of male students was improved slightly with advancing age. Nevertheless, pull-ups of male students aged 13 onwards still remained at a low level, reflecting that back strength and upper limb strength of male students needed to be improved. It is crucial to further improve the strength of Macao children and adolescents by exercising after puberty, especially the strength of female students.

Occurrence of decayed primary teeth among male and females students was basically similar. The prevalence of decayed primary teeth, filled primary teeth and dmf teeth tended to increase first and then decrease with advancing age. Caries in primary teeth differed between male and female students in several age groups. Occurrence of decayed permanent teeth also increased first and then decreased with advancing age. The changing trend was fairly consistent in males and females, reflected by the prevalence of decayed, filled permanent teeth and DMF teeth. Caries in permanent teeth differed between male and female students in several age groups.

The proportion of nearsightedness of students was on the rise with advancing age. The proportion of students aged 15 onwards remained at a high of over 70% (except the male students aged 21~22). To facilitate the prevention of nearsightedness, Macao children and adolescents should be encouraged to foster good habits of eye health and keep correct body posture.

2. Comparison of 2015 and 2010 Results on the Physical Fitness Study of Children and Adolescents (Students)

Compared with 2010 study, the awareness of proactive exercising among Macao children and adolescents was enhanced, as reflected by the increasing number of students participated in extracurricular physical exercise, longer duration of exercising and more students reaching high intensity exercise. The proportion of primary and secondary school students who had two PE classes weekly increased remarkably, whereas the proportion of university students having PE classes decreased. The prevalence of disease among children and adolescents declined; however, accidental injury still accounted for a dramatic proportion. Relevant departments should establish an effective mechanism of accidental injury prevention for the youth.

Through comparison of 2010 and 2015 data, length indicators remained fairly consistent in the two studies; among width indicators, only shoulder and pelvis width of male students showed an upward trend; the average weight and BMI of all age groups increased slightly. The obesity rate of each age group increased accordingly, with remarkable increase found in males. Moreover, circumference indicators remained fairly stable. In regards to body composition, skinfold thickness of the three parts of students in 2015 increased in varying degrees compared with 2010; body fat percentage of each age group was on the rise, with quite similar increase found in males and females.

Through comparison of the blood pressure, it could be found that SBP of male students tended to increase after age 14 in 2015, whereas DBP decreased slightly, leading to increased pressure difference. Pressure difference of male students aged 21 increased by 13.7mmHg. Vital capacity remained relatively stable in both male and female students.

Compared with 2010 results, speed of male and female students remained consistent in 2015. Maximum force of students was enhanced generally except male and female students aged 18~19 and male students aged 21~22. It was noteworthy that strength endurance of male students declined substantially. Cardiorespiratory endurance of university student was lower in 2015 than 2010. Proper measures should be taken to further improve the strength and cardiorespiratory fitness of Macao children and adolescents.

Compared with 2010 results, the prevalence of decayed primary teeth in male and female students, as well as the prevalence of decayed permanent teeth in males, tended to increase in 2015; whereas the prevalence of missing permanent/primary teeth saw a slight decrease, which indicated that more emphasis was placed on dental treatment. However, prevention of caries should be further strengthened. According to the analysis, the proportion of moderate and severe poor eyesight remained high, significant increase was found in severe poor eyesight in several age groups. Therefore, greater efforts should be enforced to promote eye health among children and adolescents in Macao.

III. Adults

(I) Physical Fitness Conditions of Adults in 2015

1. Basic Information of the Subjects

Adult subjects were divided into two categories, labor-intensive and non-labor intensive workers, which were further divided into 32 groups according to gender and age. The sample size by gender in each group was shown in Table 2-3-1-1. There were a total of 1,190 subjects (548 males and 642 females) drawn from government institutions and 2,100 subjects (1,003 males and 1,097 females) from private sector institutions and organizations (Table 3-3-1-1).

Table 2-3-1-1 Sample size of adult subjects in each age group

Gender	Age group	Labor intensive worker	Non-labor intensive worker	Sub-total
Male	20~24	93	92	185
	25~29	111	102	213
	30~34	95	112	207
	35~39	96	101	197
	40~44	94	91	185
	45~49	89	94	183
	50~54	96	97	193
	55~59	93	95	188
Female	20~24	96	99	195
	25~29	104	166	270
	30~34	103	122	225
	35~39	92	101	193
	40~44	97	104	201
	45~49	102	107	209
	50~54	119	120	239
	55~59	105	102	207
Total		**1585**	**1705**	**3290**

According to the occupation of subjects, there were 109 legislative officers, administrators or managers from the public or private institutions (57 males and 52 females), 538 professionals (288 males and 250 females), 656 technicians and professional assistants (388 males and 268 females), 896 office clerks (280 males and 616 females), 432 customer service and sales representatives (229 males and 203 females), 7 workers in agricultural and fishery fields (7 males and 0 females), 58 handicraft workers (47 males and 11 females), 81 machine operators, drivers or assemblers (79 males and 2 females), 88 non-technicians (36 males and 52 females) and 425 subjects with other occupations (140 males and 285 females) (Table 3-3-1-2).

Among the subjects, 1,224 subjects (545 males and 679 females) were from the north area (Freguesia de Nossa Senhora de Fátima); 837 subjects (402 males and 435 females) were from the central area (Freguesias de Santo António and de São Lázaro); 1,229 subjects (603 males and 626 females) were from the south area (Freguesias de São Francisco Xavier, de Nossa Senhora do Carmo, de São Lourenço and da Sé) (Table 3-3-1-3).

In terms of the birthplace, 60.3% of males and 57.2% of females were born in Macao; 31.9% of males and 36.7% of females were born in Mainland China, the proportion of those born in Mainland China increased with advancing age. As for education level, subjects who had secondary education (secondary school and university) contributed the highest proportion (80.0% of males and 77.4% of females), and those who had elementary

education (primary school and below) accounted for a lower proportion (7.8% males and 9.5% females). About 12.7% of the adult subjects possessed master degrees or higher education (Tables 3-3-1-4 and 3-3-1-5).

In terms of the working environment, working indoors accounted for the highest proportion, with 83.8% of males and 96.8% of females. Among them, 70.0% of males and 78.4% of females worked indoors under "air conditioned" environment for a long period of time. As age increased, the proportion of subjects working under "air conditioned" environment tended to decrease, while that of those working under "naturally ventilated" environment tended to increase. In addition, 16.2% males and 3.2% females often worked outdoors (Table 3-3-1-6).

In regards to the weekly working hours, 84.2% of males and 75.2% of females normally worked 35~50 hours per week. However, 6.3% of males and 9.5% of females worked an average of less than 20 hours or between 20~35 hours per week. The proportion of "non-working" females (10.2%) was significantly higher than that of the males (2.6%). The proportion of "non-working" subjects aged 45 onwards tended to increase with advancing age, and the "non-working" females aged 55~59 accounted for nearly 27.1%. The proportion of males who worked over 50 hours (6.9%) was higher than that of females (5.1%). The proportion of "non-working" males and females showed a "U" shaped curve (high at both ends and low at central part) across age (Table 3-3-1-7).

2. Lifestyle

Information regarding lifestyle on living habits, physical exercise, occurrence of diseases, and perception of the physical fitness study was analyzed. The results were shown as follows:

(1) Living Habits

Living habits included average daily accumulated sleeping hours and quality of sleep, average accumulated walking and sitting hours, activities during leisure time, smoking, alcohol consumption and eating habits.

Study results showed that 83.1% of adults slept for an average of 6~9 hours daily, 14.9% slept for less than 6 hours, and only 2.0% slept for 9 or more hours. Males had a higher proportion than females on 6~9 hours of sleep. The sleeping hours decreased gradually with advancing age (Table 3-3-2-1). 67.4% of adults considered their sleep quality to be average. More males than females considered themselves having good quality of sleep. The highest proportion of males having poor quality of sleep was found in the 35~39 year age group, which accounted for 11.7%. The proportion of females having poor quality of sleep went up gradually with advancing age (Table 3-3-2-2).

As for average daily walking hours (excluding the walking time during physical exercise), 37.7% of adult subjects walked for less than 30 minutes, 38.8% walked for 30~60 minutes, 23.5% walked for 1 hour or above. More males than females walked for more than 1 hour daily. The walking hours increased evidently after age 45 for males and 40 for females (Table 3-3-2-3).

12.4% of the adult subjects sat for an average of less than 3 hours daily, 37.3% for 3~6 hours, 30.4% for 6~9 hours and 20% for over 9 hours. More males than females sat for less than 6 hours daily, whereas females had a higher proportion than males in sitting for over 9 hours daily. As age increased, adults with daily sitting hours less than 3 hours tended to increase (Table 3-3-2-4).

The most popular activity for adults during leisure time was audio-visual entertainment (54.7%). Specifically, the popular activities for males in descending order were audio-visual entertainment, physical exercise, social gathering, sleeping, traveling and house chores; the activities for females in descending order were audio-visual entertainment, house chores, social gathering, physical exercise, sleeping and traveling. The types of leisure activity differed by age group. In addition to the audio-visual entertainment desired by most of males, the proportion of males preferring traveling, social gathering and sleeping decreased with advancing age, while those doing house chores increased, and those doing physical exercise remained basically stable. The proportion of females declined with advancing age in preferring traveling, social gathering, audio-visual entertainment and sleeping, while that of females doing physical exercise and house chores was on the rise (Table 3-3-2-5).

18.9% of males and 1.9% of females currently had smoking habit. As age increased, males tended to smoke more, whereas females tended to smoke less after age 45 (Figure 2-3-1-1, Table 3-3-2-6).
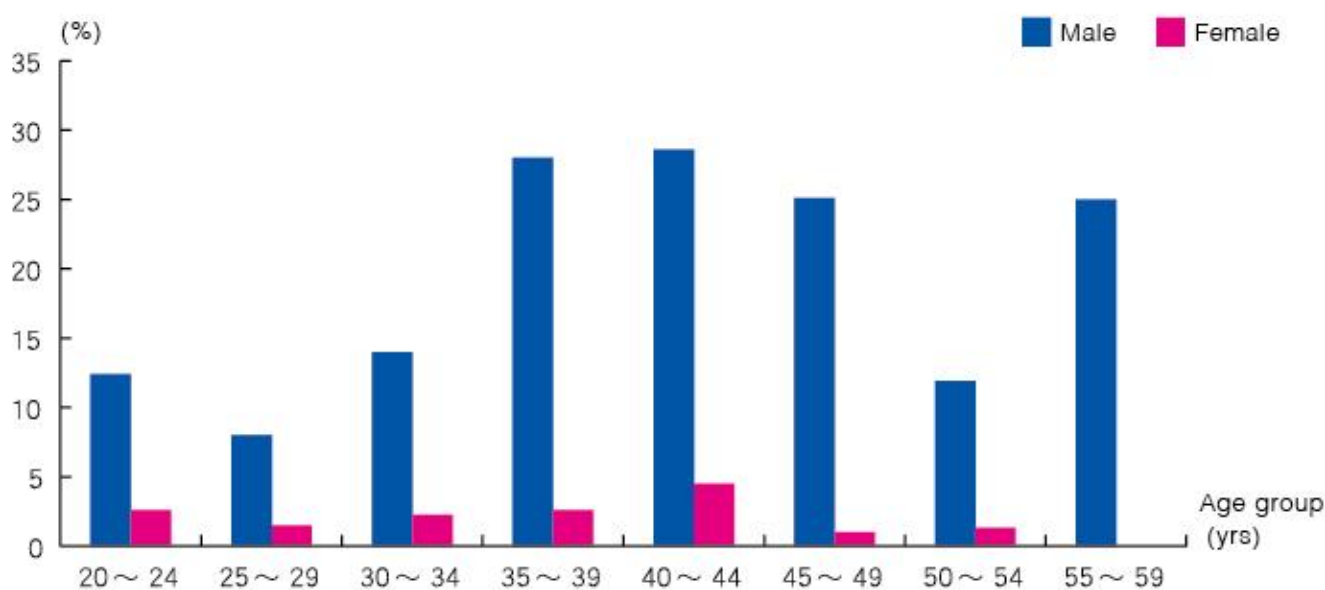

Figure 2-3-1-1 Proportion of adult "current smokers"

Among current smokers, 49.5% of males smoked less than 10 cigarettes per day, 42.3% of males smoked 10~20 cigarettes per day and 8.2% of males smoked above 20 cigarettes, whereas 93.9% of females smoked less than 10 cigarettes per day. The proportion of males smoking over 10 cigarettes per day was lower in the 30~39 and 50~54 year age groups than other age groups; however, the proportion of smoking less than 10 cigarettes per day increased in these age groups. Consequently, the cigarette consumption of males in the 30~39, 50~54 year age groups was relatively lower. A majority of female smokers in each age group smoked less than 10 cigarettes per day and no female smoker was found in the 55~59 age group (Table 3-3-2-6).

Among smokers (current and ex-smokers), 43.4% of males had smoked for over 15 years, which account for the highest proportion, while females had the highest proportion of 39.7% in smoking for 5~10 years (Table 3-3-2-7). As for adults who had quitted smoking, 18.9% of males had quitted smoking for less than 2 years and 81.1% had quitted smoking for over 2 years. Among female smokers, 28.0% had quitted smoking for less than 2 years and 72.0% had quitted for over 2 years (Table 3 -3-2-8).

52.9% of males and 27.6% of females had drinking history, with significant gender difference (P < 0.05). According to the different characteristics between genders, the two highest proportions of males that consumed alcohol were 60.1% and 61.2%, found in the 25~29 and 30~34 year age groups, respectively; and drinkers in other age groups generally accounted for about 50%. In the 20~24 year age group, females that consumed alcohol accounted for the highest proportion of 39.0%; and the proportion of female drinkers decreased as age increased (Figure 2-3-1-2, Table 3-3-2-9).
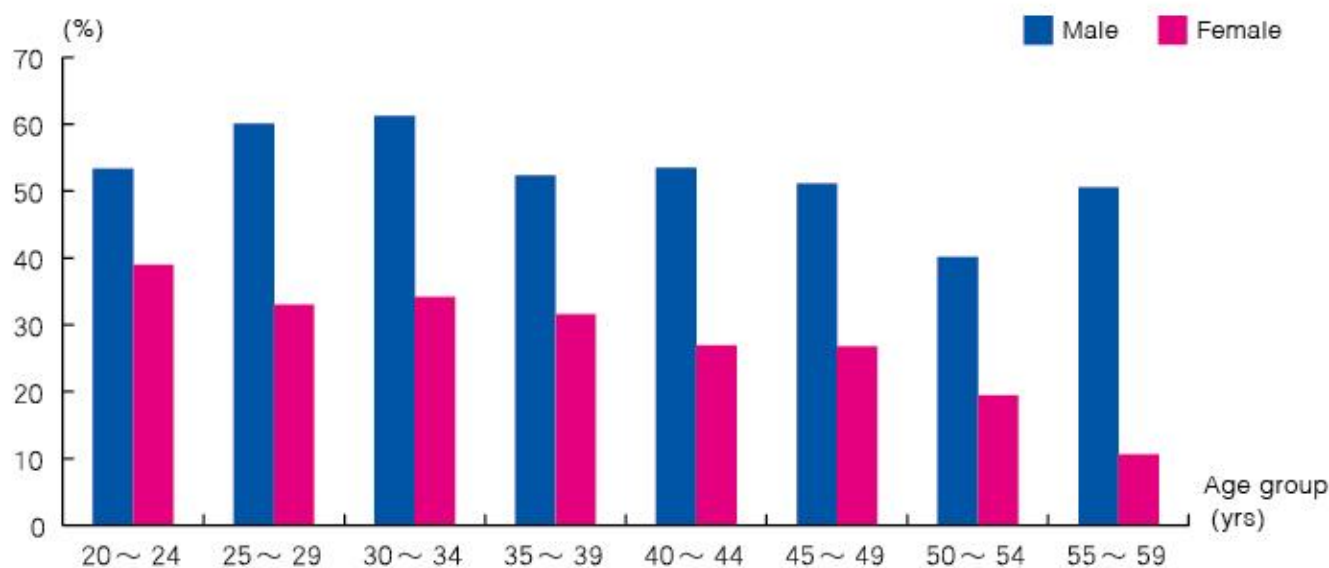
Figure 2-3-1-2 Proportion of adults that consumed alcohol

Among drinkers, 56.0% of males consumed alcohol once a month, 31.1% consumed 1~2 times a week, 8.3% consumed 3~4 times a week, and only 4.5% consumed alcohol 5~7 times weekly. For females, those drinking once a month contributed the highest proportion of 74.4% (Table 3-3-2-10). Most adults drank beer (44.5%), followed by wine or fruit wine (42.0%). The most common alcohol drank by males was beer; for females, wine or fruit wine were the most favorite (Table 3-3-2-11).

In respect of eating habits, it could be found that 71.9% of adult subjects (68.0% males, 74.9% females) had breakfast 6 or more days a week. Those having breakfast 3~5 days a week accounting for 20.9% (21.5% males, 20.3% females), having breakfast 1~2 days a week accounting for 4.9% (6.5% males, 3.5% females), and only 2.3% (3.5% males, 1.3% females) never ate breakfast (Table 3-3-2-12).

The proportion of adults eating out for 10 or more times, 7~9 times, 4~6 times, 1~3 times and "hardly" a week were 14.1% (16.4% males, 12.0% females), 11.3% (12.9% males, 9.9% females), 23.5% (24.2% males, 22.8% females), 43.3% (41.0% males, 45.3% females) and 7.9% (5.5% males, 10.0% females), respectively (Table 3-3-2-13).

The proportion of adults taking high-fat and high-sugary snacks for 6 or more times, 3~5 times, 1~2 times and "hardly" a week were 15.7% (14.7% males, 16.5% females), 30.0% (32.0% males, 28.2% females), 44.0% (43.2% males, 44.7% females) and 10.3% (10.1% males, 10.6% females) (Table 3-3-2-14).

(2) Physical exercise

According to the study, 76.5% of adult subjects participated in physical exercise, of which 69.9% exercised less than 2 times a week, 68.6% exercised for more than 30 minutes each time, 54.6% reached moderate exercise intensity. In addition, persistent exercising for less than 1 year gained the highest proportion of 53.7%, 21.3% persisted for 1~5 years, and 25.1% persisted for over 5 years.

Exercise frequency and duration differed between genders. More males (30.6%) exercised for more than 3 times a week than females (29.6%), and more males (72.1%) exercised for more than 30 minutes each time compared to females (64.9%). The proportion of males (41.2%) doing high intensity exercise was significantly higher than females (22.5%) (P < 0.05), and the proportion of males (30.9%) who persisted in exercising for over 5 years was also significantly higher than females (19.2%) (P < 0.05).

As age increased, weekly exercising frequency of adults increased, but exercise intensity tended to decrease. The proportion of adults who persisted in exercising for no more than 6 months declined, and those who continued exercising for over 5 years increased. Besides, the exercising duration decreased in males while increased in females with advancing age (Tables 3-3-2-15, 3-3-2-16, 3-3-2-17 and 3-3-2-18).

Subjects were classified into frequent, occasional and non-exercisers according to weekly exercise frequency, exercise duration and intensity (see "Part II Children and Adolescents" for definitions). The results showed that frequent exerciser accounted for 16.0%, occasional exerciser accounted for 60.5% and non-exerciser accounted for 23.5%. There was a significant gender difference in the proportion of frequent, occasional and non-exercisers. Frequent and occasional exercisers accounted for a higher percentage in males (18.0% and 63.4%, respectively) than females (14.3% and 57.8%, respectively) (P<0.05). Males and females appeared to have different characteristics on physical exercise at different age groups. For males, the proportion of frequent exercisers was obviously higher in the 20~24, 50~54 and 55~59 year age groups than that in other age groups. A higher decrease was found in the proportion of occasional exercisers in the 50~54 and 55~59 year age groups than other age groups. The proportion of non-exercisers increased with advancing age. For females, the proportion of frequent exercisers increased rapidly, that of occasional exercisers varied slightly, and the proportion of non-exercisers descended gradually with advancing age (Figures 2-3-1-3 and 2-3-1-4).

Frequent exercisers who kept exercising for over 5 years had the highest proportion (44.9%), followed by 1~3 years (19.1%) and 6~12 months (13.6%). The proportion of occasional exercisers who had exercised for less than 6 months was 47.2%, followed by over 5 years (19.8%) and 6~12 months (14.2%).
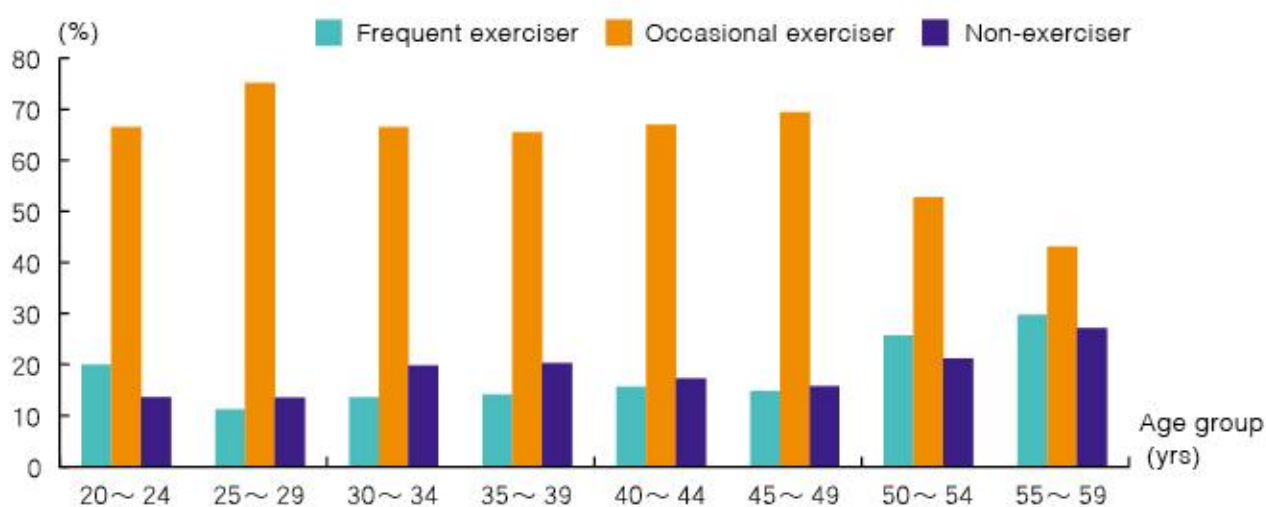

Figure 2-3-1-3 Proportion of frequent, occasional and non-exercisers in male adults
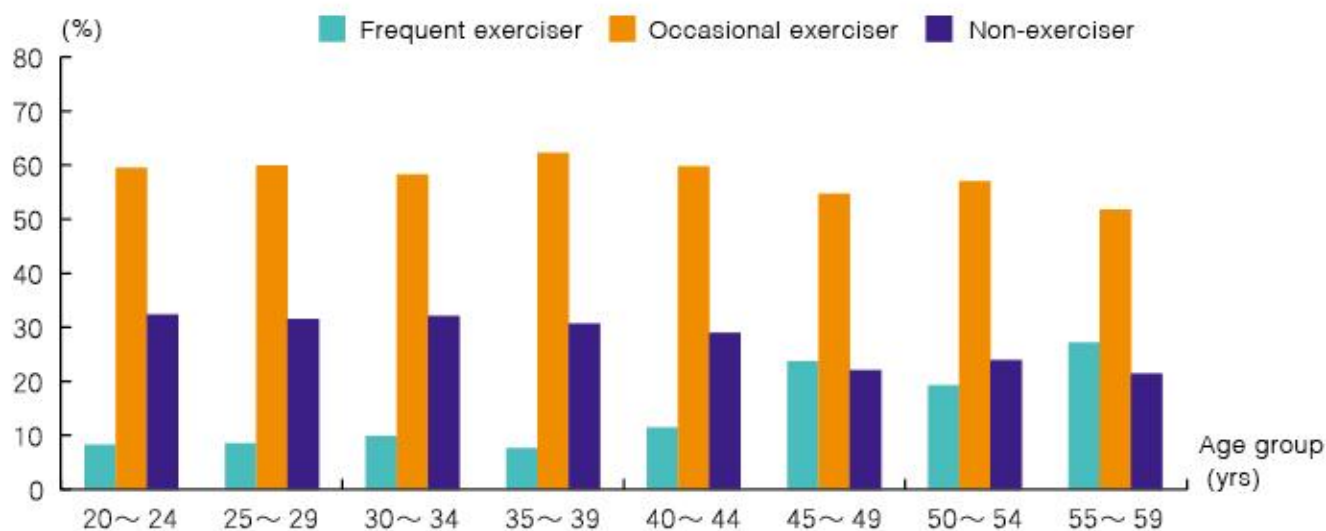
Figure 2-3-1-4 Proportion of frequent, occasional and non-exercisers in female adults

The main purposes for males to participate in physical exercise were to improve exercise ability (65.5%), relieve pressure and regulate mood (58.6%) and cure or prevent diseases (54.3%). The aims for frequent and occasional exercisers were generally the same. For females, the aims of doing physical exercise were to prevent and cure diseases (60.7%) and to relieve pressure (58.3%), with basically same aims for frequent and occasional exercisers. The reasons for doing exercise varied with age groups. As age increased, more and more people exercised for the purpose of preventing and curing diseases, while less people exercised to improve exercise ability, lose weight, keep fit and relieve pressure (Table 3-3-2-19).

Major locations where adults exercised were park (50.4%), stadium or gym (49.7%), open area, road or street (39.1%), office or home (17.6%), and recreational club (10.0%). For exercising locations, stadium or gym was the first choice for males, followed by park; where park was the first choice and then stadium or gym for females. More frequent exercisers went to gym or stadium and more occasional exercisers chose park (Table 3-3-2-20).

As for the types of sports that adult exercisers participated in, the top 6 sports were walking (51.0%), jogging (49.8%), ball games (30.6%), swimming (23.2%), bicycling (13.5%) and hiking (11.7%). Difference was seen between genders. Males usually participated in sports such as jogging, ball games, walking, swimming, equipment work out and strength training; while females usually participated in walking, jogging, ball games, swimming, aerobics, yangko dance and yoga, etc. Frequent and occasional exercisers generally chose the same types of sports. An association between sports choices and age was seen. As age increased, the proportion of subjects who jogged and played ball games dropped while more and more subjects participated in walking, aerobics and yangko dance, martial arts and qigong (Table 3-3-2-21).

A large percentage of males among Macao adults participated in football, basketball, badminton and table tennis. As for females, the most favorite ball game in each age group was badminton, followed by table tennis (Table 3-3-2-22).

The major obstacles that hindered adults to participate in physical exercise in descending order were laziness (58.8%), lack of time (58.4%), lack of venues and facilities (27.1%), lack of coaching advice (11.5%) and lack of interest (11.2%). The obstacles for exercising among frequent exercisers, occasional exercisers and non-exercisers were mainly laziness, lack of time, and lack of venues and facilities (Table 3-3-2-23).

In addition, the frequently watched sports by Macao male adults were football (55.4%) and basketball (36.5%), while the rest of the 15 items did not exceed a total of 20%. As age increased, the proportion for those watching football varied little and those watching basketball decreased, while the proportion of those watching swimming and table tennis were on the rise. Females mainly watched swimming (27.5%), gymnastics (23.3%) and badminton (18.7%). The proportion of adults watching different sports in all age groups was basically stable, and the most favorite sports being watched were football (34.7%), basketball (26.2%) and swimming (20.6%). The proportion of males and females watching basketball decreased with advancing age. The highest proportion of adults watching swimming was seen in the 50~54 year age group of males (20.3%) and the 35~39 year age group of females (35.8%). For football, the highest proportion was seen in the 30~34 year age group of males and the 20~24 year age group of females, which was higher than that in other age groups (Table 3-3-2-24).

(3) Occurrence of Diseases

The results showed that 24.8% of adult subjects had been diagnosed with diseases by a hospital in the past 5 years. The top 3 diseases in descending order were hypertension (25.2%), respiratory diseases (21.7%) and gastrointestinal diseases (20.1%). There were 24.4% of males and 25.2% of females had diseases. The proportion of subjects diagnosed with diseases increased gradually with advancing age (Figure 2-3-1-5) and the types of diseases diagnosed varied with age groups. A relatively high proportion of subjects at age 20~30 had gastrointestinal diseases, respiratory diseases and accidental injury, while the proportion with hypertension, cardiovascular diseases, tumor and diabetes increased rapidly for subjects aged 45 onwards (Tables 3-3-2-25 and 3-3-2-26).
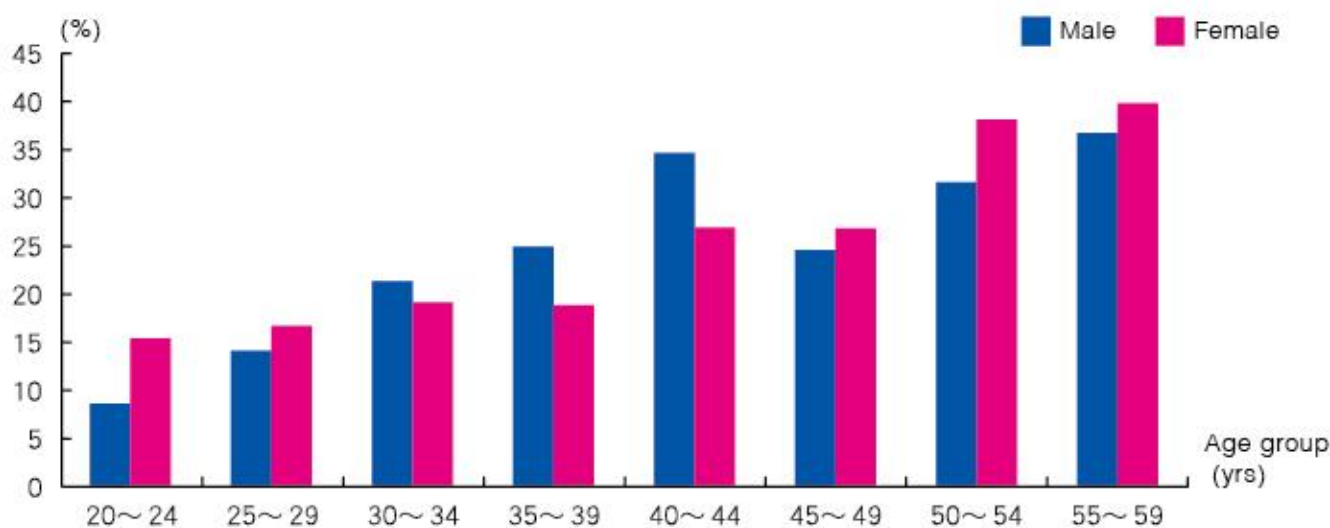
Figure 2-3-1-5 Occurrence of diseases in the past 5 years in adults

(4) Perception of the Physical Fitness Study

The results indicated that 68.9% of adult subjects (66.5% males, 71.1% females) had heard of the physical fitness study. More than 60% adults in each age group had heard of the physical fitness study (Figure 2-3-1-6, Table 3-3-2-27).

Among adult subjects, 34.0% (34.8% males and 33.2% females) had previously participated in the physical fitness study. The proportion tended to increase with advancing age, and more than 30.0% of male and female adults aged 35 onwards had participated in the physical fitness study before (Table 3-3-2-27). In regards to the perception of physical fitness study, 94.2% of the subjects considered fitness study as a mean "to understand their fitness status", 54.3% considered it helpful "to recognize the importance of physical exercise", 43.7% felt that it could "improve scientific knowledge of fitness", and 4.3% considered it "meaningless" (Table 3-3-2-28).
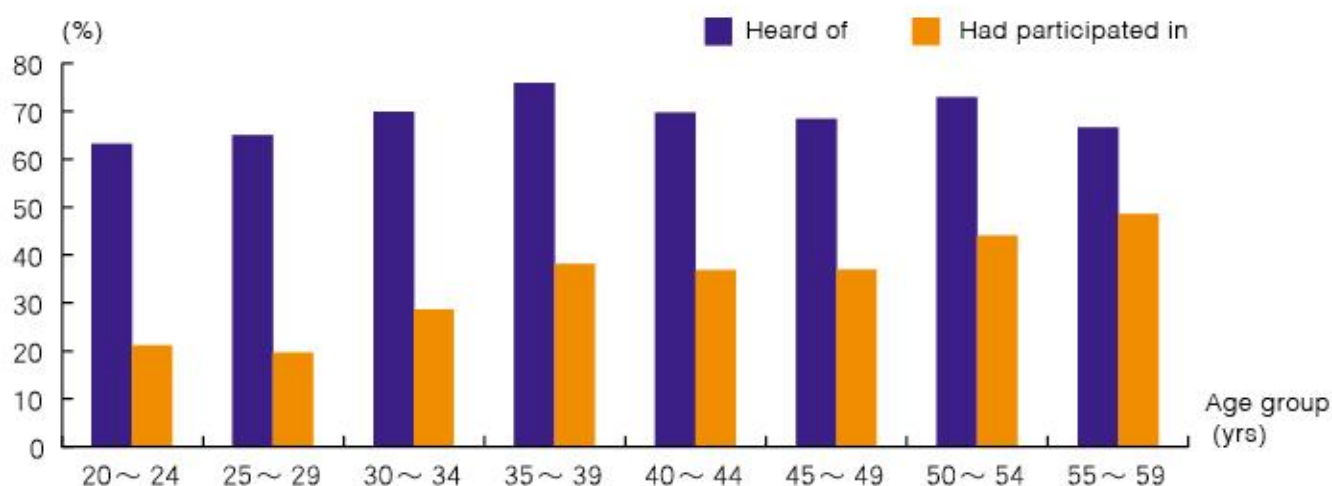
Figure 2-3-1-6 Adults had heard of or participated in physical fitness study

3. Anthropometric Measurements

(1) Length Indicators

Height of adult males and females tended to decline with advancing age. The highest average height was found in the 20~24 year age group, 172.4cm for males and 159.5cm for females. The lowest average height was found in the 55~59 year age group, 167.1cm for males and 155.5cm for females (Figure 2-3-1-7 and Table 3-3-3-1).

Sitting height of males and females also tended to decline with advancing age. The average sitting height of males and females ranged from 89.8~92.6cm and 84.1~86.5cm, respectively (Figure 2-3-1-8 and Table 3-3-3-2).

Foot length stopped increasing during adolescence and remained stable with little change during adulthood. The average foot length for males and females ranged from 24.6~25.3cm and 22.8~23.0cm respectively (Figure 2-3-1-9 and Table 3-3-3-3).

Length indicators differed between genders, with height, sitting height and foot length higher in males than females (P < 0.01). The differences between males and females were 11.3~13.5cm for height, 4.9~6.6cm for sitting height and 1.8~2.5cm for foot length.
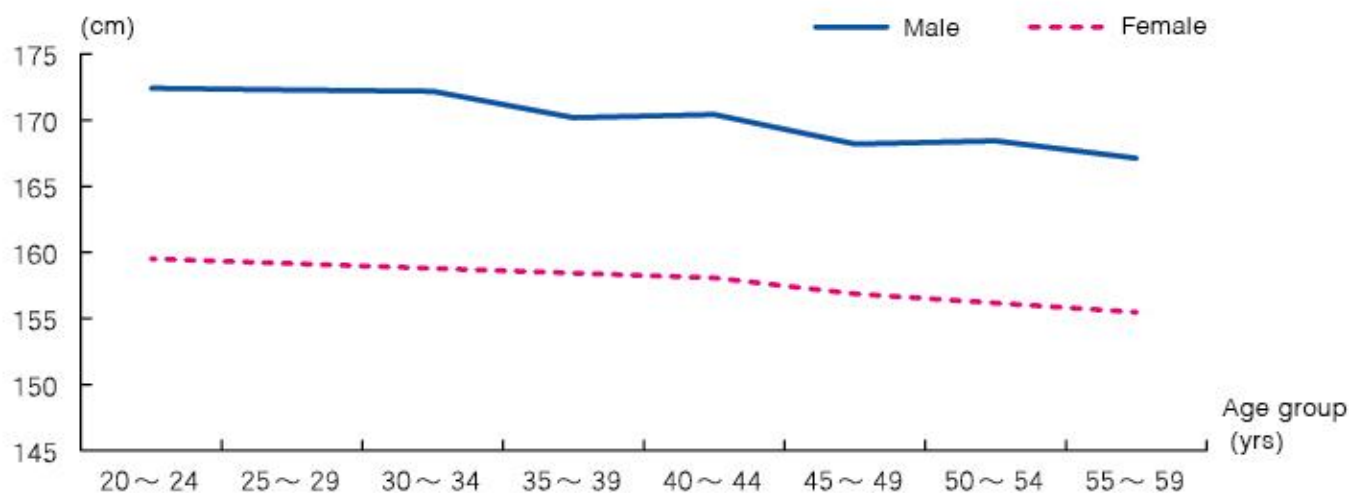
Figure 2-3-1-7 Average height of adults

153
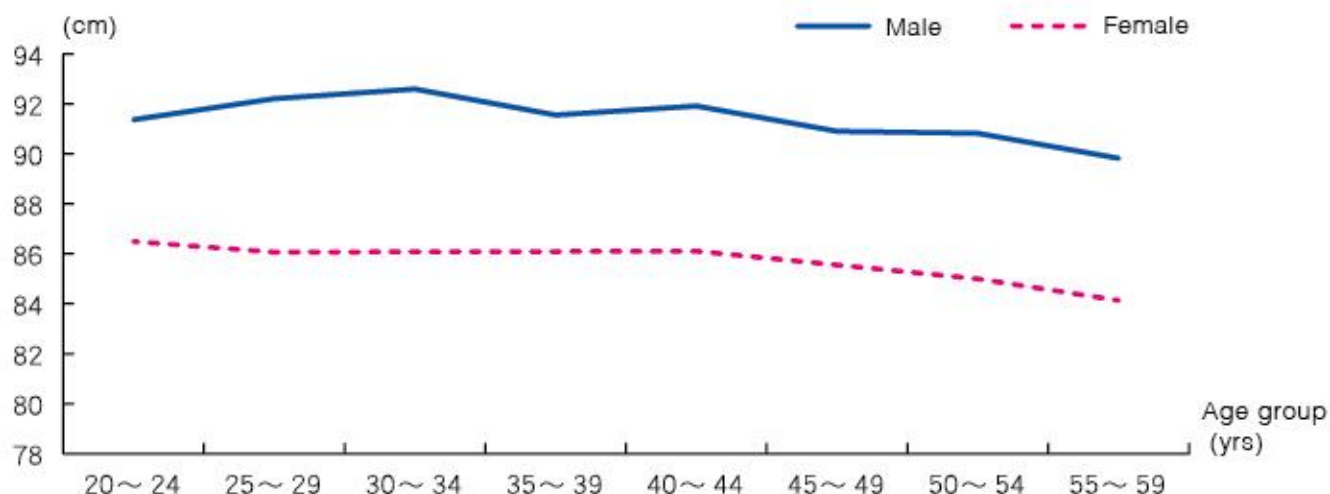
Figure 2-3-1-8 Average sitting height of adults
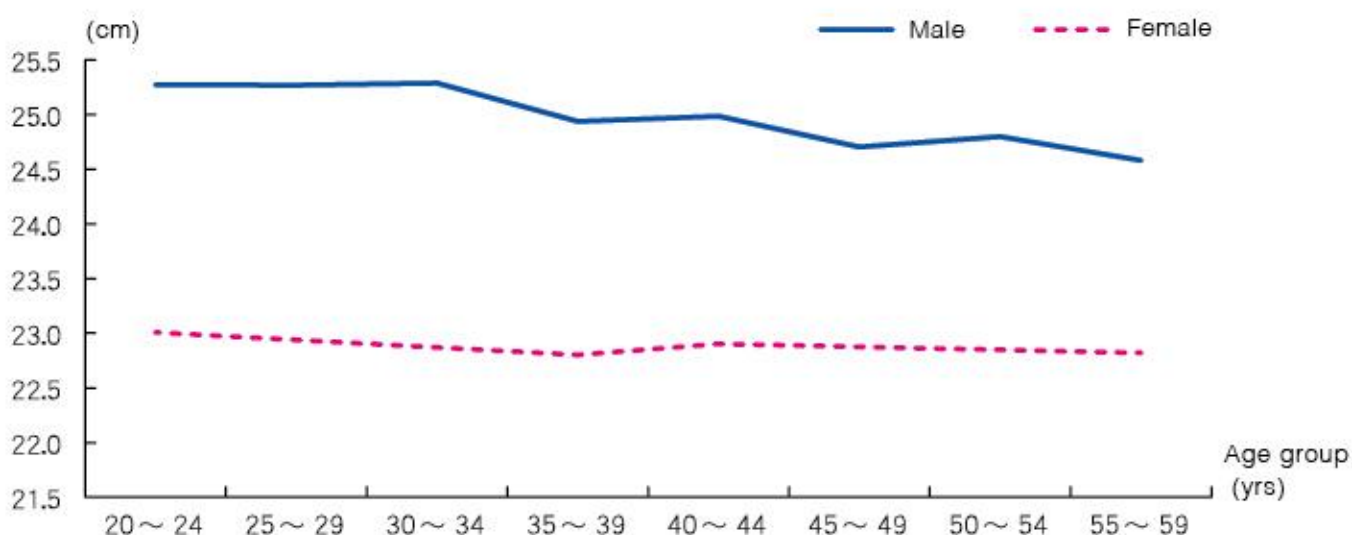
Figure 2-3-1-9 Average foot length of adults

(2) Weight and BMI

Before age 35, weight of male adults continued to increase with advancing age, with a maximum weight of 70.1kg recorded in the 30~34 year age group and a minimum weight of 65.7kg in the 20~24 year age group. After age 35, weight of male adults decreased gradually afterwards. As age increased, weight of female adults declined in the 20~29 and 50~59 year age groups, while increased in the 30~49 year age groups. The minimum weight of 52.7kg was found in females of the 25~29 year age group, and the maximum weight of 58.1kg was in the 45~49 year age group (Figure 2-3-1-10). Males had a significantly higher weight than females and the gender difference decreased with advancing age, ranging from 10.3~17.3kg (P<0.01) (Table 3-3-3-4).

The body mass index (BMI) is the value of the body mass (kg) divided by the square of the height (m2), which is a universal measure for body fat levels. According to the recommended standard of BMI grouping by China Obesity Problem Working Team, underweight is defined as BMI < 18.5, normal weight is defined as 18.5≤BMI < 24.0, overweight is considered as 24.0≤BMI < 28.0, and obesity is defined as BMI≥28.0.

Between ages 20~29, BMI of male adults increased with advancing age. BMI of males varied little between ages 30~49 and declined with age between ages 50~59. The highest BMI of 24.3 was recorded in the 45~49 year age group, while the lowest BMI of 22.1 was recorded in the 20~24 year age group. As for female adults, BMI decreased between ages 20~29 and increased between ages 30~54 with advancing age; and then declined thereafter between ages 55~59. The maximum BMI of 23.7 was found in the 50~54 year age group and the minimum BMI of 20.7 was in the 25~29 year age group (Figure 2-3-1-11). Males had a higher BMI than females and the gender difference decreased as age increased, ranging from 0.5~2.9 (Table 3-3-3-5).

Males aged 25~39 had a higher obesity rate, among which the rate in the 25~29, 30~34 and 35~39 year age groups were 13.2%, 13.5% and 10.2%, respectively; whereas the relatively lower rates were recorded in the 20~24 (4.9%) and 40~44 (5.4%) year age groups; the obesity rate in other age groups ranged from 8.0~9.3%. The obesity rate of female adults increased first and then decreased with advancing age, with the highest rate of 12.6% in the 50~54 year age group and the lowest rate of 3.6% in the 20~24 year age group (Figure 2-3-1-12 and Table 3-3-3-6).
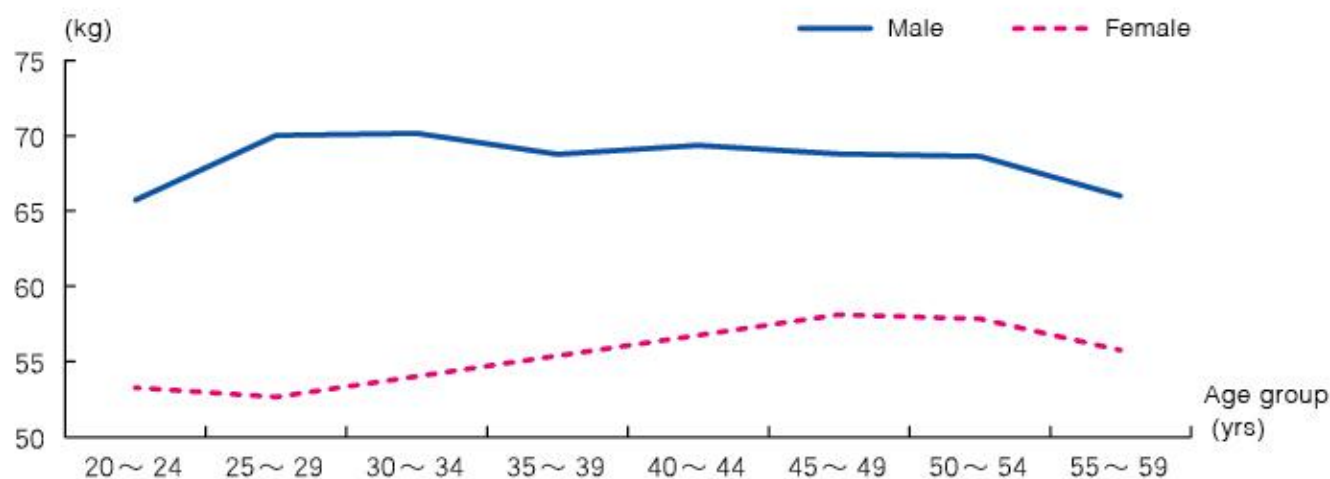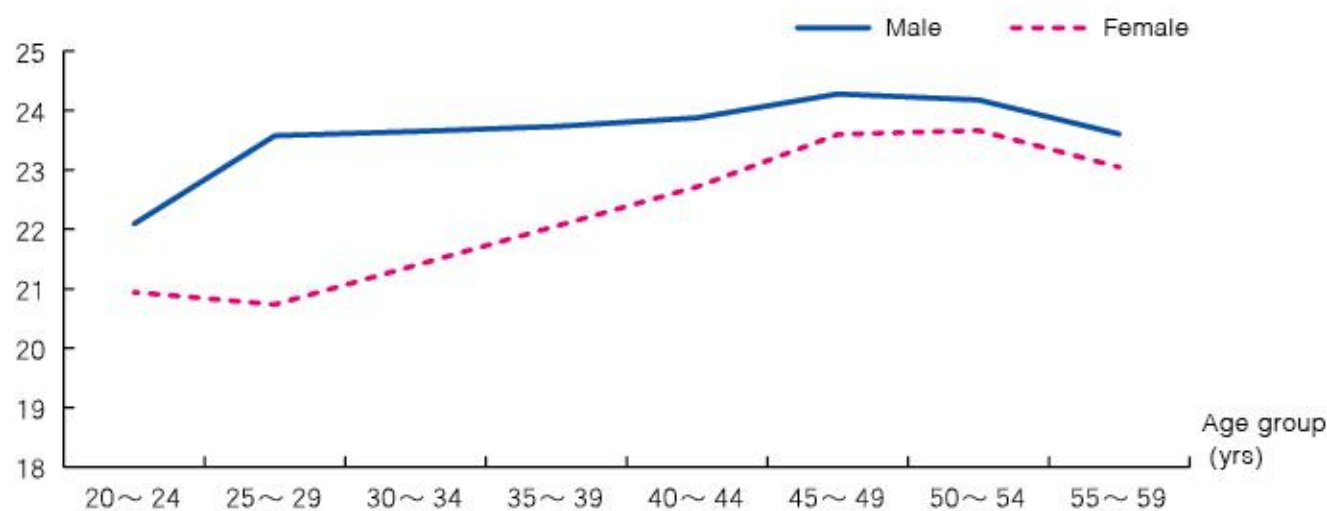
Figure 2-3-1-10 Average weight of adults

Figure 2-3-1-11 Average BMI of adults
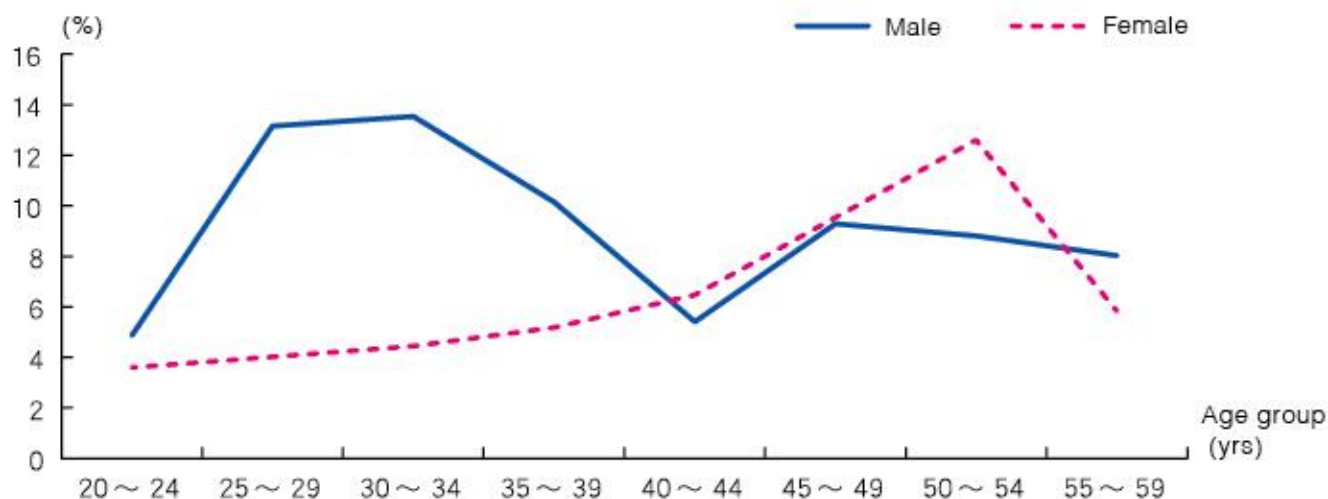
Figure 2-3-1-12 Obesity rate of adults

(3) Circumference Indicators

Chest and waist circumferences for male and female adults increased with advancing age before age 55, and remained stable thereafter. The average chest and waist circumferences ranged from 89.1~93.2cm (males) and 81.6~87.3cm (females), 78.1~86.2cm (males) and 70.7~80.2cm (females), respectively (Figures 2-3-1-13 and 2-3-1-14, Tables 3-3-3-7 and 3-3-3-8). Hip circumference for male adults increased with advancing age between ages 20~29, and remained fairly stable between ages 30~54, then declined afterwards between ages 55~59. Hip circumference for female adults increased with advancing age between ages 20~49, and then declined slightly between ages 50~59. The average hip circumference for males and females ranged from 91.5~93.5cm and 90.6~94.0cm, respectively (Figure 2-3-1-15 and Table 3-3-3-9).

Chest and waist circumferences of males were significantly higher than females, but the differences decreased as age increased. The significant differences between males and females ranged from 4.6~10.2cm for chest circumference and 5.6~11.7cm for waist circumference (P < 0.01). After age 40, hip circumference of males was lower than that of females, with significant gender difference found in the 25~34, 45~49 and 55~59 year age groups (P < 0.05). The differences in other age groups were relatively small.

The waist-to-hip ratios (WHR) of males and females increased with advancing age, ranging from 0.851~0.930 and 0.778~0.856, respectively. The WHR of males was higher than that of females, with significant difference ranging from 0.073~0.098 (P < 0.01). This was probably due to a rather small difference in hip circumference between males and females, and a significant higher waist circumference of males compared to females (Figure 2-3-1-16 and Table 3-3-3-10).
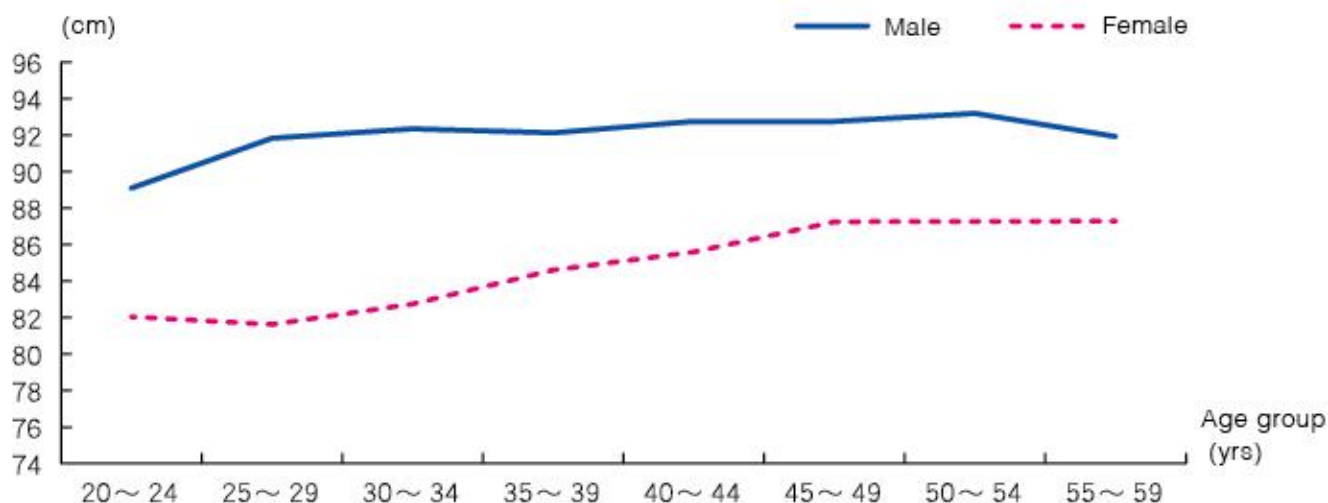
Figure 2-3-1-13 Average chest circumference of adults
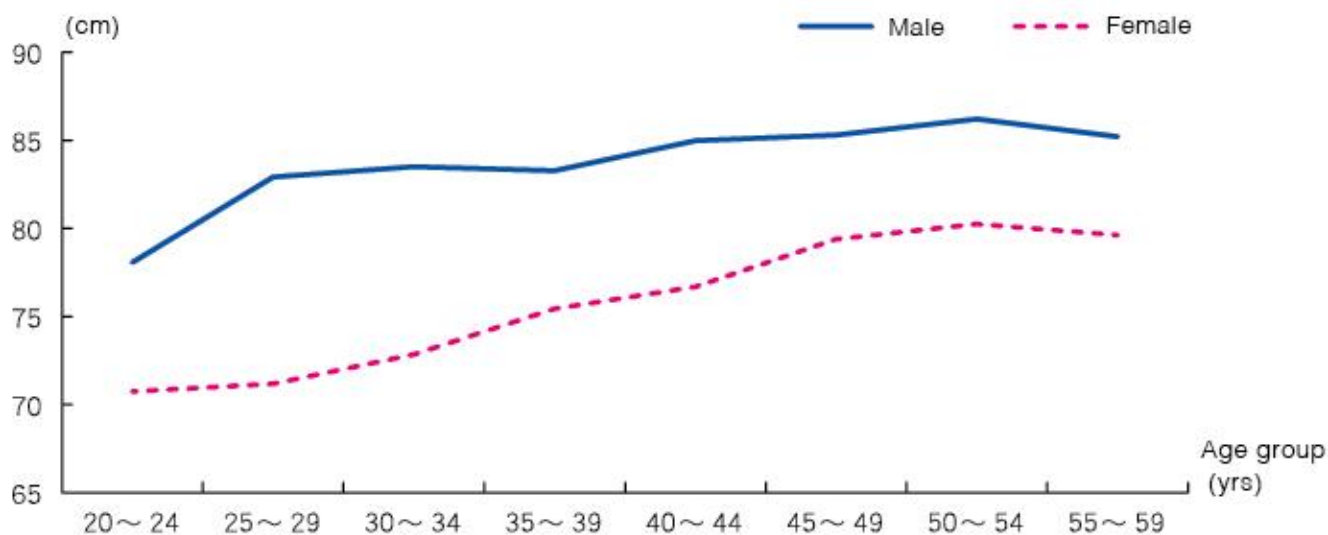
Figure 2-3-1-14 Average waist circumference of adults
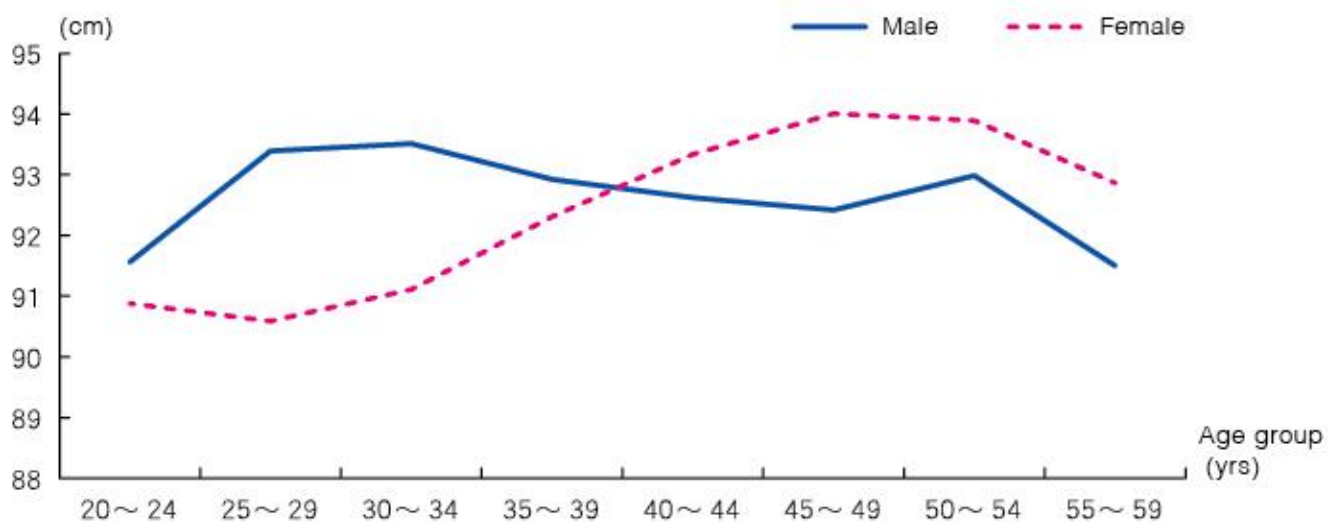
Figure 2-3-1-15 Average hip circumference of adults
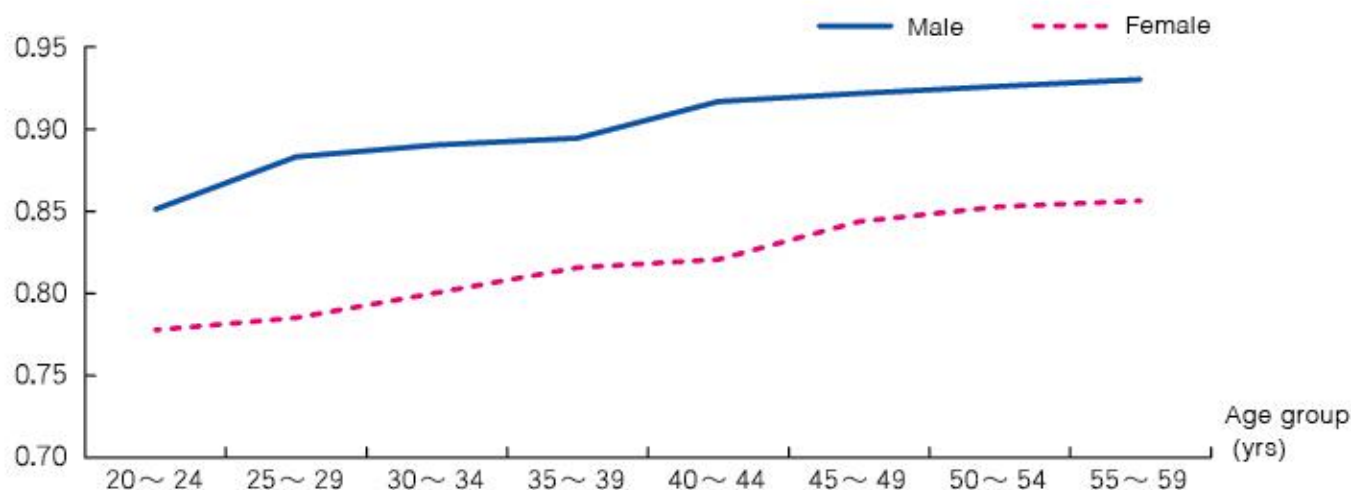
Figure 2-3-1-16 Average waist-hip ratio(WHR) of adults

(4) Width Indicators

Shoulder width of male adults declined slightly with advancing age, while shoulder width of female adults varied mildly among age groups. The average shoulder width for males and females ranged from 38.6~40.1cm and 33.6~34.4cm, respectively. The shoulder width of males was 4.6~6.0cm wider than females, with significant difference between genders (P < 0.01) (Figure 2-3-1-17 and Table 3-3-3-11).

Pelvis width of female adults increased with advancing age. As for male adults, pelvis width increased rapidly between ages 20~29 and the growth rate slowed down thereafter; between ages 35~39, pelvis width of males increased steadily. The average pelvis width for males and females were 27.2~28.0cm and 26.6~28.0cm, respectively. The average pelvis width of males was larger than females in the 20~54 year age groups and the difference declined with advancing age. The average pelvis width differed significantly between genders in the 20~34 year age groups (P < 0.01), with the difference ranging from 0.6~1.1cm. No statistical significance was found after age 35 (Figure 2-3-1-18 and Table 3-3-3-12).
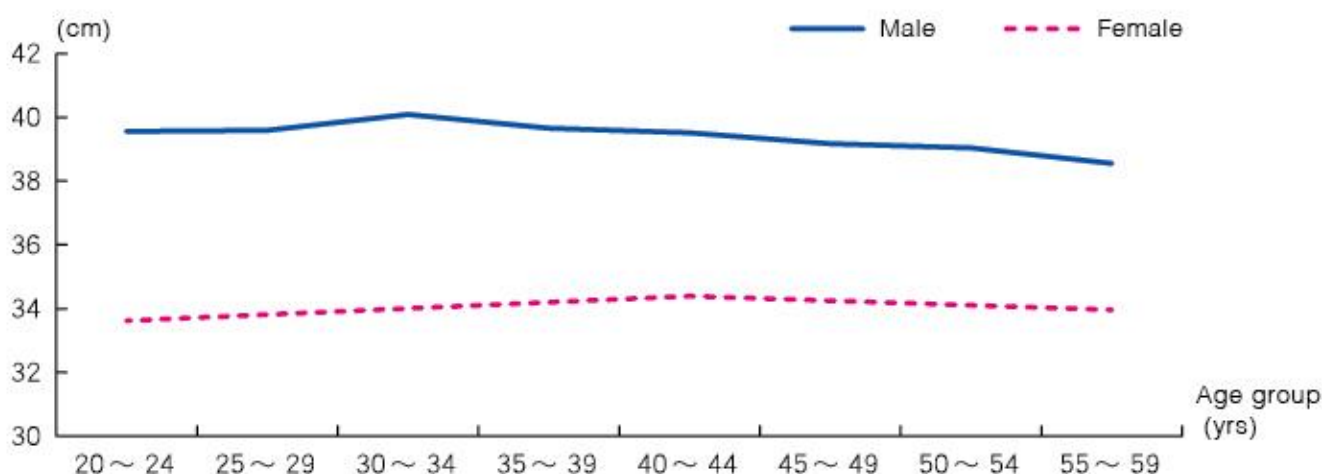
Figure 2-3-1-17 Average shoulder width of adults
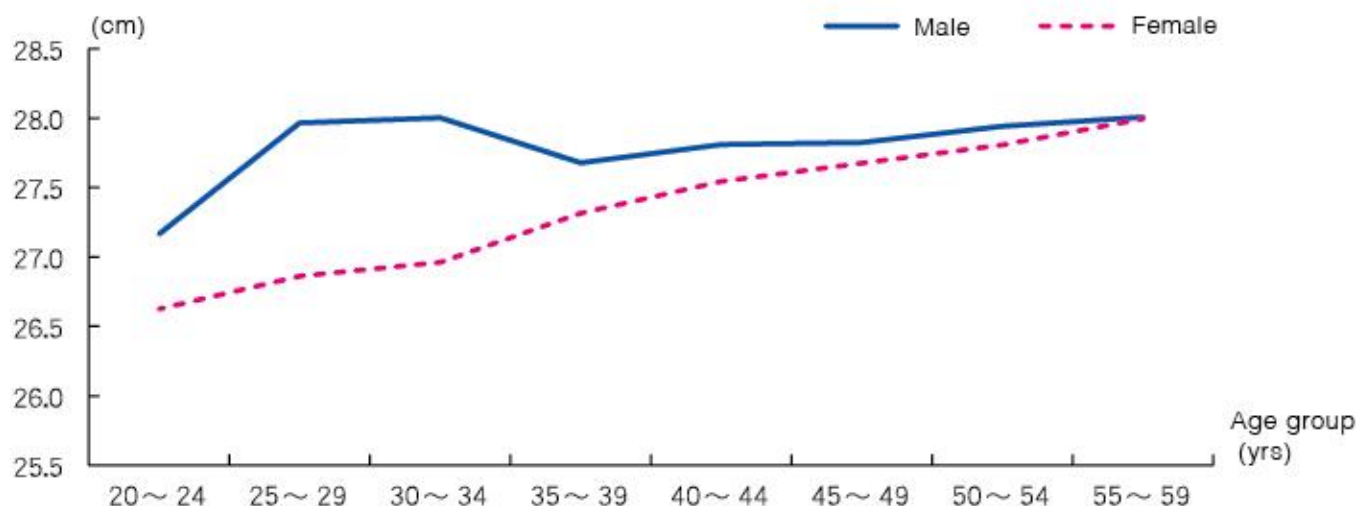
Figure 2-3-1-18 Average pelvis width of adults

(5) Body Composition

For male adults, the upper arm skinfold thickness increased with advancing age between ages 20~29, then decreased thereafter; the subscapular and abdominal skinfold thickness increased with advancing age between ages 30~44, and remained stable afterwards while decreased after age 55. For female adults, as age increased, the upper arm skinfold thickness increased before age 44, and the subscapular and abdominal skinfold thickness increased before age 49. The skinfold thickness of these three parts remained stable thereafter and all decreased after age 55. Among the three measuring parts of males, abdominal skinfold was the thickest, followed by subscapular skinfold and upper arm skinfold. For females, abdominal skinfold was also the thickest, followed by upper arm skinfold and subscapular skinfold (Figures 2-3-1-19, 2-3-1-20 and 2-3-1-21).

The average upper arm, subscapular and abdominal skinfold thickness ranged from 9.8~13.6mm (males) and 19.2~24.1mm (females), 14.4~20.9mm (males) and 16.4~23.0mm (females), and 18.3~25.3mm (males) and 22.3~27.3mm (females), respectively (Tables 3-3-3-13, 3-3-3-14 and 3-3-3-15).

The average skinfold thickness of the three measuring parts of female adults was higher than males (except for the subscapular and abdominal skinfold thickness at age 25~34). The difference in skinfold thickness between males and females tended to increase as age increased. The differences in the upper arm, subscapular and abdominal skinfold thickness between males and females ranged from 6.0~12.5mm, 1.1~2.2mm and 0.3~4.0mm, respectively. Significant gender difference was found in the skinfold thickness of these three parts in all age groups except in the 25~34 and 40~44 year age groups ($P < 0.05$).

Body fat percentage of males ranged from 16.7%~19.8%. With the exception of relatively lower value in the age groups of 20~24 and 55~59, body fat percentage in other age groups remained stable. Body fat percentage of females increased with advancing age, ranging from 24.3%~30.8%. Females had significantly higher body fat percentage than males ($P < 0.05$) (Figure 2-3-1-22 and Table 3-3-3-16).

Lean body mass of male and female adults fluctuated slightly in a flat trend with advancing age, ranging from 53.9~55.7kg and 38.9~40.1kg, respectively. Lean body mass of males was significantly higher than that of females ($P < 0.05$) (Figure 2-3-1-23 and Table 3-3-3-17).
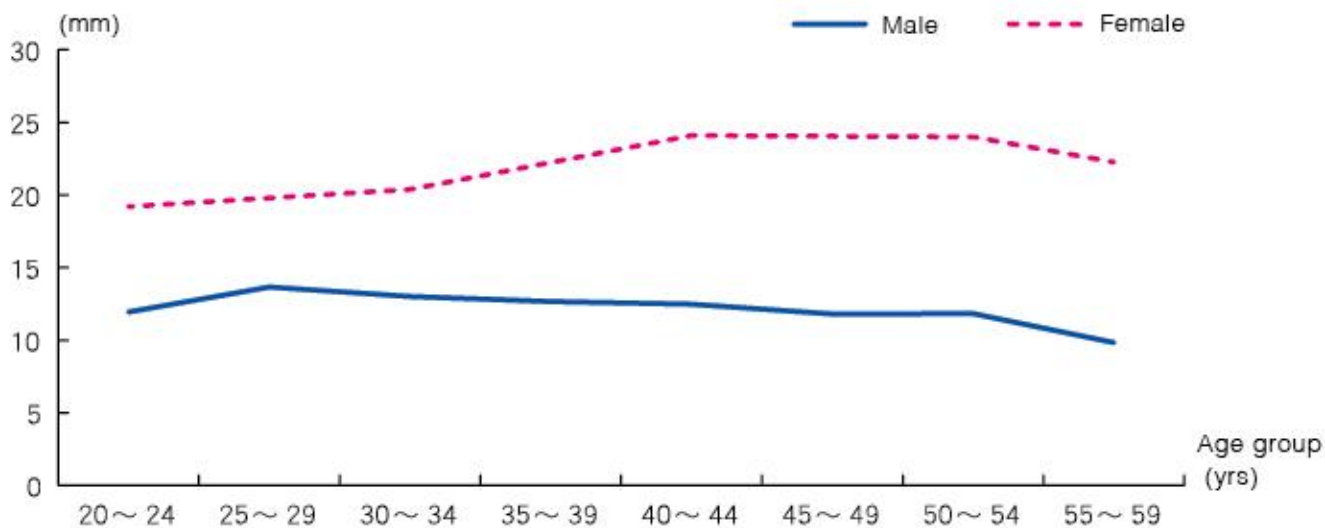
Figure 2-3-1-19 Average upper arm skinfold thickness of adults
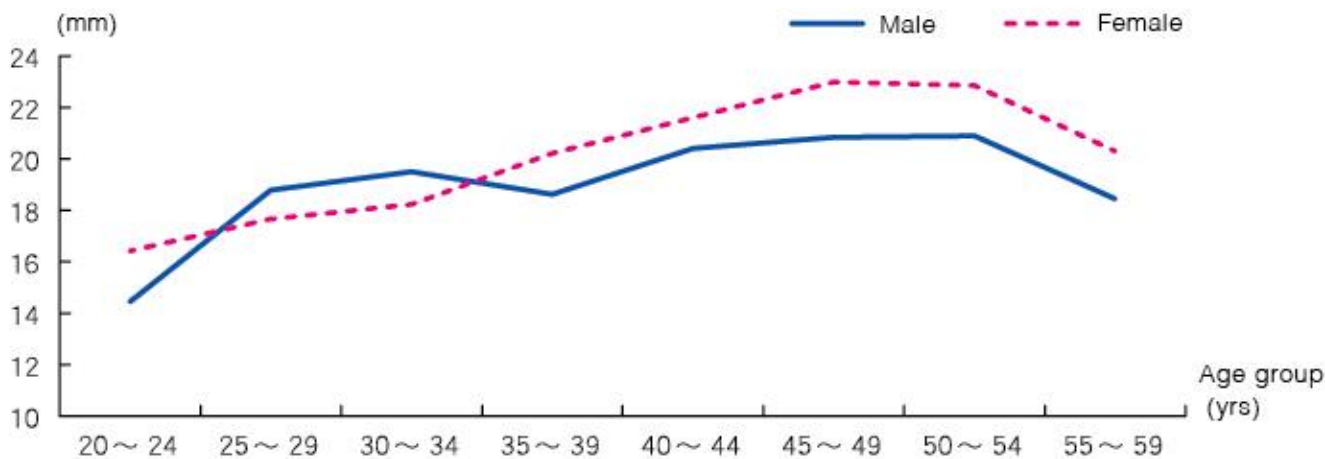
Figure 2-3-1-20 Average subscapular skinfold thickness of adults
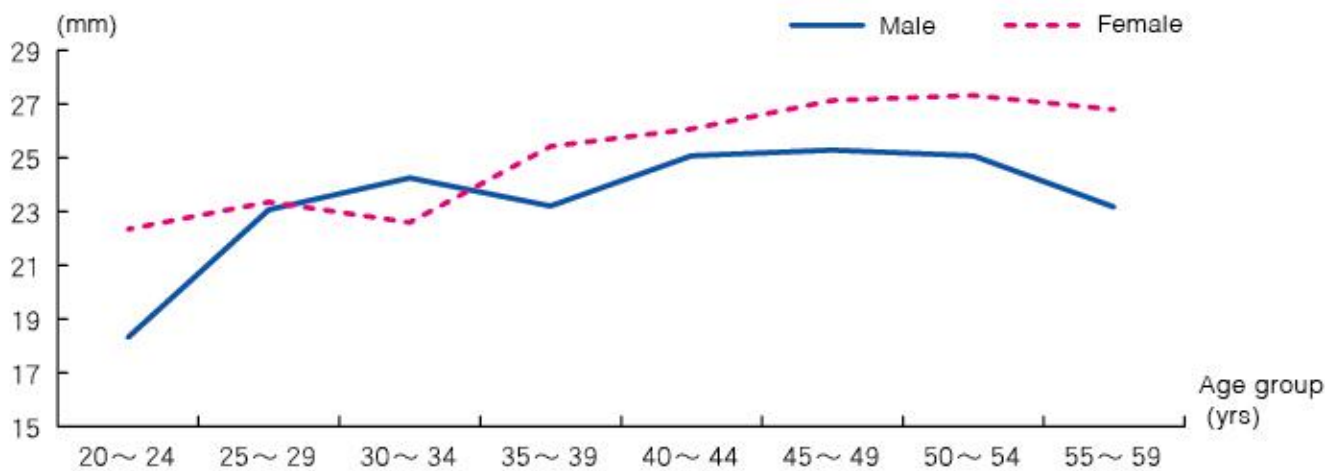
Figure 2-3-1-21 Average abdominal skinfold thickness of adults

160
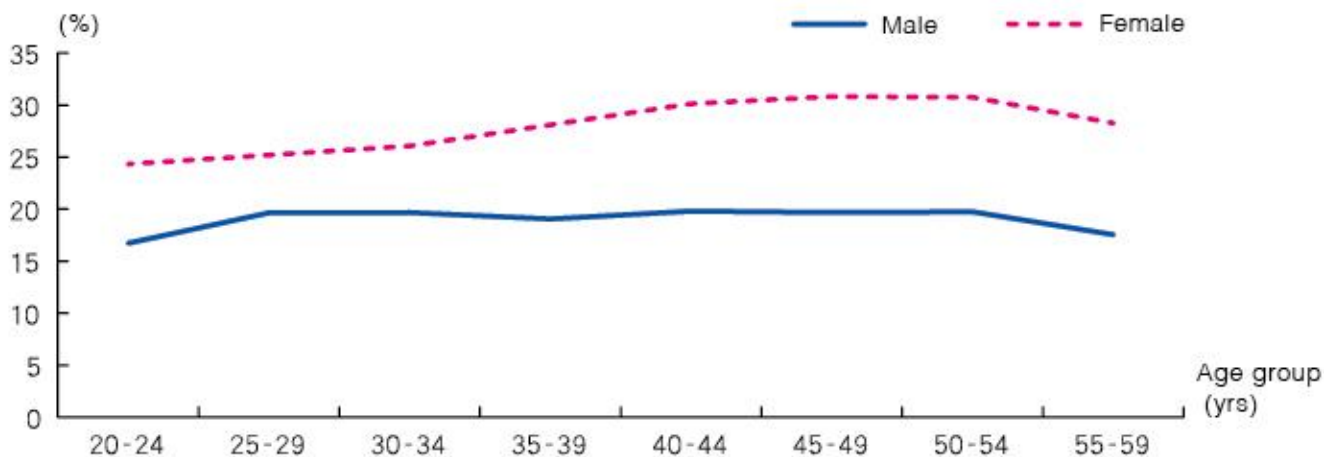
Figure 2-3-1-22 Average body fat percentage of adults
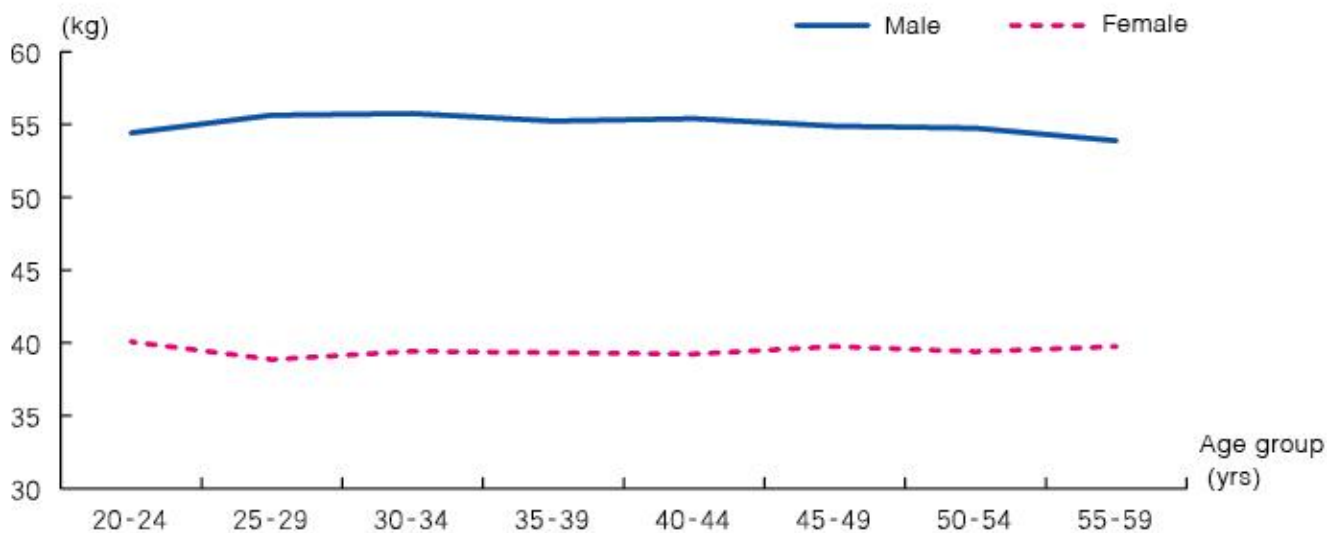
Figure 2-3-1-23 Average lean body mass of adults

4. Physiological Function

(1) Resting Pulse

The resting pulses for adults increased with advancing age and remained relatively stable. Resting pulse ranged from 73.1~76.7 bpm for males and 72.3~78.8 bpm for females. Significant gender difference was found in all age groups except in the age groups of 25~29 and 50~54 ($P < 0.05$) (Figure 2-3-1-24 and Table 3-3-4-1).
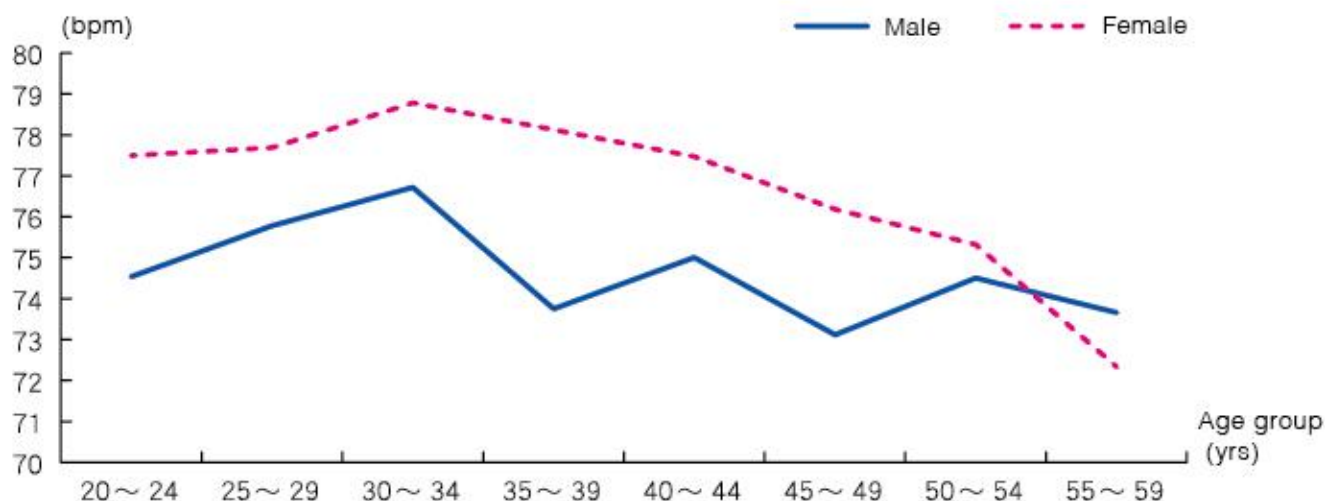
Figure 2-3-1-24 Average resting pulse of adults

(2) Blood Pressure

The systolic blood pressure (SBP) of male adults fluctuated slightly in a stable trend in each age group, while the SBP of female adults tended to increase slowly with advancing age. The SBP for males and females were 126.3~131.7 mmHg and 107.4~125.2 mmHg, respectively. The average SBP of males was usually higher than females, with significant gender difference ranging from 6.5~20.1 mmHg (P < 0.01) (Figure 2-3-1-25 and Table 3-3-4-2).

The diastolic blood pressure (DBP) of adults tended to increase slowly with advancing age. The DBP for males and females were 73.1~78.8 mmHg and 67.3~73.2 mmHg, respectively. Males had a significant higher DBP than females (P < 0.01), with the difference between genders ranging from 4.3~9.0 mmHg (Figure 2-3-1-26 and Table 3-3-4-3).

The pressure difference of male adults remained fairly stable as age increased, ranging from 50.4~53.4 mmHg; the pressure difference of female adults tended to increase slowly with advancing age, ranging from 40.1~54.0 mmHg. The pressure difference of males was higher than that of females before age 55. The difference between males and females became increasingly smaller with advancing age (Figure 2-3-1-27 and Table 3-3-4-4).
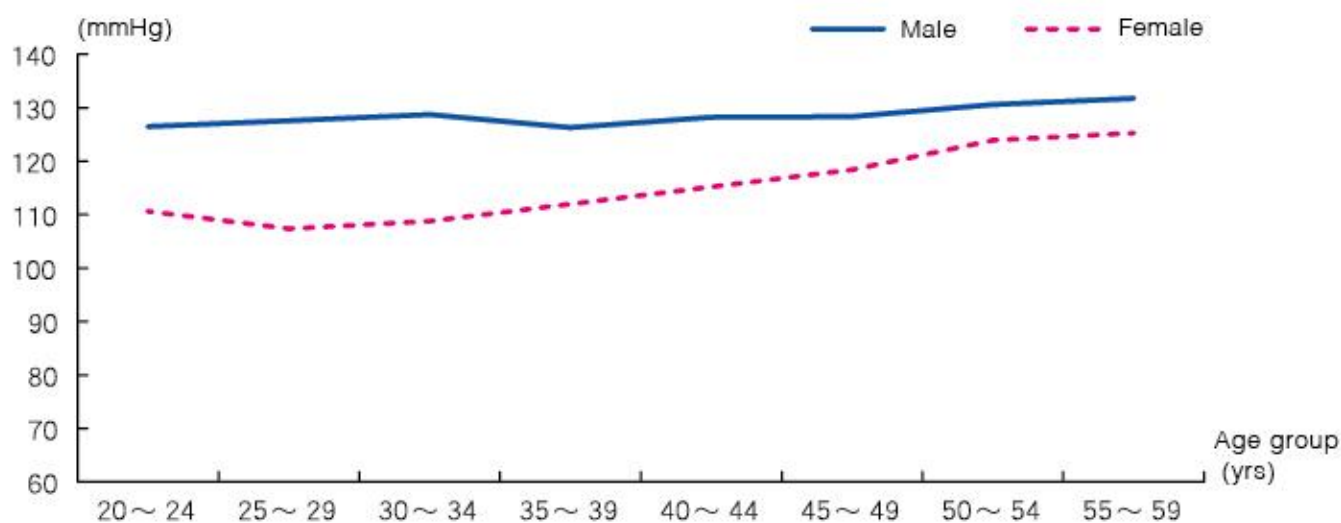
Figure 2-3-1-25 Average SBP of adults

162
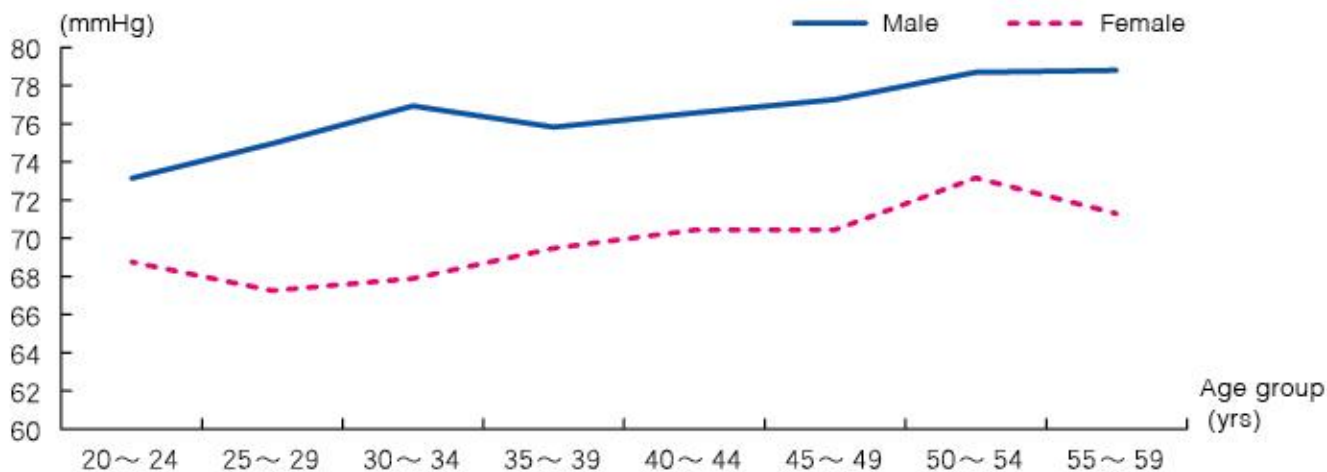
Figure 2-3-1-26 Average DBP of adults
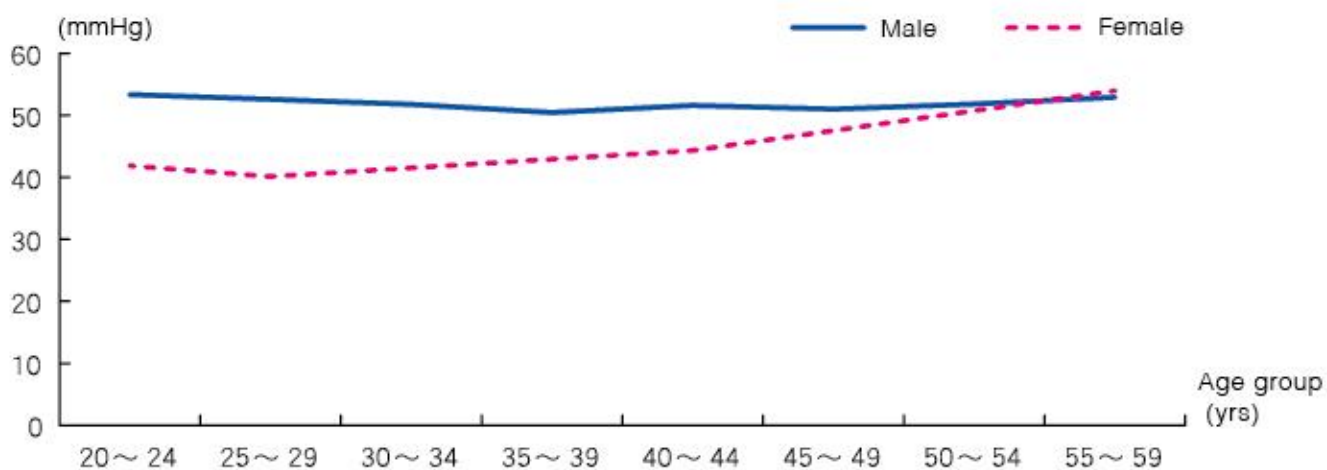
Figure 2-3-1-27 Average pressure difference of adults

(3) Vital capacity

The vital capacity of male and female adults at age 20~34 showed a stable trend with little change. The vital capacity of male and female adults at age 35~59 showed a decreasing trend as age increased. The vital capacity ranged from 3144.7~4064.0ml for males and 2213.6~2789.7ml for females. Males had a higher vital capacity than females, with significant gender difference (P < 0.01) (Figure 2-3-1-28 and Table 3-3-4-5).

Vital capacity/weight of adults tended to decrease slowly as age increased. The vital capacity/weight ranged from 48.2~61.9 ml/kg for males and 40.3~53.0 ml/kg for females. Males had a higher vital capacity/weight than females, and the difference was significant between genders (P < 0.01) (Figure 2-3-1-29 and Table 3-3-4-6).
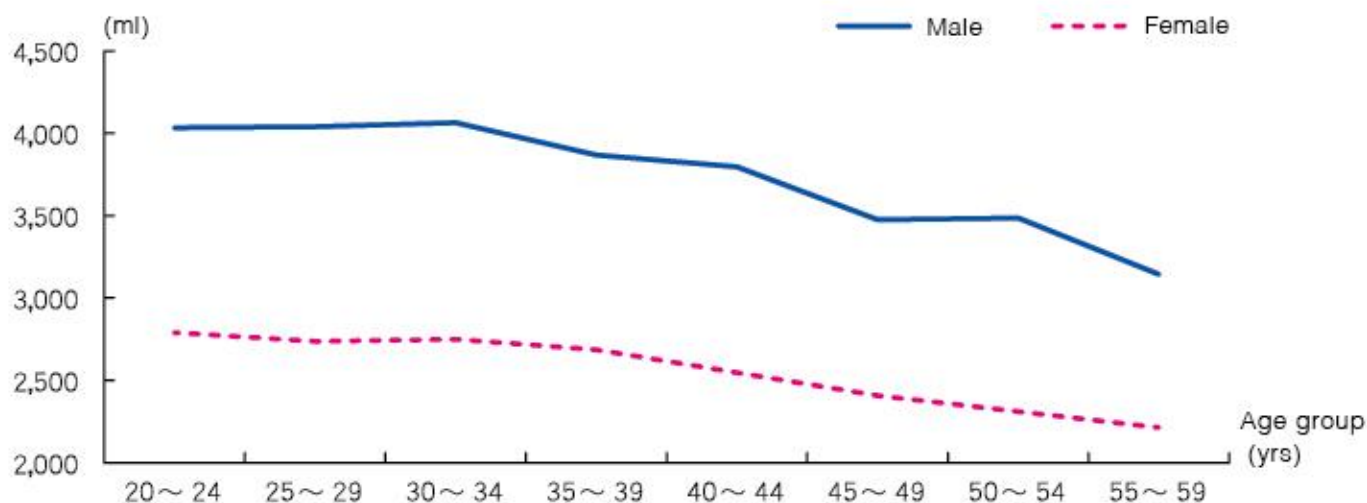
Figure 2-3-1-28 Average vital capacity of adults
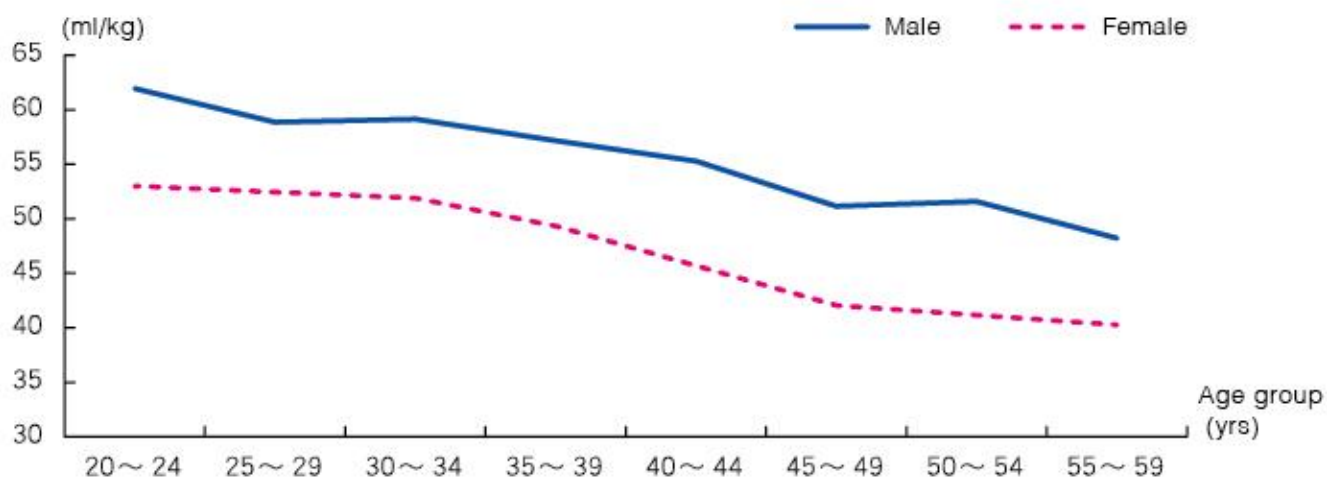
Figure 2-3-1-29 Average vital capacity/weight of adults

(4) Step Test Index

Step test is a simple quantitative load experiment to evaluate cardiovascular function. By observing the relationship between exercising continuously in an established time, the cardiovascular respond and heart rate recovery speed after the exercise (step test index), the cardiovascular function can be assessed.

The step test index of female adults at age 20~59 increased with advancing age, while that of male adults remained fairly stable among age groups except for a decrease at age 25~34. The step test index ranged from 53.2~56.4 for males and 54.4~60.2 for females. The step test index was slightly higher in females than males between ages 25~59. Significant difference between genders was seen among age groups except in the 35~44 and 50~54 year age groups ($P < 0.05$) (Figure 2-3-1-30 and Table 3-3-4-7).
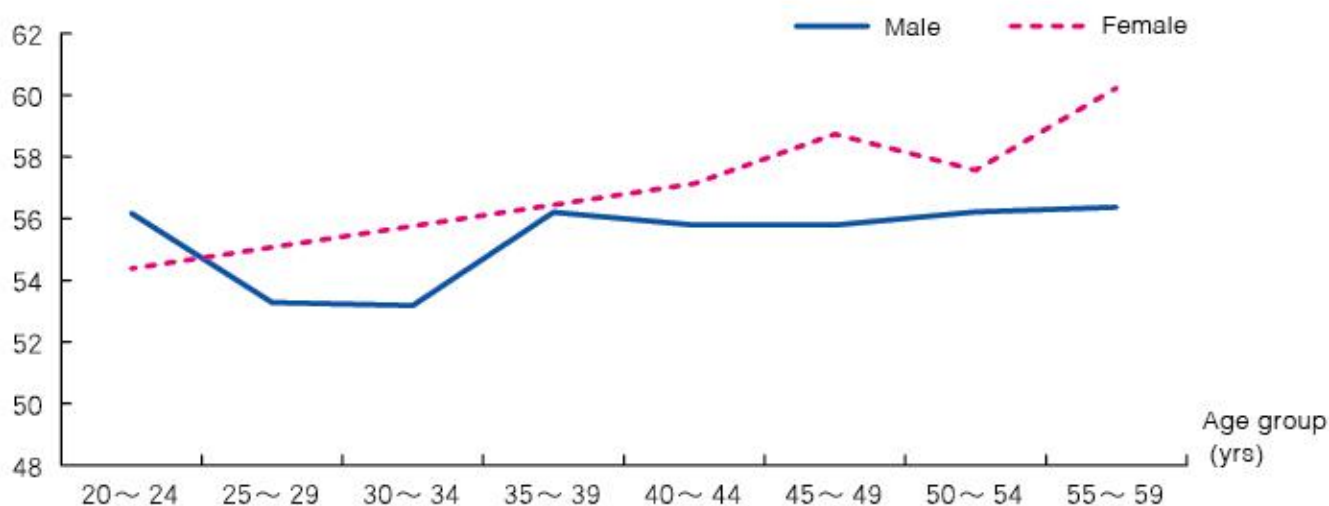
Figure 2-3-1-30 Average step test index of adults

5. Physical Fitness

(1) Strength

Strength is reflected by four different indicators - vertical jump, push-ups (male) / one-minute sit-ups (female), grip strength and back strength for adults in the age groups below 39 years old. For adults aged 40 onwards, grip strength is used to reflected strength.

The indicators for vertical jump, push-ups (male) and one-minute sit-ups (female) reached maximum at age 20~24, and then a decreasing trend with advancing age was observed. Grip strength for males stayed relatively stable before age 54 and tended to decline thereafter at age 55~59; as age increased, grip strength for females declined first before age 29 and then increased between ages 30~44, finally dropped again thereafter. Back strength of male and female adults fluctuated slightly with advancing age in a flat trend, with the exception of a decrease at age 20~29 (Figures 2-3-1-31, 2-3-1-32, 2-3-1-33 and 2-3-1-34).

The indicators for vertical jump, push-ups, grip and back strength in males ranged from 35.5~37.7cm, 26.1~30.2 times, 41.2~46.0kg and 108.1~110.4kg, respectively. For females, the indicators for vertical jump, one-minute sit-ups, grip and back strength ranged from 22.9~25.0cm, 19.2~24.8 times/minute, 23.4~26.4kg and 55.3~61.4kg, respectively. Males were generally stronger than females, with significant gender difference observed ($P<0.05$) (Tables 3-3-5-1, 3-3-5-2, 3-3-5-3, 3-3-5-4).
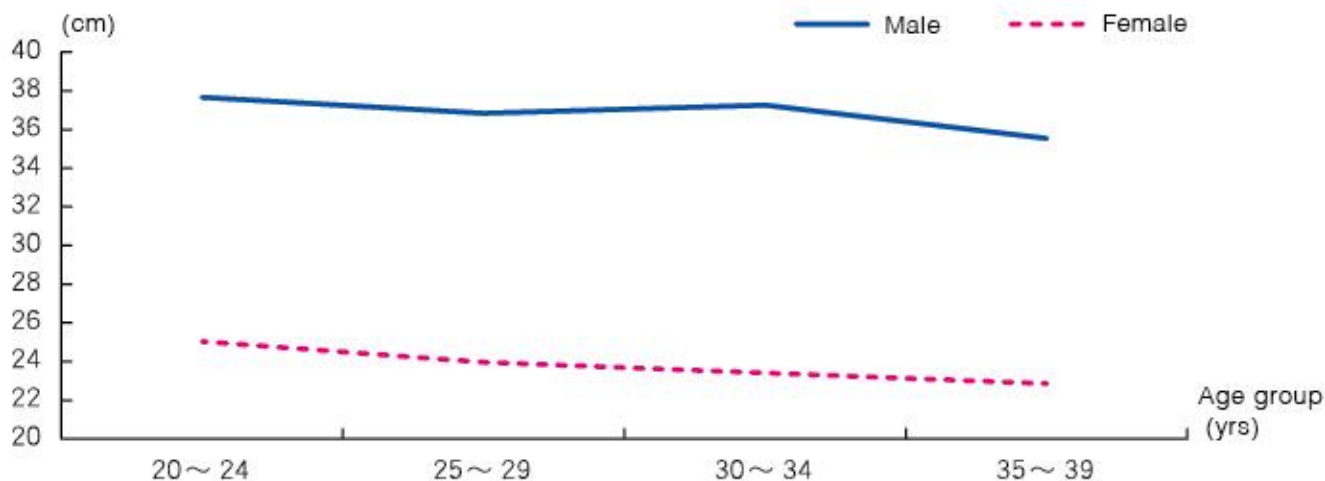
Figure 2-3-1-31 Average vertical jump of adults
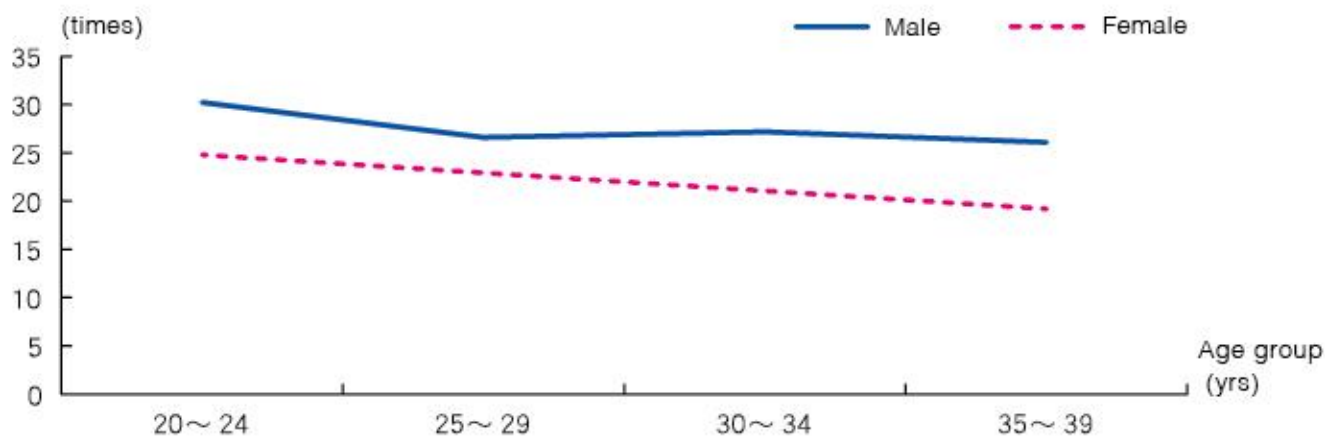
Figure 2-3-1-32 Average push-ups (male) / one-minute sit-ups (female) of adults
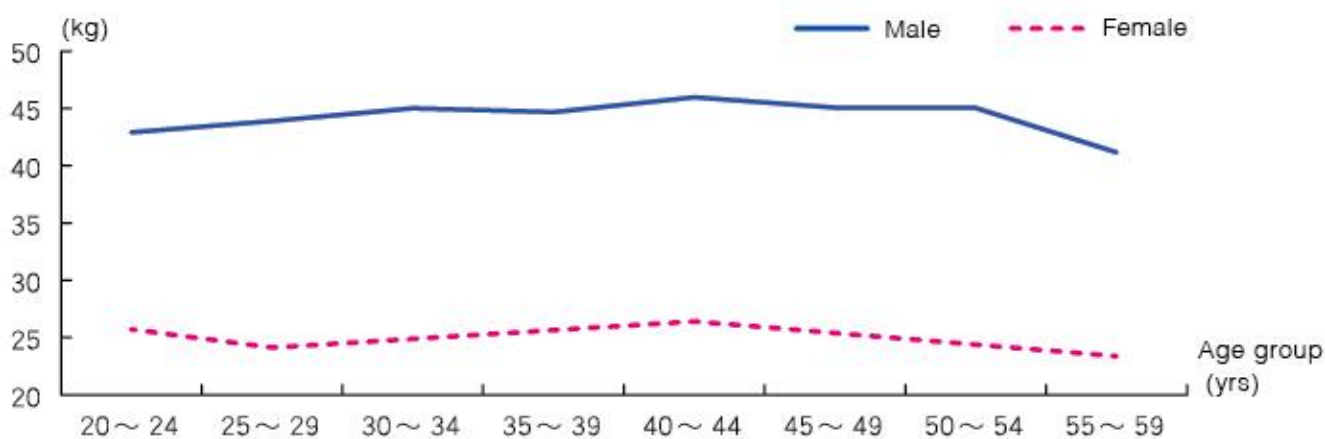
Figure 2-3-1-33 Average grip strength of adults
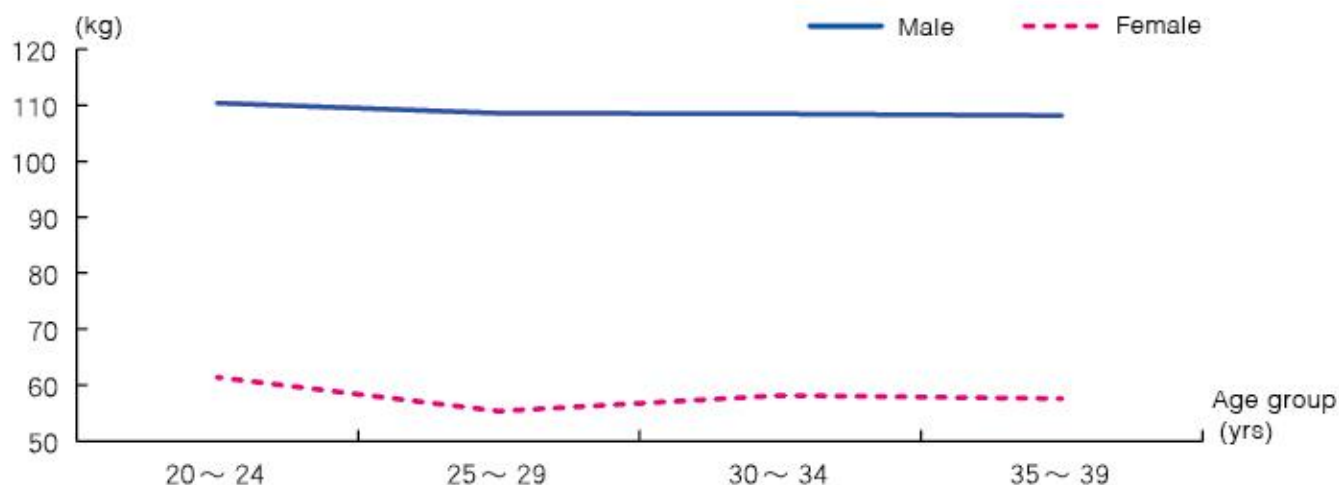
Figure 2-3-1-34 Average back strength of adults

(2) Flexibility

Sit and reach reflects flexibility. The sit and reach for males between ages 20~44 varied mildly as age increased, with no statistically significant difference among age groups. The sit and reach for males tended to decline afterwards with advancing age and the rate of decrease accelerated, especially after age 55. The sit and reach for females fluctuated between 5.2~7.3cm among age groups (Table 3-3-5-5).

The sit and reach for females was higher than males in each age group, with statistically significant difference found (P < 0.01). The biggest difference of 7.3cm occurred in the 55~59 year age group. Flexibility of females was obviously better than males (Figure 2-3-1-35).
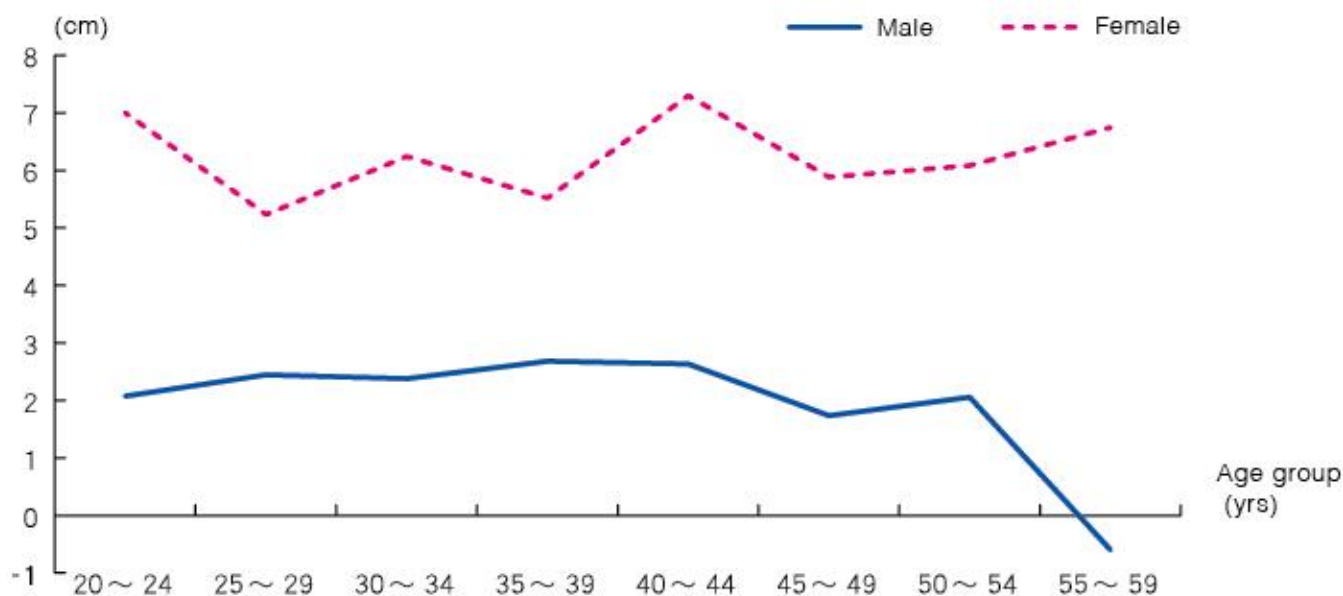
Figure 2-3-1-35 Average sit and reach of adults

(3) Reaction

Choice reaction time reflects reaction ability. Choice reaction time for male and female adults tended to decrease with advancing age and the rate of decrease was generally the same for both genders. Both males and females had the shortest reaction time between ages 20~24 and the longest time between ages 55~59. The reaction time for males and females ranged from 0.40~0.45 seconds and 0.43~0.52 seconds, respectively (Table 3-3-5-6). Males generally had a faster reaction time than females and the difference between genders was significant (P < 0.01) (Figure 2-3-1-36).
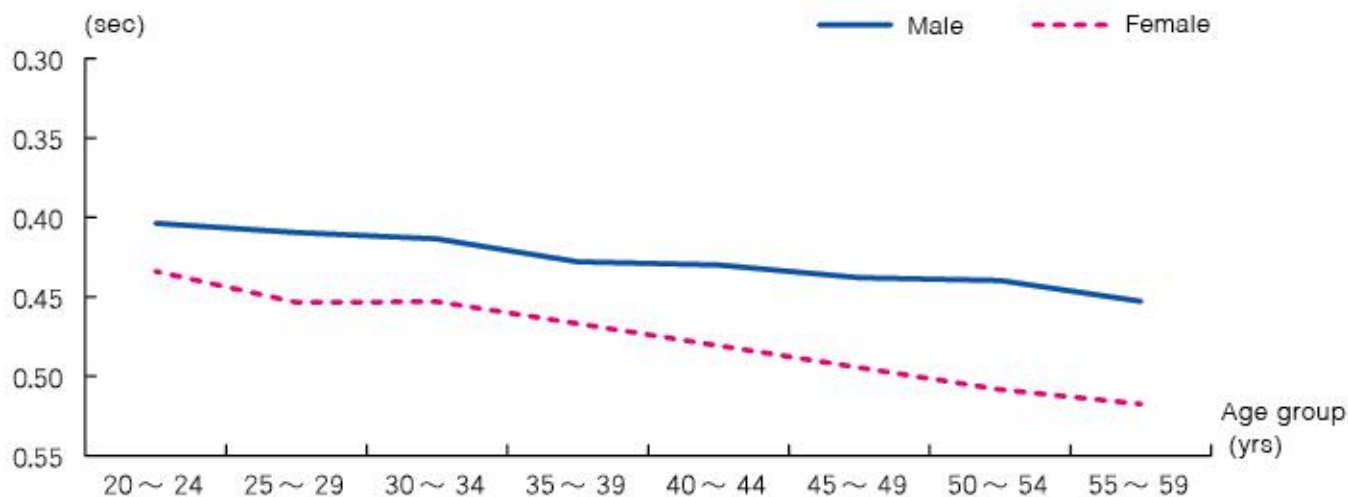
Figure 2-3-1-36 Average choice reaction time of adults

(4) Balance

One foot stands with eyes closed (OFSEC) reflects balance ability. The OFSEC time for males and females showed a descending trend with advancing age. The longest balance time for males and females occurred in the 20~24 year age group and the 25~29 year age group, respectively; whereas the shortest time for both genders occurred in the 55~59 year age group (Table 3-3-5-7). The OFSEC ranged from 22.7~47.9 seconds for males and 14.1~46.3 seconds for females. Only small difference was seen between males and females in balance ability (Figure 2-3-1-37).
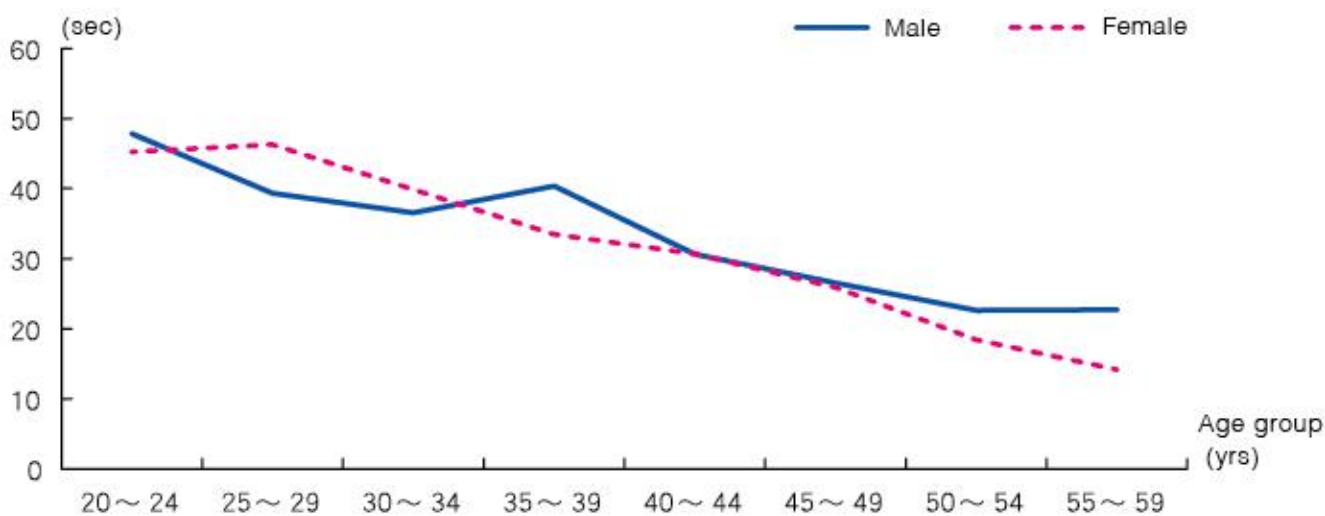
Figrue 2-3-1-37 Average OFSEC time of adults

(II) Comparison of 2015 and 2010 Results on the Physical Fitness Study of Macao Adults

1. Comparison of Basic Information of the Subjects

In 2015, the total number of adult subjects was 3,290 which was slightly less than 3,540 subjects in 2010. Compared with the results in 2010, the proportion of male adults born in Mainland China remained stable and female adults born in Mainland China decreased substantially ($P < 0.05$); the proportion of males born in Macao changed only slightly, while females born in Macao increased obviously ($P < 0.05$). In terms of educational level, no obvious change was seen in the proportion of females with doctoral education; males with doctoral education as well as both males and females with master education increased to some extent ($P < 0.05$). Concurrently, the proportion of adults who possessed a post-secondary or university education increased dramatically, whereas those with secondary education or below decreased significantly ($P < 0.05$).

There was an obvious increase in the proportion of adults working indoors in an "air conditioned" environment ($P < 0.05$), and those working indoors in a "naturally ventilated" environment decreased somewhat ($P < 0.05$). The proportion of males working outdoors tended to decrease significantly ($P < 0.05$), whereas that of females remained stable. In terms of working hours, the proportion of adults working 35~40 hours per week increased ($P < 0.05$), while males working for 40~50 hours per week decreased ($P < 0.05$); a slight decline was found in females working for over 50 hours ($P < 0.05$) and the proportion of "non-working" females increased dramatically ($P < 0.05$) (Tables 2-3-2-1, 2-3-2-2, 2-3-2-3 and 2-3-2-4).

Table 2-3-2-1 Comparison of birthplaces in adults (%)

Birthplace	M			F		
	2010	2015	Difference	2010	2015	Difference
Mainland China	32.3	31.9	-0.4	41.0	36.7	-4.3*
Macao	57.0	60.3	3.3	51.2	57.2	6.0*
Hong Kong	5.5	3.8	-1.7*	3.2	3.4	0.2
Portugal	0.8	0.4	-0.4	0.7	0.1	-0.6*
Others	4.3	3.6	-0.7	3.9	2.6	-1.3*

Note: difference equaled to the data in 2015 minus the data in 2010, and * means p<0.05, which applies to subsequent tables.

Table 2-3-2-2 Comparison of educational levels in adults (%)

Education Level	M			F		
	2010	2015	Difference	2010	2015	Difference
Below primary school education level	3.1	1.0	-2.1*	3.3	2.1	-1.2*
Primary school	11.5	6.8	-4.7*	13.7	7.4	-6.3*
Secondary school	39.4	31.4	-8.0*	35.7	25.8	-9.9*
University	37.6	48.6	11.0*	38.8	51.6	12.8*
Master	7.9	10.8	2.9*	8.2	12.8	4.6*
Doctoral	0.4	1.5	1.1*	0.3	0.3	0.0

Table 2-3-2-3 Comparison of working environments in adults (%)

Working environment	M			F		
	2010	2015	Difference	2010	2015	Difference
Outdoors	19.1	16.2	-2.9*	2.5	3.2	0.7
"Naturally ventilated" indoors	17.9	13.8	-4.1*	23.7	18.4	-5.3*
"Air conditioned" indoors	63.0	70.0	7.0*	73.8	78.4	4.6*

Table 2-3-2-4 Comparison of working hours in adults (%)

Working hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Not working	3.7	2.6	-1.1	4.6	10.2	5.6*
Less than 20 hours	3.3	2.5	-0.8	8.9	4.4	-4.5*
20~35 hours	4.9	3.8	-1.1	9.3	5.1	-4.2*
35~40 hours	40.9	46.7	5.8*	31.9	40.3	8.4*
40~50 hours	41.5	37.5	-4.0*	37.4	34.9	-2.5
50 hours or more	5.6	6.9	1.3	7.9	5.1	-2.8*

2. Comparison of Lifestyle

(1) Living Habits

Compared with the results in 2010, the proportion of female adults slept for more than 9 hours decreased slightly in 2015 (P < 0.05). The proportion of adults with different sleeping hours changed little and no significant difference was found in the quality of sleep between two studies (Table 2-3-2-5). The proportion of adults walking for less than 30 minutes daily decreased substantially (P < 0.05) while those walking for 30~60 minutes increased remarkably, and males walking for 1~2 hours also had an obvious increase (P < 0.05) (Table 2-3-2-6). The proportion of adults sitting for an average of 6~9 hours daily increased (P < 0.05) and those sitting for less than 3 hours declined dramatically (P < 0.05) (Table 2-3-2-7). The proportion of adults doing physical exercise during their leisure time increased to some extent, while choosing "audio-visual entertainment" had decreased (P < 0.05) (Table 2-3-2-8).

Table 2-3-2-5 Comparison of sleeping hours and quality of sleep in adults (%)

Sleeping hours and quality of sleep	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 6 hours	13.6	13.1	-0.5	16.4	16.4	0.0
6~9 hours	83.5	84.8	1.3	80.5	81.6	1.1
9 hours or more	2.9	2.1	-0.8	3.1	2.0	-1.1*
Poor quality of sleep	9.7	8.1	-1.6	13.6	14.1	0.5
Average quality of sleep	69.1	68.5	-0.6	67.8	66.4	-1.4
Good quality of sleep	21.1	23.3	2.2	18.6	19.5	0.9

Table 2-3-2-6 Comparison of daily walking hours in adults (%)

Walking hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 30 minutes	47.1	35.2	-11.9*	47.7	40.0	-7.7*
30~60 minutes	32.3	39.5	7.2*	30.6	38.1	7.5*
1~2 hours	10.4	15.0	4.6*	10.5	11.9	1.4
2 hours or more	10.3	10.3	0.0	11.2	10.0	-1.2

Table 2-3-2-7 Comparison of daily sitting hours in adults (%)

Daily sitting hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 3 hours	17.6	14.2	-3.4*	15.1	10.8	-4.3*
3~6 hours	39.1	38.9	-0.2	36.3	35.8	-0.5
6~9 hours	25.5	30.2	4.7*	26.8	30.6	3.8*
9~12 hours	13.6	13.7	0.1	16.7	17.7	1.0
12 hours or more	4.2	3.0	-1.2	5.2	5.2	0.0

Table 2-3-2-8 Comparison of activities during leisure time in adults (%)

Activities during leisure time	M			F		
	2010	2015	Difference	2010	2015	Difference
Physical exercise	49.1	55.8	6.7*	30.1	40.2	10.1*
Chess or poker	7.1	5.5	-1.6	3.8	2.9	-0.9
Traveling	27.6	31.7	4.1*	17.9	21.5	3.6*
Social gathering	32.6	35.2	2.6	39.4	44.8	5.4*
Audio-visual entertainment	65.2	57.0	-8.2*	63.3	52.7	-10.6*
House chores	27.7	27.2	-0.5	56.4	49.5	-6.9*
Sleeping	30.9	32.1	1.2	35.3	39.3	4.0*
Others	16.0	14.2	-1.8	16.1	14.5	-1.6

The proportion of cigarette consumption in male adults remained basically unchanged in 2015, except for a decrease seen in the proportion of male adults smoking more than 10 cigarettes per day and female adults smoking 10~20 cigarettes per day (P < 0.05). No obvious difference in the proportion was seen between two studies in adults quitting smoking. Among smokers, the proportion of male and female adults who had smoked for 5~10 years increased (P < 0.05), and females who had smoked for more than 15 years decreased substantially (P < 0.05). No significant difference was found in smoking duration among males (Tables 2-3-2-9 and 2-3-2-10).

Table 2-3-2-9 Comparison of cigarette consumption in adults (%)

Cigarette consumption	M			F		
	2010	2015	Difference	2010	2015	Difference
None	71.7	74.3	2.6	96.2	96.7	0.5
Less than 10 cigarettes per day	8.1	9.4	1.3	2.1	1.8	-0.3
10~20 cigarettes per day	10.1	8.0	-2.1*	0.7	0.1	-0.6*
Over 20 cigarettes per day	2.6	1.5	-1.1*	0.1	0.1	0.0
Quitted smoking for less than 2 years	1.8	1.3	-0.5	0.4	0.4	0.0
Quitted smoking for more than 2 years	5.7	5.5	-0.2	0.6	1.0	0.4

Table 2-3-2-10 Comparison of smoking duration in adults (%)

Smoking Duration	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 5 years	17.2	18.0	0.8	27.6	25.9	-1.7
5~10 years	17.4	21.1	3.7*	31.6	39.7	8.1*
10~15 years	20.1	17.5	-2.6	15.8	15.5	-0.3
15 years or more	45.3	43.4	-1.9	25.0	19.0	-6.0*

The proportion of female drinkers increased in 2015 (P < 0.05), whereas no significant change was found among male adults. An obvious increase was seen in the proportion of adults who drank once a month (P < 0.05), the proportion decreased in males who drank 5~7 times weekly and females who drank 3~4 times weekly (P < 0.05). Apparently, more and more males chose wine or fruit wine (P < 0.05), while those drinking mixed alcohol decreased (P < 0.05). For females, the proportion increased considerably in drinking yellow wine, wine or fruit wine (P < 0.05), while the proportion declined somewhat in drinking beer and mixed alcohol (P < 0.05) (Tables 2-3-2-11 and 2-3-2-12).

Table 2-3-2-11 Comparison of drinking frequency in adults (%)

Drinking frequency	M			F		
	2010	2015	Difference	2010	2015	Difference
Non-drinker	47.6	47.2	-0.4	80.2	72.4	-7.8*
Drinker	52.4	52.8	0.4	19.8	27.6	7.8*
Once/month	48.2	56.0	7.8*	67.9	74.4	6.5*
1~2 times/week	34.4	31.1	-3.3	21.3	19.2	-2.1
3~4 times/week	9.2	8.3	-0.9	5.6	2.7	-2.9*
5~7 times/week	8.2	4.5	-3.7*	5.1	3.8	-1.3

Table 2-3-2-12 Comparison of alcohol preference in adults (%)

Type of alcohol	M			F		
	2010	2015	Difference	2010	2015	Difference
Liquor	6.5	8.0	1.5	4.6	4.8	0.2
Beer	56.0	57.2	1.2	25.6	22.6	-3.0*
Yellow wine	0.5	0.2	-0.3	0.3	1.5	1.2*
Rice wine	1.7	1.5	-0.2	1.5	1.9	0.4
Wine or fruit wine	24.2	29.7	5.5*	50.8	63.1	12.3*
Mixed	11.1	3.4	-7.7*	17.2	6.1	-11.1*

(2) Physical Exercise

In 2015, 16.0 % of adult subjects participated in physical exercise frequently, which was higher than 15.5% in 2010. A decrease was seen in the proportion of those who never participated in physical exercise (P < 0.05), indicating that there was an improvement in the popularity and promotion of sports for all in Macao.

In 2015, there was a significant increase in the proportion of adults who participated in physical exercise for 1~2 times a week. An obvious increase was also found in the proportion of those who exercised for 30~60 minutes each time. For adults reaching an exercise intensity of "rapid breathing, increased heart rate and perspiring greatly", the proportion increased significantly as well (P < 0.05).

The proportion of males who persisted in continual exercising for 6~12 months increased dramatically, but an obvious decrease was seen in the proportion of those who persisted in continual exercising for more than 5 years (P < 0.05). For females, the proportion increased in those who kept exercising for less than 6 months and no apparent change was seen in the proportion of those who kept exercising for 1~5 years. In addition to the main exercise purposes of "preventing and curing diseases", "improving exercise ability" and "relieving pressure and regulating mood", more adults chose "losing weight and keeping fit" (P < 0.05). More males chose "improving exercise ability" while females choosing "preventing and curing diseases" declined (P < 0.05).

For exercise locations, the proportion of males choosing "road or street" to exercise increased significantly (P < 0.05) and females choosing "office or residential area" and "road or street" also increased significantly (P < 0.05) (Tables 2-3-2-13, 2-3-2-14, 2-3-2-15, 2-3-2-16 and 2-3-2-17).

The proportion of males choosing "basketball" , "football" and "volleyball" as top choices increased (P < 0.05) while choosing "table tennis" and "billiards" as top choices decreased (P < 0.05). For females, the proportion of those choosing "basketball", "volleyball", "football", "table tennis", "golf" and "billiards" as top choices declined significantly (P < 0.05) while those choosing "badminton" was on the rise (P < 0.05). The main obstacles affecting adults to participate in physical exercise were still "lack of time" and "laziness". In addition, an increase was seen in the proportion of non-participants due to "lack of venues and facilities" and "lack of coaching advice" in males (P < 0.05). For females, an obvious decrease was seen in the proportion of non-participants due to "lack of interest", "too much labor intensive work" and "lack of time", while an increasing trend was found in non-participants due to "laziness" and "lack of venues and facilities" (Tables 2-3-2-18 and 2-3-2-19).

Table 2-3-2-13 Comparison of exercise frequency per week in adults (%)

Frequency of exercise	M			F		
	2010	2015	Difference	2010	2015	Difference
Never	23.6	18.6	-5.0*	35.8	27.8	-8.0*
Less than 1 time	19.3	21.9	2.6	19.7	23.3	3.6*
1~2 times	30.2	34.6	4.4*	21.3	27.5	6.2*
3~4 times	16.1	17.3	1.2	11.4	12.5	1.1
5 times or more	10.8	7.5	-3.3*	11.8	8.8	-3.0*

Table 2-3-2-14 Comparison of exercise duration and self-perception in adults (%)

Exercise duration and self-perception	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 30 minutes	33.3	27.9	-5.4*	35.5	35.1	-0.4
30~60 minutes	40.9	46.0	5.1*	44.8	48.1	3.3*
60 minutes or more	25.8	26.1	0.3	19.7	16.8	-2.9*
Breathing & heart rate remained almost the same	14.0	11.9	-2.1	19.1	15.2	-3.9*
Slight increase in breathing & heart rate and perspiring slightly	46.6	46.9	0.3	61.8	62.3	0.5
Rapid breathing & increased heart rate and perspiring greatly	39.3	41.2	1.9	19.1	22.5	3.4*

Table 2-3-2-15 Comparison of duration of persistent exercising in adults (%)

Duration of persistent exercising	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 6 months	34.5	32.9	-1.6	42.2	46.3	4.1*
6~12 months	12.0	15.6	3.6*	13.1	12.5	-0.6
1~3 years	12.5	13.2	0.7	16.4	15.8	-0.6
3~5 years	6.1	7.3	1.2	7.6	6.2	-1.4
5 years or more	34.8	30.9	-3.9*	20.7	19.2	-1.5

Table 2-3-2-16 Comparison of exercise purposes in adults (%)

Exercise purpose	M			F		
	2010	2015	Difference	2010	2015	Difference
Prevent and cure diseases	56.1	54.3	-1.8	66.9	60.7	-6.2*
Improve exercise ability	62.0	65.5	3.5*	44.0	43.0	-1.0
Lose weight and keep fit	32.6	39.9	7.3*	47.8	56.3	8.5*
Relieve pressure and regulate mood	55.5	58.6	3.1	56.7	58.3	1.6
Socialize	18.1	18.5	0.4	12.2	10.0	-2.2*
Others	11.7	9.4	-2.3*	9.2	7.5	-1.7

Table 2-3-2-17 Comparison of exercise locations in adults (%)

Exercise location	M			F		
	2010	2015	Difference	2010	2015	Difference
Stadium or gym	55.0	57.4	2.4	43.7	41.9	-1.8
Park	49.1	49.0	-0.1	54.9	51.7	-3.2
Office or home	11.8	12.8	1.0	19.1	22.5	3.4*
Open area	25.4	17.0	-8.4*	18.9	15.1	-3.8*
Road or street	23.4	28.1	4.7*	12.5	17.9	5.4*
Recreational club	13.2	10.5	-2.7*	10.7	9.4	-1.3
Others	9.0	15.8	6.8*	10.3	13.9	3.6*

Table 2-3-2-18 Comparison of participation in ball games in adults (%)

Ball game	M			F		
	2010	2015	Difference	2010	2015	Difference
Basketball	18.8	25.3	6.5*	10.6	7.5	-3.1*
Volleyball	0.9	2.3	1.4*	3.5	0.3	-3.2*
Football	25.0	29.9	4.9*	0.4	0.0	-0.4*
Table tennis	16.4	8.8	-7.6*	19.8	14.4	-5.4*
Badminton	19.4	17.7	-1.7	43.8	50.0	6.2*
Tennis	5.1	4.9	-0.2	5.9	5.2	-0.7
Golf	0.3	0.5	0.2	1.3	0.6	-0.7*
Billiards	6.1	1.2	-4.9*	1.1	0.3	-0.8*
Others	7.8	9.4	1.6	13.6	21.7	8.1*

Table 2-3-2-19 Comparison of obstacles to participating in physical exercise in adults (%)

Obstacles	M			F		
	2010	2015	Difference	2010	2015	Difference
No interest	13.0	11.5	-1.5	15.0	10.9	-4.1*
Laziness	53.9	55.4	1.5	56.9	61.8	4.9*
Physically fit, not necessary	2.6	2.3	-0.3	1.0	1.0	0.0
Too weak	3.4	2.9	-0.5	6.6	6.0	-0.6
Too much labor intensive work	8.0	7.6	-0.4	7.4	3.7	-3.7*
Lack of time	60.4	59.4	-1.0	64.3	57.5	-6.8*
Lack of venues and facilities	25.3	29.6	4.3*	17.2	24.9	7.7*
Lack of coaching advice	8.7	11.7	3.0*	12.1	11.3	-0.8
Lack of organization	13.4	13.1	-0.3	9.5	8.9	-0.6
Financial restraint	2.5	3.0	0.5	2.1	1.6	-0.5
Embarrassment	0.9	0.5	-0.4	0.4	0.7	0.3
Others	8.9	10.7	1.8	8.8	11.6	2.8*

(3) Occurrence of Diseases and Perception of the Physical Fitness Study

In 2015, 24.8 % of subjects were diagnosed with diseases in the past five years, which was lower than the proportion in 2010. The proportion of males with "respiratory diseases" and "endocrine diseases" increased (P < 0.05), the proportion of those with "gastrointestinal diseases", "diabetes" and "urinary or reproductive diseases" tended to decline (P < 0.05). As for females, the proportion of those with "respiratory diseases", "cardiovascular diseases" and "endocrine diseases" increased substantially (P < 0.05), and a decrease was found in the proportion of "hypertension". (P < 0.05) (Table 2-3-2-20).

Table 2-3-2-20 Comparison of diseases in adults (%)

Types of disease	M			F		
	2010	2015	Difference	2010	2015	Difference
Cancer	2.9	2.9	0.0	14.1	12.9	-1.2
Cardiovascular diseases	7.4	6.6	-0.8	4.1	6.9	2.8*
Respiratory diseases	18.8	23.3	4.5*	15.7	20.2	4.5*
Accidental injury	11.0	12.7	1.7	5.8	5.8	0.0
gastrointestinal diseases	21.9	17.5	-4.4*	20.7	22.3	1.6
Hypertension	32.6	32.6	0.0	25.7	18.9	-6.8*
Endocrine diseases	1.0	2.7	1.7*	7.8	10.4	2.6*
Urinary or reproductive diseases	9.0	6.4	-2.6*	8.1	9.0	0.9
Diabetes	7.9	5.3	-2.6*	6.5	6.9	0.4
Others	22.9	15.6	-7.3*	26.0	22.8	-3.2*

Compared with the results in 2010, a significant increase was seen in the proportion of adults who had previously participated in the physical fitness study (P < 0.05), indicating the growing knowledge and popularity on the physical fitness study. In terms of perception of the physical fitness study, fewer males considered it helpful to "understand their own fitness status" and "improve scientific knowledge about fitness" (P < 0.05). Besides, the proportion of females who considered it helpful to "recognize the importance of physical exercise" and "improve scientific knowledge of fitness" also showed a declining trend (P < 0.05) (Tables 2-3-2-21 and 2-3-2-22).

Table 2-3-2-21 Comparison of adults who had heard of or participated in the physical fitness study (%)

Heard of or participation status	M			F		
	2010	2015	Difference	2010	2015	Difference
Heard of	68.2	66.5	-1.7	69.4	71.1	1.7
Never heard of	31.8	33.5	1.7	30.6	28.9	-1.7
Participated previously	27.1	34.8	7.7*	28.7	33.2	4.5*
Never participated	72.9	65.2	-7.7*	71.3	66.8	-4.5*

Table 2-3-2-22 Comparison of perception of the physical fitness study in adults (%)

Perception of the physical fitness study	M			F		
	2010	2015	Difference	2010	2015	Difference
Meaningless	3.4	5.7	2.3*	2.7	3.1	0.4
Understand the physical fitness status of oneself	95.0	92.3	-2.7*	96.2	95.9	-0.3
Recognize the importance of physical exercise	58.1	55.7	-2.4	60.2	53.1	-7.1*
Improve scientific knowledge of fitness	49.5	45.9	-3.6*	50.3	41.6	-8.7*

3. Comparison of Anthropometric Measurements

(1) Length Indicators

Between two studies, no statistically significant difference was found in males in all age groups, except the 50~54 year age group (P < 0.05); nor any significant difference was seen in females among age groups. This revealed that the average height of Macao citizens had remained fairly stable in the past 5 years (Table 2-3-2-23).

Compared with the results in 2010, no significant change was seen in the sitting height of adults aged 20~59 in 2015. Difference was only found in several age groups.

The average foot length of males aged 35~39 was shorter in 2015, with significant difference (P < 0.05); no statistically significant difference was found in other age groups between two studies. The average foot length of females was higher in 2015, with significant difference between two studies ranging from 0.2~0.4cm (P < 0.05) (Table 2-3-2-25).

Table 2-3-2-23 Comparison of average height in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	171.3	172.4	1.1	159.0	159.5	0.5
25~29 years	171.5	172.3	0.8	158.3	159.3	1.0
30~34 years	171.1	172.2	1.0	158.4	158.7	0.3
35~39 years	170.7	170.2	-0.5	157.9	158.1	0.2
40~44 years	169.3	170.4	1.1	157.4	158.1	0.7
45~49 years	168.3	168.2	-0.1	156.6	156.9	0.3
50~54 years	167.0	168.4	1.4*	155.6	156.2	0.6
55~59 years	166.5	167.1	0.6	155.5	155.5	0.0

Table 2-3-2-24 Comparison of average sitting height in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	91.8	91.4	-0.4	86.0	86.5	0.5*
25~29 years	92.2	92.2	0.0	85.8	86.1	0.3
30~34 years	91.8	92.6	0.8*	85.7	86.0	0.3
35~39 years	92.3	91.6	-0.7*	86.0	86.0	0.0
40~44 years	91.5	91.9	0.4	85.6	86.1	0.5*
45~49 years	91.2	90.9	-0.3	85.2	85.6	0.4
50~54 years	90.2	90.8	0.6*	84.3	85.0	0.7*
55~59 years	89.7	89.8	0.1	84.3	84.1	-0.2

Table 2-3-2- 25 Comparison of average foot length in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	25.3	25.3	0.0	22.6	23.0	0.4 *
25~29 years	25.3	25.3	0.0	22.5	22.9	0.4 *
30~34 years	25.3	25.3	0.0	22.6	22.8	0.2 *
35~39 years	25.2	24.9	-0.3*	22.5	22.8	0.3 *
40~44 years	25.1	25.0	-0.1	22.6	22.9	0.3 *
45~49 years	24.9	24.7	-0.2	22.5	22.9	0.4 *
50~54 years	24.8	24.8	0.0	22.5	22.9	0.4 *
55~59 years	24.8	24.6	-0.2	22.5	22.8	0.3 *

(2) Weight and BMI

Compared with the results in 2010, an increase was found in the average weight of male and female adults in 2015. In particular, there was a significant increase in the weight of males in the 25~34 and 50~54 year age groups, and females in the 20~29, 45~49 and 50~54 year age groups (P < 0.05). No statistically significant difference was found in other age groups between 2010 and 2015 (Table 2-3-2-26).

By contrast, the BMI of males in the 25~29 year age group and females in the 25~29 and 45~49 age groups was higher in 2015, with significant difference (P < 0.05). No significant difference was seen in other age groups. The obesity rate was significantly higher in 2015 in the 25~29 year age group of males and the 50~54 year age group of females, whereas the rate of males in the 40~44 year age group was significantly lower in 2015 (P < 0.05); no significant difference was seen in other age groups (Tables 2-3-2-27 and 2-3-2-28).

Table 2-3-2-26 Comparison of average weight in adults (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	64.3	65.7	1.4	51.6	53.3	1.7*
25~29 years	66.6	70.0	3.4*	50.3	52.7	2.4*
30~34 years	67.4	70.1	2.7*	53.3	53.9	0.6
35~39 years	69.6	68.8	-0.8	55.7	55.4	-0.3
40~44 years	69.2	69.4	0.2	57.0	56.8	-0.2
45~49 years	68.6	68.8	0.2	56.5	58.1	1.6*
50~54 years	66.2	68.6	2.4*	55.9	57.8	1.9*
55~59 years	65.3	66.0	0.7	56.5	55.7	-0.8

Table 2-3-2-27 Comparison of average BMI in adults

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	21.9	22.1	0.2	20.4	20.9	0.5
25~29 years	22.6	23.6	1.0*	20.1	20.7	0.6*
30~34 years	23.0	23.7	0.7	21.2	21.4	0.2
35~39 years	23.9	23.7	-0.2	22.3	22.1	-0.2
40~44 years	24.1	23.9	-0.2	23.0	22.7	-0.3
45~49 years	24.2	24.3	0.1	23.0	23.6	0.6*
50~54 years	23.7	24.2	0.5	23.1	23.7	0.6
55~59 years	23.5	23.6	0.1	23.3	23.1	-0.2

Table 2-3-2-28 Comparison of obesity rate in adults (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	5.4	4.9	-0.5	2.1	3.6	1.5
25~29 years	4.5	13.2	8.7*	1.5	4.1	2.6
30~34 years	8.3	13.5	5.2	3.0	4.4	1.4
35~39 years	10.8	10.2	-0.6	6.9	5.2	-1.7
40~44 years	13.6	5.4	-8.2*	6.1	6.5	0.4
45~49 years	12.2	9.3	-2.9	6.7	9.6	2.9
50~54 years	6.9	8.8	1.9	6.5	12.6	6.1*
55~59 years	7.4	8.0	0.6	9.9	5.8	-4.1

(3) Circumference Indicators

No statistically significant difference was found in chest circumference of male adults in each age group between 2010 and 2015. For females, the chest circumference in the 20~29 and 45~49 year age groups was higher in 2015, with the increase ranging from 1.3~1.7cm, which differed significantly ($p < 0.05$) (Table 2-3-2-29).

The waist circumference of males in the 25~29 year age group was obviously higher in 2015, while that of females in the 40~44 and 55~59 year age groups was significantly reduced in 2015 ($P < 0.05$). No statistically significant difference was observed in other age groups (Table 2-3-2-30).

The hip circumference of males in the 35~49 year age groups was reduced significantly in 2015 ($p < 0.05$), with the decrease ranging from 1.3~1.4cm. No statistically significant difference was seen in other age groups between the two studies. For females, the hip circumference was significantly higher in 2015 in the 20~29 and 45~54 year age groups ($p < 0.05$), with the increase ranging from 1.5~2.2cm. No significant difference was found in females of other age groups between 2010 and 2015 (Table 2-3-2-31).

The WHR of males in the 25~34 year age groups was significantly higher in 2015 ($p<0.05$), with the increase ranging from 0.01~0.02. No significant difference was found in other age groups between 2010 and 2015. Except in the 20~29 year age groups, the WHR of females in all age groups was 0.01~0.03cm lower in 2015, which differed significantly ($p < 0.05$) (Table 2-3-2-32).

Table 2-3-2-29 Comparison of average chest circumference in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	88.5	89.1	0.6	80.4	82.0	1.6*
25~29 years	90.5	91.8	1.3	79.9	81.6	1.7*
30~34 years	92.0	92.3	0.3	82.7	82.7	0
35~39 years	92.9	92.1	-0.8	84.4	84.6	0.2
40~44 years	93.5	92.7	-0.8	85.9	85.6	-0.3
45~49 years	93.8	92.7	-1.1	85.9	87.2	1.3*
50~54 years	92.2	93.2	1	86.2	87.2	1
55~59 years	91.9	91.9	0	86.7	87.3	0.6

Table 2-3-2-30 Comparison of average waist circumference in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	78.7	78.1	-0.6	70.4	70.7	0.3
25~29 years	80.6	82.9	2.3*	70.1	71.2	1.1
30~34 years	82.0	83.5	1.5	74.0	72.8	-1.2
35~39 years	85.0	83.3	-1.7	76.7	75.4	-1.3
40~44 years	85.2	85.0	-0.2	78.4	76.7	-1.7*
45~49 years	86.6	85.3	-1.3	79.4	79.4	0
50~54 years	85.4	86.2	0.8	79.9	80.2	0.3
55~59 years	85.7	85.2	-0.5	81.4	79.6	-1.8*

Table 2-3-2-31 Comparison of average hip circumference in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	91.8	91.6	-0.2	89.4	90.9	1.5*
25~29 years	93.2	93.4	0.2	88.7	90.6	1.9*
30~34 years	93.5	93.5	0	90.4	91.1	0.7
35~39 years	94.3	92.9	-1.4*	92.0	92.3	0.3
40~44 years	93.9	92.6	-1.3*	92.4	93.3	0.9
45~49 years	93.7	92.4	-1.3*	91.9	94.0	2.1*
50~54 years	93.0	93.0	0	91.7	93.9	2.2*
55~59 years	92.5	91.5	-1	92.1	92.9	0.8

Table 2-3-2-32 Comparison of average WHR of adults

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	0.86	0.85	-0.01	0.79	0.78	-0.01
25~29 years	0.86	0.88	0.02*	0.79	0.79	0.0
30~34 years	0.88	0.89	0.01*	0.82	0.80	-0.02*
35~39 years	0.90	0.90	0.0	0.83	0.82	-0.01*
40~44 years	0.91	0.92	0.01	0.85	0.82	-0.03*
45~49 years	0.92	0.92	0.0	0.86	0.84	-0.02*
50~54 years	0.92	0.93	0.01	0.87	0.85	-0.02*
55~59 years	0.93	0.93	0.0	0.88	0.86	-0.02*

(4) Width Indicators

Compared with the results in 2010, the shoulder and pelvis width of male adults in 2015 tended to increase. The shoulder width of males increased by 0.7~1.7cm in 2015, which differed significantly among age groups between 2010 and 2015 (p < 0.05). Except in the 20~24 and 45~49 year age groups, the pelvis width of males in all age groups in 2015 was 0.5~0.9cm wider than 2010, with significant difference (p < 0.05).

The shoulder and pelvis width of female adults in 2015 tended to decrease. The shoulder width of females decreased by 0.3~0.8cm in 2015, with significant difference (p < 0.05). Except in the 20~29 year age groups, the pelvis width of females in all age groups decreased in 2015, without significant difference; only an obvious decrease of 0.4cm was recorded in the 55~59 year age group (p < 0.05) (Tables 2-3-2-33 and 2-3-2-34).

Table 2-3-2-33 Comparison of average shoulder width in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	38.1	39.6	1.5*	34.4	33.6	-0.8*
25~29 years	38.9	39.6	0.7*	34.5	33.9	-0.6*
30~34 years	38.4	40.1	1.7*	34.8	34.1	-0.7*
35~39 years	38.4	39.7	1.3*	35.0	34.2	-0.8*
40~44 years	38.3	39.5	1.2*	35.1	34.4	-0.7*
45~49 years	38.1	39.2	1.1*	34.9	34.3	-0.6*
50~54 years	37.7	39.0	1.3*	34.6	34.3	-0.3*
55~59 years	36.9	38.6	1.7*	34.5	34.0	-0.5*

Table 2-3-2-34 Comparison of average pelvis width in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	26.9	27.2	0.3	26.6	26.6	0.0
25~29 years	27.2	28.0	0.8*	26.5	26.9	0.4*
30~34 years	27.1	28.0	0.9*	27.1	27.0	-0.1
35~39 years	27.2	27.7	0.5*	27.6	27.3	-0.3
40~44 years	27.3	27.8	0.5*	27.8	27.5	-0.3
45~49 years	27.5	27.8	0.3	27.9	27.7	-0.2
50~54 years	27.2	27.9	0.7*	28.0	27.8	-0.2
55~59 years	27.4	28.0	0.6*	28.4	28.0	-0.4*

(5) Body Composition

Compared with the results in 2010, the upper arm, subscapular and abdominal skinfold thickness of adult subjects all tended to increase in 2015. Significant increase was found in the upper skinfold thickness of males in the 20~34, and 40~54 year age groups and females in the 40~54 year age groups. The increase ranged from 1.0~3.1mm for males and 1.7~2.0mm for females ($p < 0.05$) (Table 2-3-2-35).

Except in the 20~24 and 35~39 year age groups, the subscapular skinfold thickness of males in all age groups was higher in 2015, with significant increase ranging from 1.9~3.9mm ($p < 0.05$). The subscapular skinfold thickness of females in the 20~29 and 40~54 year age groups increased in 2015, with the increase ranging from 2.0~3.5mm which differed significantly ($p < 0.05$) (Table 2-3-2-36).

The abdominal skinfold thickness of males in the 25~34 and 50~54 year age groups increased by 2.9~3.5mm in 2015, which differed significantly ($p < 0.05$). The abdominal skinfold thickness of females in the 25~29 year age group was 2.6mm higher in 2015, with significant increase ($p < 0.05$) (Table 2-3-2-37).

Table 2-3-2-35 Comparison of average upper arm skinfold thickness in adults (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	10.5	11.9	1.4*	19.1	19.2	0.1
25~29 years	10.5	13.6	3.1*	18.7	19.6	0.9
30~34 years	11.2	13.0	1.8*	20.5	20.4	-0.1
35~39 years	12.0	12.7	0.7	21.9	22.1	0.2
40~44 years	11.5	12.5	1.0*	22.2	24.1	1.9*
45~49 years	10.5	11.8	1.3*	22.0	24.0	2.0*
50~54 years	9.4	11.8	2.4*	22.3	24.0	1.7*
55~59 years	9.1	9.8	0.7	22.4	22.3	-0.1

Table 2-3-2-36 Comparison of average subscapular skinfold thickness in adults (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	14.2	14.4	0.2	14.4	16.4	2.0*
25~29 years	15.0	18.8	3.8*	14.2	17.7	3.5*
30~34 years	16.1	19.5	3.4*	17.3	18.2	0.9
35~39 years	19.5	18.6	-0.9	19.0	20.2	1.2
40~44 years	18.5	20.4	1.9*	19.4	21.7	2.3*
45~49 years	18.3	20.8	2.5*	19.9	23.0	3.1*
50~54 years	17.0	20.9	3.9*	19.9	22.9	3.0*
55~59 years	16.5	18.4	1.9*	20.0	20.3	0.3

Table 2-3-2-37 Comparison of average abdominal skinfold thickness in adults (mm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	19.2	18.3	-0.9	21.7	22.3	0.6
25~29 years	19.6	23.1	3.5*	20.8	23.4	2.6*
30~34 years	21.0	24.2	3.2*	23.6	22.6	-1.0
35~39 years	24.3	23.2	-1.1	24.3	25.4	1.1
40~44 years	23.6	25.1	1.5	25.2	26.1	0.9
45~49 years	24.1	25.3	1.2	26.2	27.1	0.9
50~54 years	22.2	25.1	2.9*	26.5	27.3	0.8
55~59 years	21.6	23.2	1.6	26.8	26.8	0.0

The body fat percentage of male and female adults in most of the age groups was significantly higher in 2015 (p < 0.05). The lean body mass of males aged 45~49 and females aged 40~44 was significantly lower in 2015 (p < 0.05), while relatively small difference was found in other age groups (Tables 2-3-2-38 and 2-3-2-39).

Table 2-3-2-38 Comparison of average body fat percentage in adults (%)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	15.9	16.7	0.8	23.2	24.3	1.1*
25~29 years	16.3	19.6	3.3*	22.9	25.2	2.3*
30~34 years	17.2	19.7	2.5*	25.5	26.1	0.6
35~39 years	19.2	19.0	-0.2	27.4	28.1	0.7
40~44 years	18.5	19.8	1.3*	27.7	30.1	2.4*
45~49 years	17.9	19.7	1.8*	27.9	30.8	2.9*
50~54 years	16.8	19.7	2.9*	28.1	30.8	2.7*
55~59 years	16.4	17.5	1.1*	28.2	28.3	0.1

Table 2-3-2-39 Comparison of average lean body mass in adults (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	53.7	54.4	0.7	39.3	40.1	0.8
25~29 years	55.3	55.7	0.4	38.7	38.9	0.2
30~34 years	55.5	55.7	0.2	39.2	39.4	0.2
35~39 years	55.9	55.2	-0.7	40.0	39.4	-0.6
40~44 years	55.9	55.4	-0.5	40.8	39.2	-1.6*
45~49 years	56.0	54.9	-1.1*	40.3	39.7	-0.6
50~54 years	54.9	54.7	-0.2	39.9	39.4	-0.5
55~59 years	54.4	53.9	-0.5	40.1	39.7	-0.4

4. Comparison of Physiological Function

(1) Resting Pulse

Compared with the results in 2010, the resting pulse was significantly higher in 2015 for males in the 30~34 year age group and females in the 25~54 year age groups (p $<$ 0.05). The difference was relatively small in other age groups (Table 2-3-2-40).

Table 2-3-2-40 Comparison of average resting pulse in adults (bpm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	74.1	74.5	0.4	76.0	77.5	1.5
25~29 years	75.9	75.8	-0.1	75.9	77.7	1.8*
30~34 years	74.2	76.7	2.5*	76.0	78.8	2.8*
35~39 years	73.6	73.7	0.1	73.8	78.1	4.3*
40~44 years	75.8	75.0	-0.8	74.7	77.5	2.8*
45~49 years	74.1	73.1	-1.0	73.7	76.2	2.5*
50~54 years	74.4	74.5	0.1	73.3	75.3	2.0*
55~59 years	74.4	73.7	-0.7	72.8	72.3	-0.5

(2) Blood Pressure

Compared with the results in 2010, the SBP increased in males while decreased in females in 2015; the DBP declined in both males and females; and pressure difference tended to increase. For males, the SBP increased significantly in the 20~24, 25~29, 30~34 and 35~39 age groups (P < 0.05); the DBP decreased significantly in all age groups except in the 25~29 and 30~34 year age groups (P < 0.05). For females, the SBP in the 25~34 year age groups and the DBP in the 25~59 year age groups dropped considerably in 2015 (P < 0.05). The pressure difference of males showed a substantial increase in each age group (P < 0.05); that of females increased dramatically in all age groups, except in the 20~44 year age groups (P < 0.05) (Tables 2-3-2-41, 2-3-2-42 and 2-3-2-43).

Table 2-3-2-41 Comparison of average SBP In adults (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	120.1	126.5	6.4*	109.8	110.6	0.8
25~29 years	121.7	127.5	5.8*	109.4	107.4	-2.0*
30~34 years	121.6	128.7	7.1*	111.1	108.8	-2.3*
35~39 years	123.2	126.3	3.1*	113.0	111.7	-1.3
40~44 years	127.3	128.2	0.9	115.9	114.8	-1.1
45~49 years	128.4	128.3	-0.1	119.0	118.4	-0.6
50~54 years	128.9	130.5	1.6	122.5	123.9	1.4
55~59 years	130.6	131.7	1.1	124.9	125.2	0.3

Table 2-3-2-42 Comparison of average DBP In adults (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	75.0	73.1	-1.9 *	68.4	68.8	0.4
25~29 years	75.7	74.9	-0.8	69.3	67.3	-2.0*
30~34 years	76.0	76.9	0.9	70.6	67.9	-2.7*
35~39 years	78.5	75.8	-2.7*	71.9	69.5	-2.4*
40~44 years	80.1	76.6	-3.5*	72.8	70.4	-2.4*
45~49 years	81.8	77.3	-4.5*	75.0	70.4	-4.6*
50~54 years	81.0	78.7	-2.3*	75.7	73.2	-2.5*
55~59 years	81.7	78.8	-2.9*	76.8	71.3	-5.5*

Table 2-3-2-43 Comparison of average pressure difference in adults (mmHg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	45.1	53.4	8.3*	41.3	41.9	0.6
25~29 years	46.0	52.6	6.6*	40.1	40.1	0.0
30~34 years	45.6	51.9	6.3*	40.5	40.9	0.4
35~39 years	44.7	50.4	5.7*	41.1	42.3	1.2
40~44 years	47.1	51.6	4.5*	43.1	44.3	1.2
45~49 years	46.6	51.0	4.4*	43.9	48.0	4.1*
50~54 years	47.9	51.8	3.9*	46.8	50.8	4.0*
55~59 years	48.9	52.9	4.0*	48.1	54.0	5.9*

(3) Vital Capacity and Vital Capacity/Weight

Compared with the results in 2010, the vital capacity of both males and females tended to increase in 2015, with significant increase found in males of the 20~24 year age group and females of the 20~24, 30~34 and 50~54 year age groups ($p < 0.05$). No significant change was found in the vital capacity/weight of males and females in 2015 (Tables 2-3-2-44 and 2-3-2-45).

Table 2-3-2-44 Comparison of average vital capacity in adults (ml)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	3865.1	4033.6	168.5*	2666.9	2789.7	122.8*
25~29 years	3981.7	4038.9	57.2	2660.2	2737.0	76.8
30~34 years	4008.2	4064.0	55.8	2626.2	2749.1	122.9*
35~39 years	3793.4	3867.7	74.3	2621.5	2686.9	65.4
40~44 years	3698.1	3795.5	97.4	2516.8	2562.6	45.8
45~49 years	3431.9	3475.7	43.8	2363.2	2408.1	44.9
50~54 years	3363.3	3485.5	122.2	2224.2	2322.6	98.4*
55~59 years	3215.9	3144.7	-71.2	2142.2	2213.6	71.4

Table 2-3-2-45 Comparison of average vital capacity/weight in adults (ml/kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	60.8	61.9	1.1	52.3	53.0	0.7
25~29 years	60.8	58.9	-1.9	53.1	52.5	-0.6
30~34 years	60.3	59.1	-1.2	49.8	51.9	2.1
35~39 years	55.2	57.1	1.9	48.0	49.3	1.3
40~44 years	54.4	55.3	0.9	44.9	45.9	1.0
45~49 years	50.8	51.2	0.4	42.6	42.0	-0.6
50~54 years	51.4	51.6	0.2	40.5	41.3	0.8
55~59 years	50.0	48.2	-1.8	38.8	40.3	1.5

(4) Step Test Index

Compared with the results in 2010, relatively small difference was found in the step test index of adults in all age groups in 2015, except for a dramatic increase in males of the 20~24 year age group and a significant decrease in females of the 50~54 year age group ($p < 0.05$) (Table 2-3-2-46).

Table 2-3-2-46 Comparison of average step test index in adults

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	53.4	56.2	2.8*	54.1	54.4	0.3
25~29 years	53.0	53.3	0.3	55.6	55.1	-0.5
30~34 years	53.9	53.2	-0.7	56.3	55.7	-0.6
35~39 years	54.9	56.2	1.3	57.5	56.5	-1.0
40~44 years	55.8	55.8	0.0	58.5	57.1	-1.4
45~49 years	56.8	55.8	-1.0	60.4	58.7	-1.7
50~54 years	58.3	56.2	-2.1	62.6	57.6	-5.0*
55~59 years	58.3	56.4	-1.9	61.8	60.2	-1.6

5. Comparison of Physical Fitness

(1) Strength

Compared with the results in 2010, the vertical jump of males in the 25~29 year age group declined significantly ($p < 0.05$), while that of females in the 20~24 year age group increased significantly ($p < 0.05$) in 2015. No obvious change was seen in vertical jump of males and females in other age groups (Table 2-3-2-47).

The indicators for grip and back strength of both males and females, push-ups of males and one-minute sit-ups of females all increased in varying degrees in 2015. A significant increase was seen in the back strength of males and females in the 20~24 age group ($p < 0.05$); the grip strength of males and females in each age group also saw a dramatic increase ($p < 0.05$); the push-ups of males in the 20~24 year age group, as well as the one-minute sit-ups of females in the 30~34 and 35~39 age groups increased considerably ($p < 0.05$) (Tables 2-3-2-48, 2-3-2-49 and 2-3-2-50).

Table 2-3-2-47 Comparison of average vertical jump in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	38.3	37.7	-0.6	23.9	25.0	1.1*
25~29 years	38.8	36.8	-2.0*	24.3	24.0	-0.3
30~34 years	37.1	37.3	0.2	23.2	23.7	0.5
35~39 years	35.8	35.5	-0.3	22.6	22.9	0.3

Table 2-3-2-48 Comparison of average push-ups (male) and one-minute sit-ups (female) in adults (times)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	24.6	30.2	5.6*	23.6	24.8	1.2
25~29 years	25.8	26.6	0.8	22.7	22.6	-0.1
30~34 years	25.0	27.2	2.2	19.3	21.2	1.9*
35~39 years	23.5	26.1	2.6	17.0	19.2	2.2*

Table 2-3-2-49 Comparison of average back strength in adults (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	103.6	110.4	6.8*	55.2	61.4	6.2*
25~29 years	104.1	108.6	4.5	55.5	55.3	-0.2
30~34 years	107.9	108.4	0.5	55.9	58.2	2.3
35~39 years	109.0	108.1	-0.9	58.4	57.6	-0.8

Table 2-3-2-50 Comparison of average grip strength in adults (kg)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	38.9	42.9	4.0*	22.6	25.7	3.1*
25~29 years	39.5	43.9	4.4*	22.7	24.1	1.4*
30~34 years	41.9	45.0	3.1*	22.7	24.9	2.2*
35~39 years	42.9	44.7	1.8*	23.6	25.6	2.0*
40~44 years	41.5	46.0	4.5*	24.0	26.4	2.4*
45~49 years	40.5	45.1	4.6*	23.0	25.7	2.7*
50~54 years	39.1	45.1	6.0*	21.9	24.4	2.5*
55~59 years	38.6	41.2	2.6*	21.5	23.4	1.9*

(2) Flexibility

Compared with the results in 2010, there was no obvious change in male and female adults in all age groups, except for a significant increase in the sit and reach of females in the 40~44 year age group (table 2-3-2-51).

Table 2-3-2-51 Comparison of average sit and reach in adults (cm)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	3.2	2.1	-1.1	6.1	7.0	0.9
25~29 years	2.8	2.4	-0.4	6.4	5.2	-1.2
30~34 years	1.5	2.4	0.9	4.8	6.2	1.4
35~39 years	2.3	2.7	0.4	5.8	5.5	-0.3
40~44 years	2.2	2.6	0.4	5.5	7.3	1.8*
45~49 years	1.9	1.7	-0.2	5.3	5.9	0.6
50~54 years	2.7	2.1	-0.6	5.4	6.1	0.7
55~59 years	1.0	-0.6	-1.6	6.3	6.7	0.4

(3) Reaction

Compared with the results in 2010, the reaction ability of males in the 35~39 year age group was reduced significantly, while that of males in the 55~59 year age group improved dramatically ($p < 0.05$); no obvious change was found in other age groups. For females, the reaction ability declined substantially in the 25~29, 35-39 and 50~54 year age groups; no apparent change was seen in other age groups (Table 2-3-2-52).

Table 2-3-2-52 Comparison of average choice reaction time in adults (sec)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	0.41	0.40	-0.01	0.43	0.43	0.00
25~29 years	0.41	0.41	0.00	0.44	0.45	0.01*
30~34 years	0.42	0.41	-0.01	0.45	0.45	0.00
35~39 years	0.41	0.43	0.02*	0.45	0.46	0.01*
40~44 years	0.43	0.43	0.00	0.47	0.48	0.01
45~49 years	0.43	0.44	0.01	0.49	0.50	0.01
50~54 years	0.45	0.44	-0.01	0.49	0.51	0.02*
55~59 years	0.47	0.45	-0.02*	0.51	0.52	0.01

(4) Balance

Compared with the results in 2010, the balance ability of males remained generally stable in 2015; the average OFSEC time for females in the 45~49 year age group was significantly longer in 2015 ($p < 0.05$) and relatively small change was observed in other age groups without statistical significance (Table 2-3-2-53).

Table 2-3-2-53 Comparison of average OFSEC time in adults (sec)

Age group	M			F		
	2010	2015	Difference	2010	2015	Difference
20~24 years	43.2	47.9	4.7	43.5	45.2	1.7
25~29 years	44.3	39.4	-4.9	47.8	46.3	-1.5
30~34 years	38.7	36.6	-2.1	36.5	39.6	3.1
35~39 years	38.1	40.4	2.3	37.6	33.5	-4.1
40~44 years	31.3	30.6	-0.7	28.9	30.7	1.8
45~49 years	30.6	26.5	-4.1	20.5	25.9	5.4*
50~54 years	22.9	22.6	-0.3	17.9	18.4	0.5
55~59 years	18.8	22.7	3.9	13.0	14.1	1.1

(III) Summary

1. Summary of 2015 Results on Physical Fitness Study of Adults

The results of 2015 survey revealed that about 3/4 of adult subjects had received secondary education. Nearly 2/3 of adult subjects worked indoors in an "air conditioned" environment. However, the proportion of those working in an "air conditioned" environment decreased progressively with advancing age, whereas the proportion of those working in a "naturally ventilated" environment tended to increase. Moreover, as much as 80% of adults worked an average of 35~50 hours per week.

In terms of sleeping, 83.1% of adult subjects slept for an average of 6~9 hours daily. The sleeping hours decreased with advancing age and 14.9% of adult subjects had less than 6 hours of sleep. Only 21.3% considered themselves having "good sleep quality", whereas 11.3% considered themselves having "poor sleep quality"; the rest of the subjects considered their sleep quality to be average.

Adult subjects walking for less than 1 hour and more than 1 hour daily accounted for 76.5% and 23.5%, respectively. More males than females walked for more than 1 hour daily. The average walking hours increased substantially in males aged 45 onwards and females aged 40 onwards.

In the daily life, the most popular activity for adult subjects during leisure time was audio-visual entertainment (54.7%). The types of leisure activity differed by genders and age groups. Most males in each age group preferred audio-visual entertainment; as age increased, the proportion of males choosing traveling, social gathering and sleeping decreased, while the proportion of males doing house chores increased, and those doing physical exercise remained basically stable. For females, the proportion of those choosing traveling, social gathering, audio-visual entertainment and sleeping declined with advancing age, while more and more females preferred physical exercise and house chores.

In respect of smoking, there were 18.9% of male subjects and 1.9% of female subjects currently having smoking habit. As age increased, more males began to smoke, whereas the number of female smokers tended to decline after age 45. The largest proportion of smokers smoked less than 10 cigarettes daily. According to smoking duration, 43.4% of males had smoked for over 15 years, which account for the highest proportion, while females had the highest proportion of 39.7% in smoking for 5~10 years. As for adults who had quitted smoking, 18.9%

males had quitted smoking for less than 2 years and 81.1% had quitted smoking for over 2 years; for females, 28.0% had quitted smoking for less than 2 years and 72.0% had quitted for over 2 years.

In respect of drinking, 52.9% males and 27.6% females had drinking history. The two highest proportions of males that consumed alcohol were 60.1% and 61.2%, found in the 25~29 and 30~34 year age groups, respectively; and drinkers in other age groups generally accounted for about 50%. In the 20~24 year age group, females that consumed alcohol accounted for the highest proportion of 39.0%. Among male drinkers, 56.0% consumed alcohol once a month, 31.1% consumed 1~2 times a week, and only 4.5% consumed alcohol 5~7 times weekly. For females, those drinking once a month had the highest proportion (74.4%). Most adults drank beer (44.5%), followed by wine or fruit wine (42.0%). The most common alcohol drank by males was beer, and wine or fruit wine was the most favorite for females.

In respect of eating habits, adult subjects having breakfast 6 or more days a week gained the largest proportion of 71.9% and only 7.2% of adults ate breakfast less than 2 days a week. Adults eating out for 1~3 times accounted for the highest proportion of 43.3% while those never ate out accounted for the lowest proportion of 7.9%; adults eating out for 10 or more times a week accounted for 14.1%. The highest proportion of 44.0% was found in adults consuming high-fat and high-sugary snacks for 1~2 times a week, whereas those never consumed such foods and drinks had the lowest proportion of 10.3%.

As for physical exercise, 76.5% of adult subjects participated in physical exercise, of which 16.0% were frequent exercisers and 60.5% were occasional exercisers. Males had a higher exercise frequency and intensity, as well as longer exercise duration than females. As age increased, weekly exercising frequency of adults increased, but exercise intensity tended to decrease. The proportion of adults who had persisted in exercising for no more than 6 months declined, and those who continued exercising for over 5 years increased.

The main purposes for males to participate in physical exercise in descending order were to improve exercise ability, relieve pressure and regulate mood as well as cure and prevent diseases. The purposes of doing physical exercise for females were to prevent and cure diseases and relieve pressure. The reasons for doing exercise varied with age groups. As age increased, more and more adults exercised to prevent and cure diseases, whereas less people exercised to improve sports skills, lose weight, keep fit and relieve pressure.

Major locations where adults exercised in descending order were park, stadium or gym, open area, road or street, office or home, and recreational club. Major types of sports that the adults participated in with the highest participation were walking, jogging, ball games, swimming, bicycling and hiking. Difference was found between genders in choosing sports. Males usually participated in sports such as jogging, ball games, walking, swimming, equipment work out and strength training; while females usually participated in walking, jogging, swimming, aerobics, yangko dance and yoga, etc. In addition, the results revealed that the proportion of adults watching different sports in all age groups remained fairly stable, and the top 3 sports being watched were football, basketball and swimming.

The major obstacles that hindered adults to participate in physical exercise were laziness, lack of time, lack of venues and facilities, lack of coaching advice and lack of interest, etc.

According to the results of 2015 study, anthropometric indicators of males and females including length and width indicators were fully developed. All indicators tended to decline with advancing age except for pelvis width. Weight of male adults continued to increase with advancing age between ages 20~35, and then remained stable or slightly decreased thereafter; weight of female adults tended to increase with advancing age between ages 30~49. Chest and waist circumferences of male and female adults increased with advancing age before age 55, but remained stable thereafter. The growth rate of waist circumference was faster than that of hip circumference for both genders.

The overall physiological function of adults tended to decline with advancing age, which was reflected by gradual increase in blood pressure, abrupt decrease in vital capacity; nonetheless, the step test index showed an upward trend. Males generally had a higher physiological function level than females of the same age.

Grip and back strength of adults varied slightly with advancing age and remained at the maximum for a fairly long period. However, explosive force, endurance strength, reaction and balance ability decreased rather rapidly with advancing age. By contrast, females had better flexibility than males and their balance ability was comparable to that of males; other physical fitness indicators of males were generally higher than those of females.

2. Comparison of 2015 and 2010 Results on the Physical Fitness Study of Adults

In comparison of the indicators in 2010 and 2015 questionnaires, the proportion of adults born in Mainland China decreased while those born in Macao increased in 2015; the proportion of adults with university degree (including master and doctoral degree) increased somewhat; adults working indoors in an "air-conditioned" environment gained a significant increase and there was also an increment in non-working females in 2015.

The proportion of adults participated in physical exercise frequently increased by 0.5% in 2015 than that in 2010 and non-exercisers declined dramatically. More and more adults persisted in exercising for 6~12 months. In the two studies, the main purposes of exercise were to "prevent and cure diseases", "improve exercise ability" and "relieve pressure and regulate mood". In terms of choosing ball games, the top choices were still football, basketball and badminton for adults. The main obstacles that hindered adults to participate in physical exercise were laziness, lack of time, lack of locations and facilities, as well as lack of coaching advice. A significant increase was seen in the proportion of adults who did not participate physical exercise due to lack of locations and facilities compared with that in 2010.

Through comparison of results in 2010 and 2015 studies, it was indicated that average height of male and female adults remained quite stable in the past 5 years. For males, relatively small difference was found in height among age groups between two studies, except for an increase of 1.4cm in the 50~54 year age group in 2015; no significant difference was found in females between two studies. Weight of males and females increased in varying degrees in 2015, of which significant increment was found in the 25~34 and 50~54 year age groups of males and the 20~29, 45~49 and 50~54 year age groups of females. Compared with the results in 2010, the obesity rate was apparently higher in 2015 in males at age 25~29 and females at age 50~54, while the rate was significantly lower in males of the 40~44 year age group, which differed significantly; besides, the differences found in other age groups were rather small. The circumference indicators of males varied little in 2015; the chest and hip circumferences of females increased slightly while the waist circumference and WHR of females decreased mildly.

In terms of physiological function, the SBP of males increased obviously while the SBP of females and DBP of both genders decreased in 2015 compared with 2010; the pressure difference was higher in 2015 than 2010 for both males and females. The overall vital capacity of males and females showed a rising trend and the step test index remained fairly stable.

As for physical fitness in 2015, compared with the results in 2010, strength and endurance of adults improved; whereas flexibility and reaction ability showed a relatively flat trend; and the overall balance ability remained stable except for a significant improvement in several female age groups.

IV. Seniors

(I) Physical Fitness Conditions of Seniors in 2015

1. Basic Information of the Subjects

Subjects were divided into two categories by gender and further classified into 4 age groups which differed by 5 years, i.e. 60~64 and 65~69. There were a total of 638 valid subjects, comprising 201 males and 437 females. The sample size of senior subjects in each age group was shown in Table 2-4-1-1.

A total of 215 subjects (90 males and 125 females) of over age 60 were drawn from Macao public or private institutions and communities that were mainly located in the north, central, south and islands areas. 106 subjects (38 males and 68 females) were randomly drawn from senior centers in the north area (Freguesia de Nossa Senhora de Fátima), including Centro de Dia da Ilha Verde, community organizations of União Geral das Associações dos Moradores de Macau (General Union of Neighbourhood Associations of Macau), Centro de Convívio da Associação de Mútuo Auxílio dos Moradores de Mong-Há, Centro de Convívio da Obra das Mães and Centro de Actividades para Idosos da Associação Beneficência Tung Sin Tong (Macau Tung Sin Tong Charitable Society Senior Activity Center), etc. 10 subjects (0 male and 10 females) were picked from Centro de Convívio da Associação de Mútuo Auxílio dos Moradores do Sam Pá Mun in the central area (Freguesias de S. António and S. Lázaro). 88 subjects (19 males and 69 females) were from senior centers in the south and islands areas Freguesias de Nossa Senhora do Carmo, de São Lourenço and da Sé), including Centro de Convívio "Missão Luterana de Hong Kong e Macau / Centro de Terceira Idade Yan Kei", Centro de Cuidados Especiais Longevidade (Serviço de Apoio Domiciliário), Academia do Cidadão Senior do Instituto Politécnico de Macau (Macao Polytechnic Institute - Seniors Academy), service centers of Associação Geral das Mulheres de Macau (The Women's Association of Macau) and Centro de Lazer e Recreação das Associações dos Moradores da Zona Sul de Macau, etc. Due to the insufficient valid subjects, 219 more subjects (54 males and 165 females) were drawn randomly from supplementary sampling sites in the above three areas, comprising Centro de Dia de Mong-Há, service centers of Federação das Associações dos Operários de Macau (Macao Federation of Trade Unions) and Centro de Convívio da Associação dos Habitantes das Ilhas Kuan Iek (Table 3-4-1-1). Residential distribution of the subjects in the senior centers was shown in Table 3-4-1-2.

Table 2-4-1-1 Sample size of senior subjects in each age group

Age group (yrs)	60~64	65~69	Total
Male	101	100	**201**
Female	243	194	**437**
Total	**344**	**294**	638

According to the study, 69.3% senior subjects (58.7% males and 74.1% females) were born in Mainland China, while 21.3% (31.3% males and 16.7% females) were born in Macao. Significant difference was found between genders in the birthplace (P < 0.05) (Figure 2-4-1-1, Table 3-4-1-3).
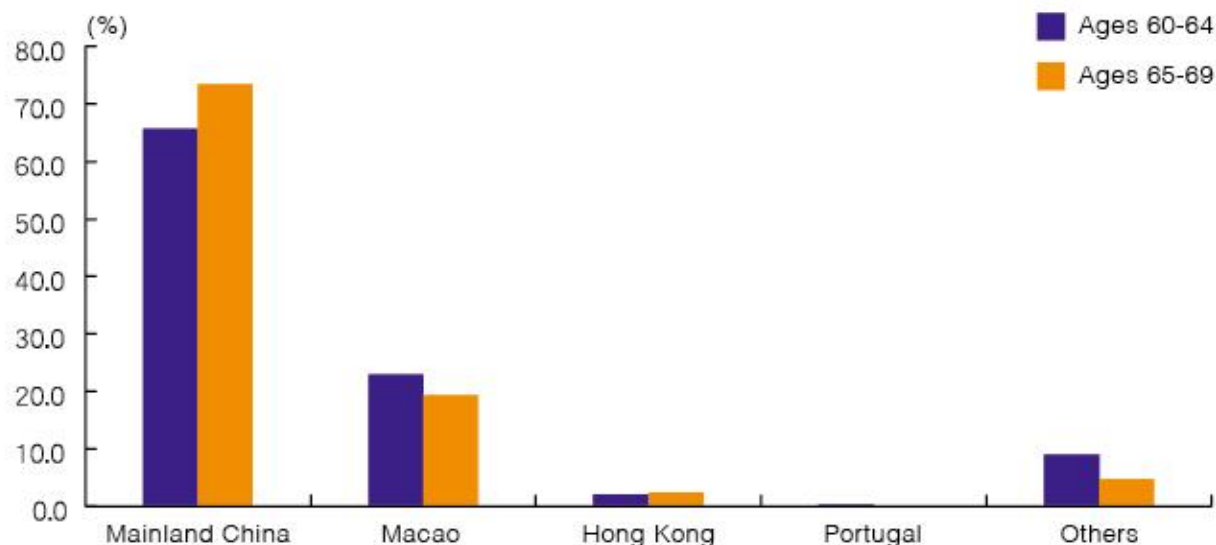
Figure 2-4-1-1 Proportion of birthplaces of seniors

Among senior subjects, those who had elementary education (primary school or below) accounted for the highest proportion of 52.7% (32.4% males and 62.0% females), followed by those having secondary education (secondary school or university) which accounted for 47.0% (66.6% males and 38.0% females). Educational level was significantly different between genders (P < 0.05) (Figure 2-4-1-2 and Table 3-4-1-4).
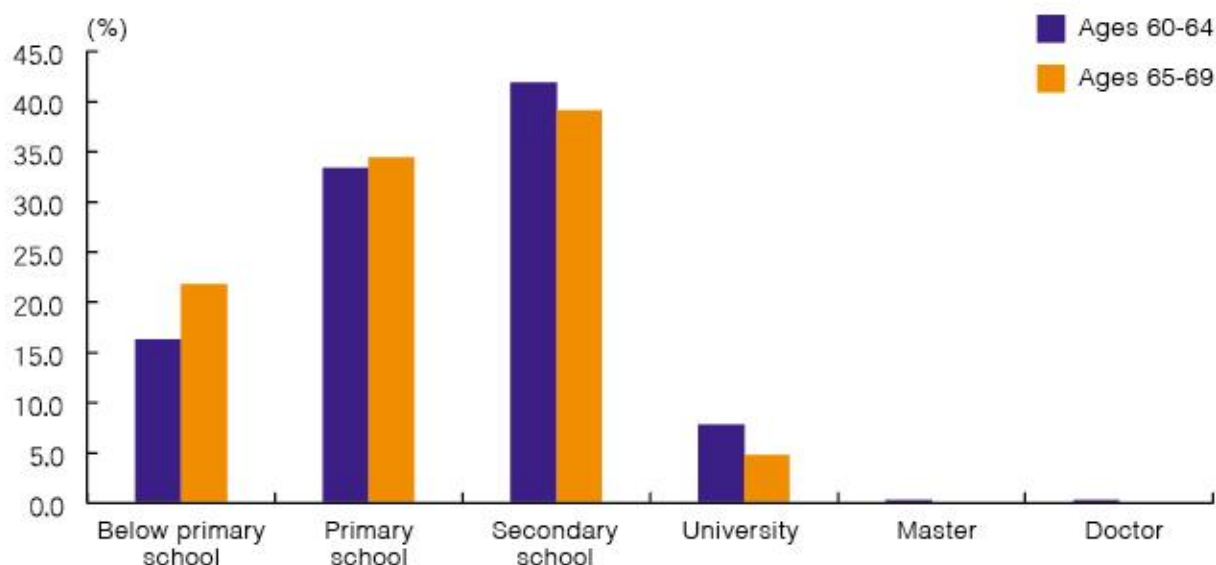
Figure 2-4-1-2 Proportion of education levels of seniors

Senior subjects having a current or preretirement labor intensive occupation had the highest proportion of 74.5%, with 69.7% males and 76.7% females. The proportion of seniors having a non-labor intensive occupation was 25.5%, with 30.3% males and 23.3% females. The proportion of labor intensive senior subjects tended to increase with advancing age and the changing trend was fairly consistent in males and females (Figure 2-4-1-3 and Table 3-4-1-5).
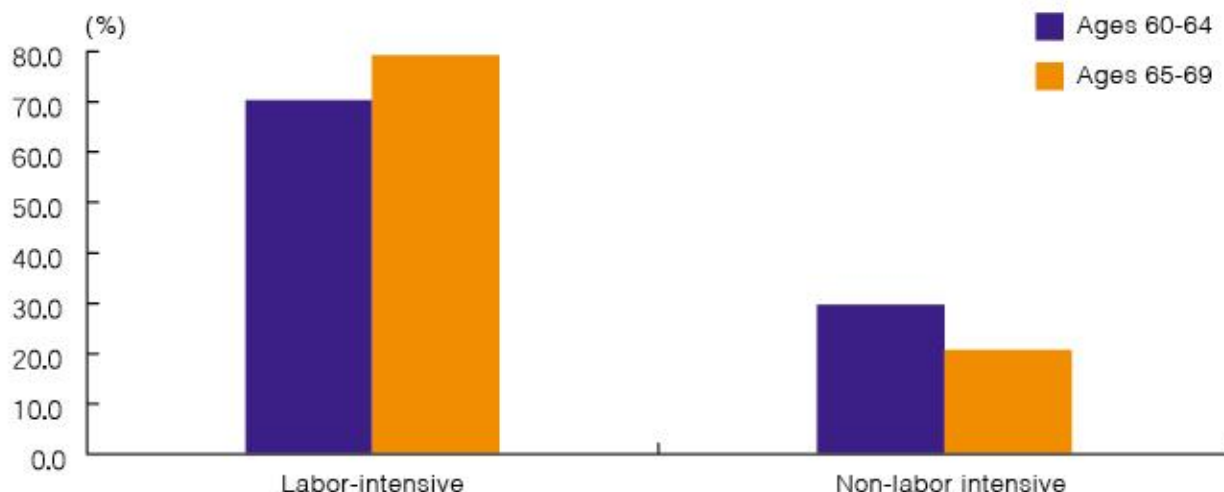
Figure 2-4-1-3 Proportion of work intensity of seniors

In terms of working environment, senior subjects working indoors before retirement contributed the highest proportion of 85.6% (73.2% males and 91.3% females), of working indoors under "air conditioned" environment had the highest proportion of 51.7% (45.3% males and 54.7% females). Significant difference between genders was observed in working environment (P < 0.05) (Figure 2-4-1-4 and Table 3-4-1-6).
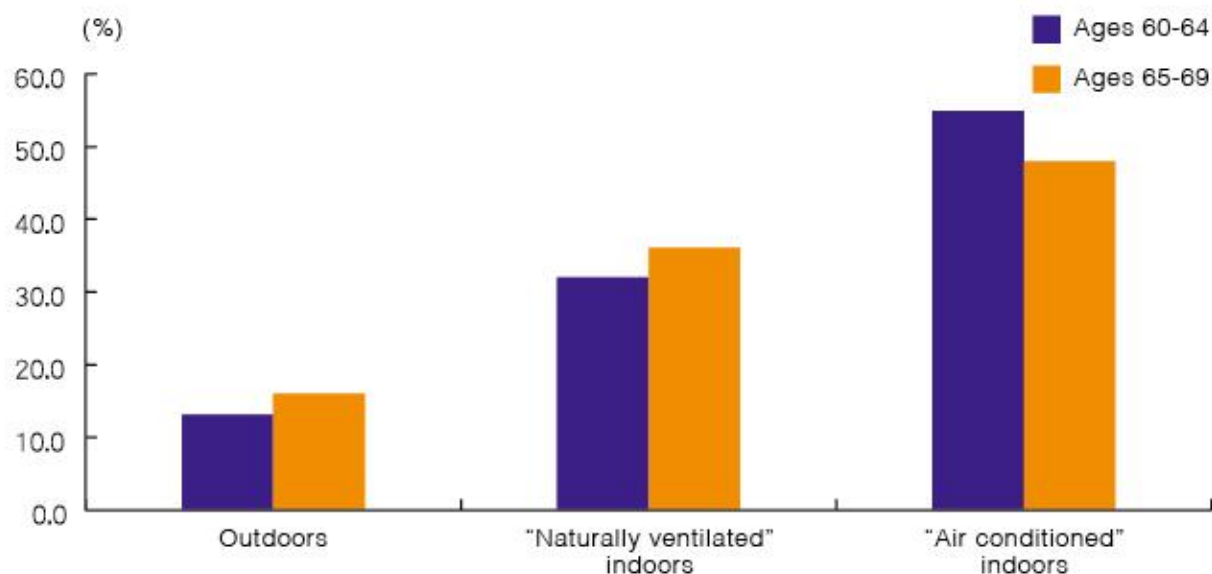
Figure 2-4-1-4 Proportion of working environments of seniors

In addition, 54.2% males and 67.7% females did not work, which accounted for the highest proportion. In the 60~64 year age group, the proportion of males who did not work was lower than that of females of the same age (P < 0.05). About 5.5% of males and 2.5% of females were still working for an average of over 50 hours per week (Table 3-4-1-7).

2. Lifestyle

Information regarding 4 areas was examined in senior subjects aged 60~69: living habits, physical exercise, occurrence of diseases and perception of the physical fitness study.

(1) Living Habits

Living habits included average daily sleeping hours and quality of sleep, accumulated walking and sitting hours, activity manners during leisure time, smoking, drinking and eating habits.

The results showed that 65.8% of seniors slept for an average of 6~9 hours daily, 30.4% slept for less than 6 hours, and 3.8% for 9 hours or more (Table 3-4-2-1). The amount of sleeping time differed between males and females. More females than males slept for an average of less than 6 hours daily ($P < 0.05$) while more males slept for 6~9 hours compared to females ($P < 0.05$). The proportion of males who slept for 9 hours or more was 4.0% higher than that of females ($P < 0.05$) (Figure 2-4-1-5). The proportion of subjects sleeping for less than 6 hours increased with advancing age (Figure 2-4-1-6).
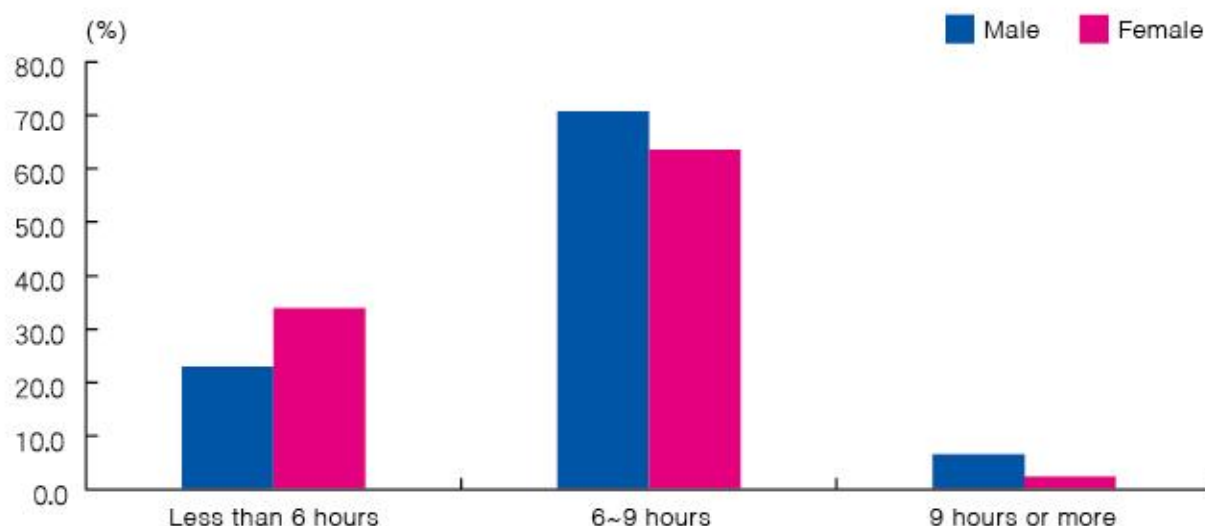
Figure 2-4-1-5 Proportion of sleeping hours of seniors by gender
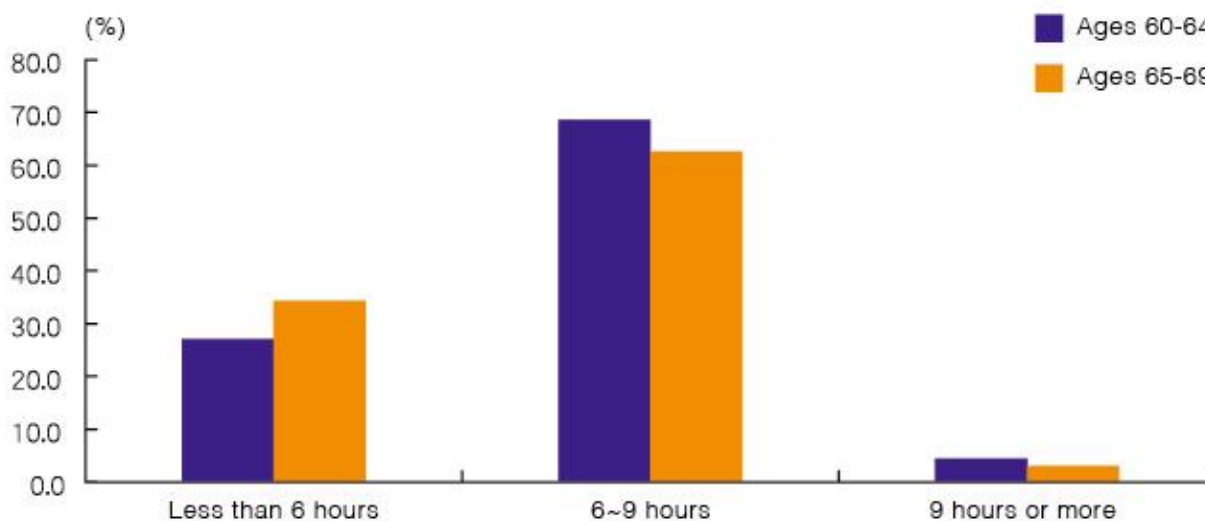
Figure 2-4-1-6 Proportion of sleeping hours of seniors by age group

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Good quality sleep refers to falling asleep quickly with a fair amount of deep sleeping time and no signs of insomnia. According to the results, 28.2% considered themselves having good quality of sleep, 53.1% considered themselves having an average and 18.7% considered themselves having poor quality. A majority of males (62.2%) considered their sleep quality to be average. More females than males considered themselves having a poor quality of sleep (P < 0.05) (Figure 2-4-1-7 and Table 3-4-2-2).
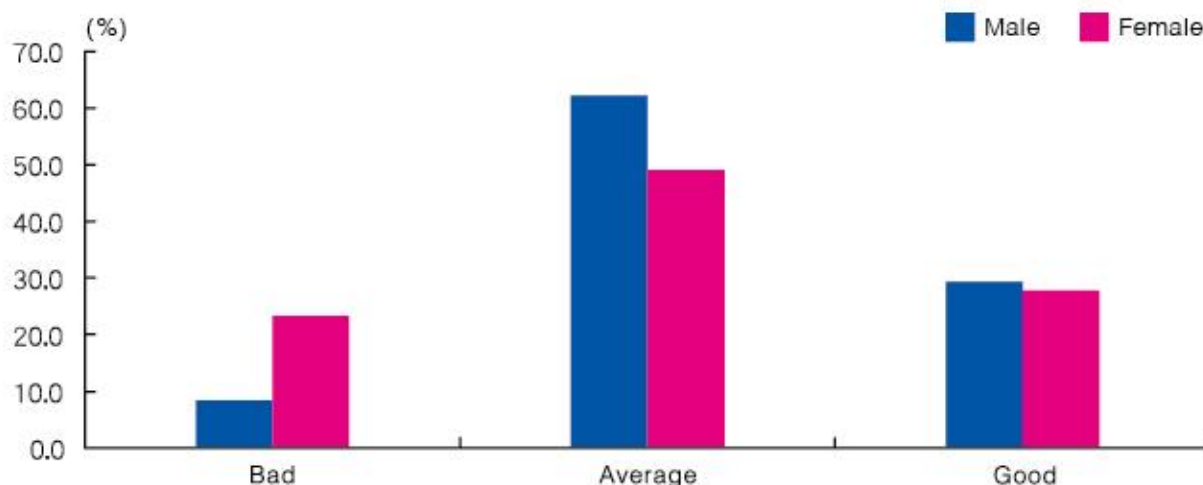
Figure 2-4-1-7 Proportion of sleeping quality of seniors

The results revealed that 13.3% of seniors walked for less than 30 minutes, 30.1% walked for 30~60 minutes, 33.2% walked for 1~2 hours and 23.4% for over 2 hours. There was no significant difference between males and females in walking hours. As age increased, more seniors walked longer (above 2 hours) while the proportion of seniors walking for less than 2 hours decreased (Figures 2-4-1-8, 2-4-1-9 and Table 3-4-2-3).
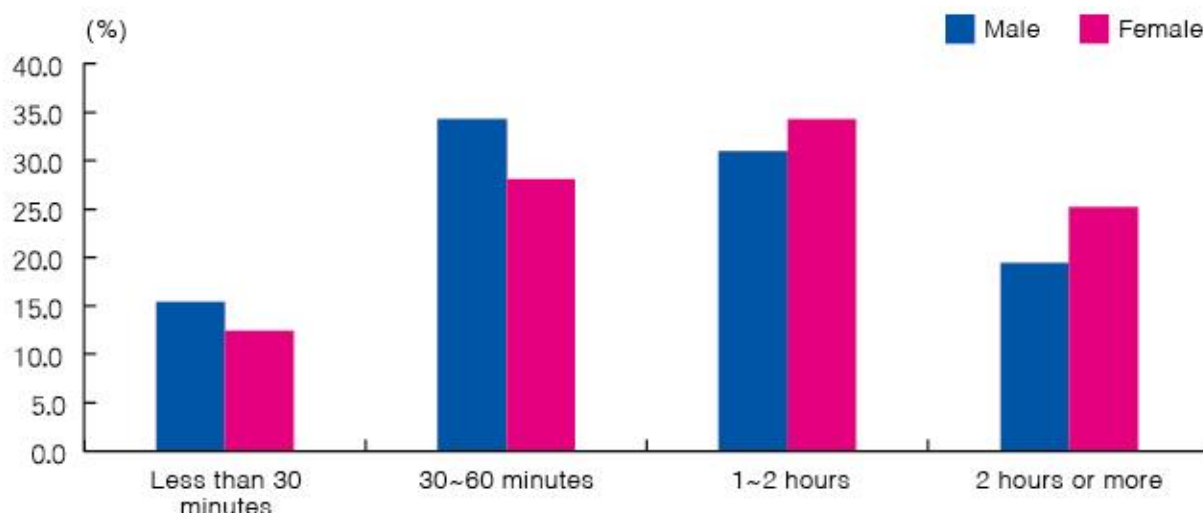
Figure 2-4-1-8 Proportion of average daily walking hours of seniors by gender
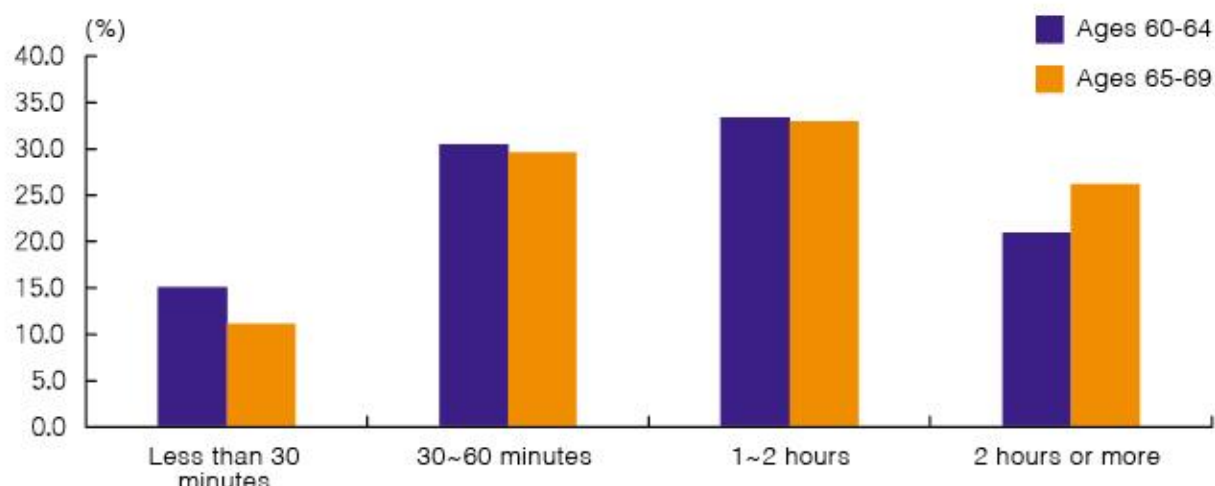
Figure 2-4-1-9 Proportion of average daily walking hours of seniors by age group

Among the senior subjects, 30.4% sat for an average of less than 3 accumulated hours per day; those who sat for 3~6 hours, 6~9 hours and 9 hour or more accounted for 52.0%, 13.6% and 4.0%, respectively. In general, significant difference was found between males and females in sitting hours ($P < 0.05$). More females than males sat for a short period of time (less than 3 hours daily) ($P < 0.05$), whereas females had a lower proportion than males in sitting for a long period of time (more than 6 hours) ($P < 0.05$). No significant difference was seen among age groups in accumulated sitting hours (Figures 2-4-1-10, 2-4-1-11 and Table 3-4-2-4).
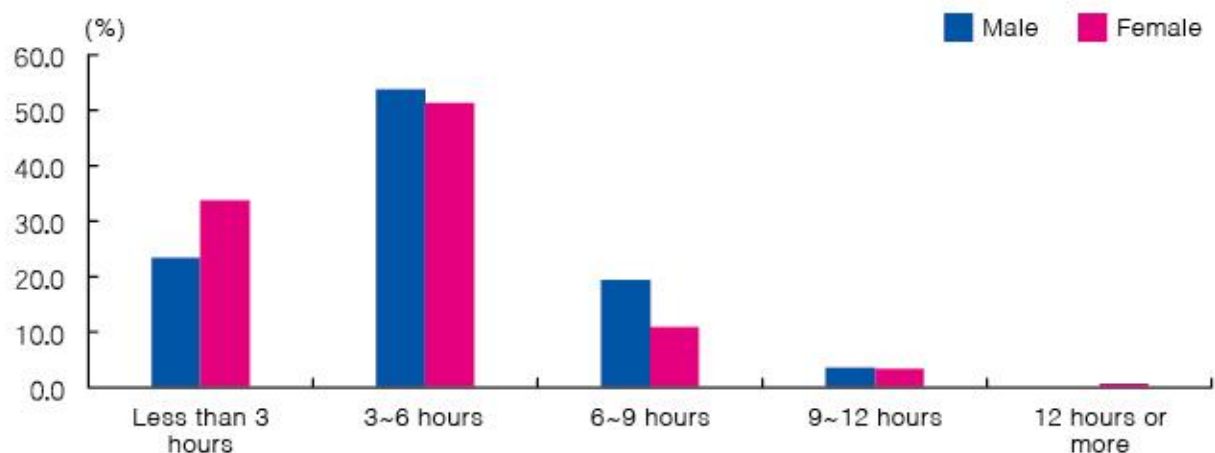
Figure 2-4-1-10 Proportion of accumulated sitting hours of seniors by gender
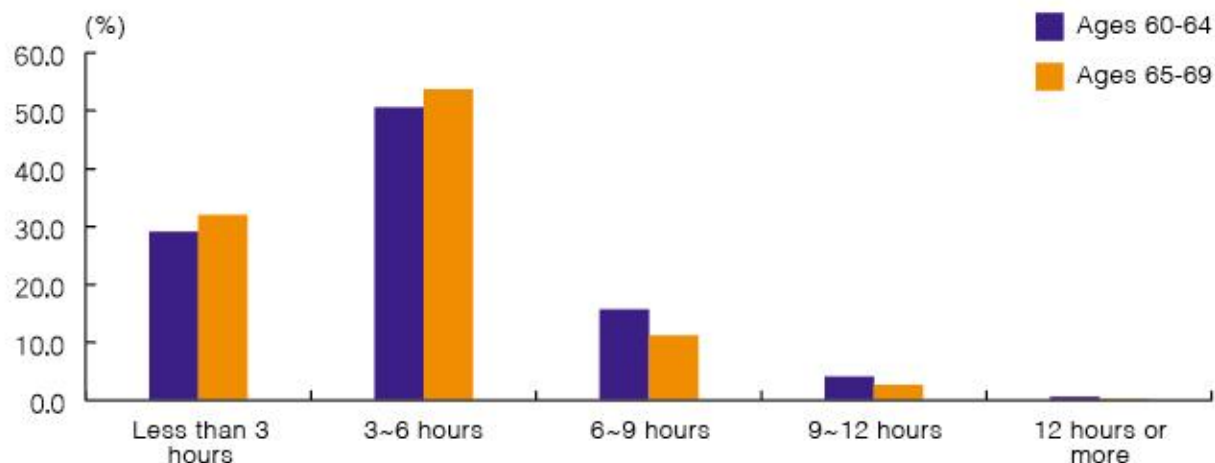
Figure 2-4-1-11 Proportion of accumulated sitting hours of seniors by age group

The study showed that 11.9% of seniors were current smokers or ex-smokers, in which 26.3% smoked less than 10 cigarettes daily, 23.7% smoked 10~20 cigarettes daily and 7.9% smoked 20 cigarettes or above. As for seniors who had quitted smoking, 9.2% had quitted smoking for less than 2 years and 32.9% had quitted for 2 years or more (Table 3-4-2-5). The proportion of male smokers (37.3%) was significantly higher than that of females smokers (0.2%), indicating a significant gender difference in smoking (P < 0.05). The percentage of senior smokers decreased gradually with advancing age. Among the smokers, 69.3% had smoked for more than 15 years (Figure 2-4-1-12 and Table 3-4-2-6).
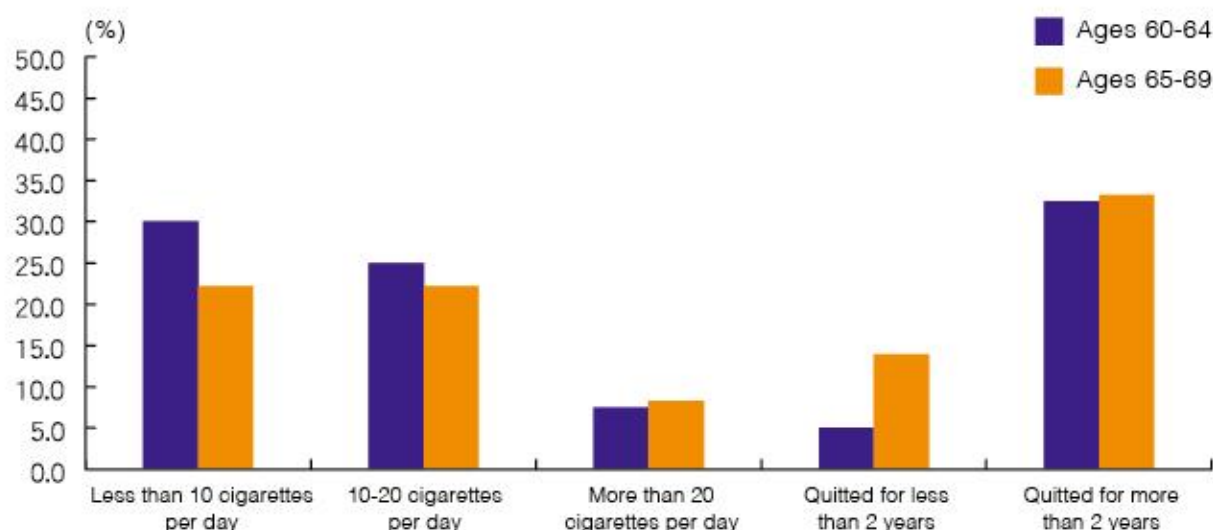
Figure 2-4-1-12 Proportion of smoking patterns of seniors

According to the study, 19.0% of senior subjects consumed alcohol, in which 29.8% drank once a month (occasionally); those who drank 1~2 times, 3~4 times and 5~7 times a week accounted for 33.0%, 18.2% and 19.0%, respectively. The main types of alcohol consumed by seniors were wine or fruit wine (43.0%), beer (30.6%), rice wine (19.8%), mixed wine (4.1%) and liquor (2.5%). The most common alcohol drank by males was beer (39.2%) and wine or fruit wine (61.9%) for females. Significant difference was found in the types of alcohol between genders (P < 0.05) (Figure 2-4-1-13; Tables 3-4-2-7, 3-4-2-8 and 3-4-2-9).
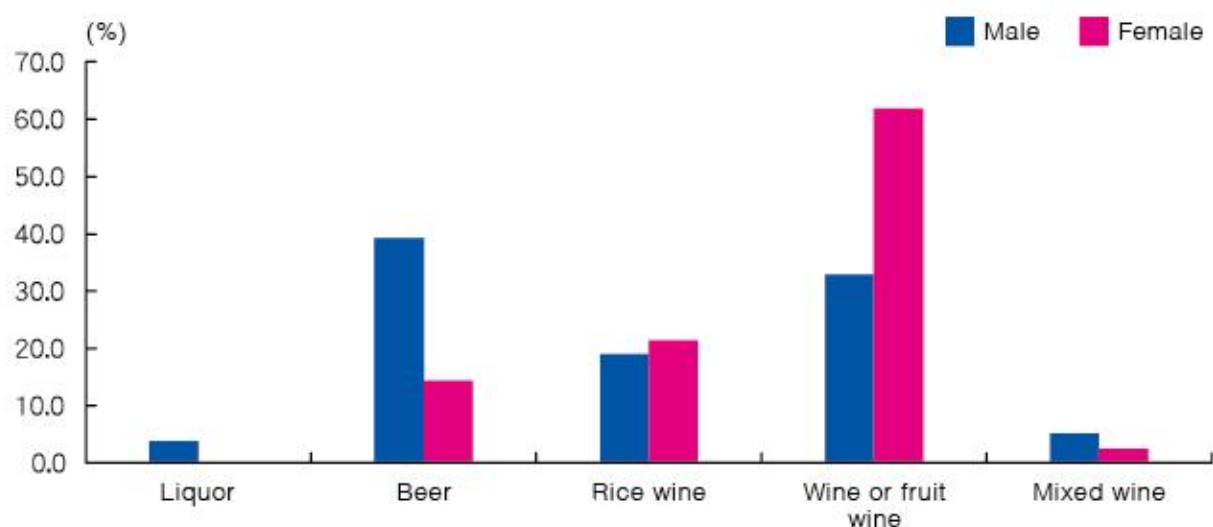
Figure 2-4-1-13 Proportion of types of alcohol consumed by seniors by gender

Seniors spent most of their leisure time on physical exercise (76.6%), house chores (58.6%), audio-visual entertainment (40.4%) and social gathering (23.7%). Male and female seniors had slightly different activities during their leisure time. Males had more varieties such as physical exercise (69.6%), audio-visual entertainment (47.3%), house chores (28.9%), social gathering (26.4%), chess and poker (8.5%) and traveling (8.4%); while females mainly focused on physical exercise (79.9%), house chores (72.3%), audio-visual entertainment (37.3%) and social gathering (22.4%). Leisure activities were generally the same among age groups (Figure 2-4-1-14 and Table 3-4-2-10).
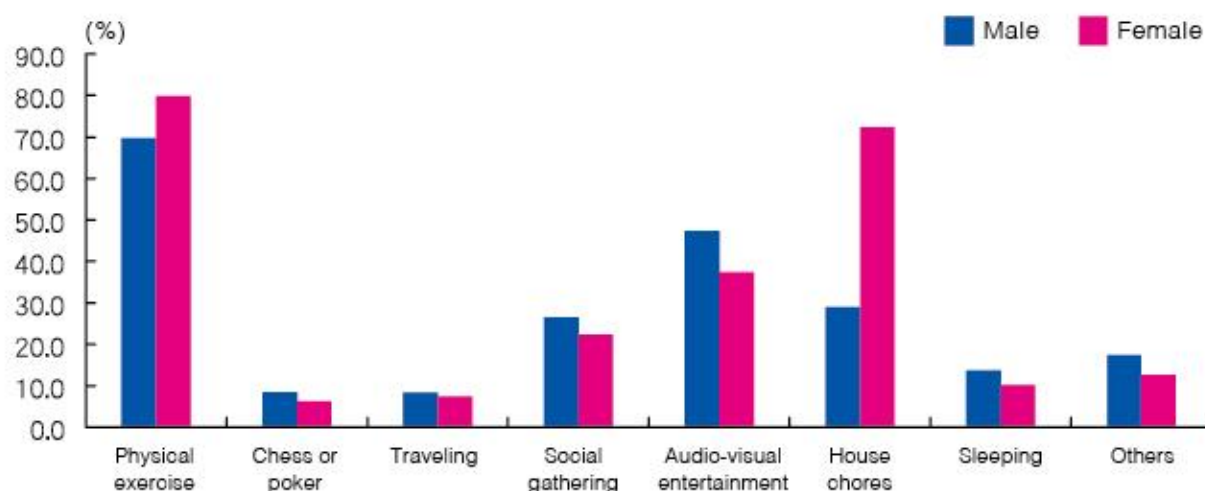
Figure 2-4-1-14 Proportion of activities during leisure time of seniors

(2) Physical Exercise

Information regarding 9 aspects was examined: purposes of physical exercise, major types of exercise, exercise frequency, exercise duration, duration of persistent exercising, self-perception during exercise, main locations of exercise, major obstacles of exercising and frequently watched sports events.

Among senior subjects, 87.3% participated in physical exercise. Most of the participants exercised 5 or more times per week (52.6%), each time for more than 30 minutes (85.4%), and were able to reach moderate and high intensity during exercise (62.1%). In addition, seniors who had persisted in continuous exercising for 5 years or above contributed the highest proportion (51.5%), followed by those exercising for 1~3 years (17.6%). The proportion increased with advancing age in seniors who exercised 5 or more times per week and in those who had persisted in exercising for 5 years or above (P<0.05) (Tables 3-4-2-11, 3-4-2-12, 3-4-2-13 and 3-4-2-14).

Senior subjects were classified into frequent, occasional and non-exercisers according to weekly exercise frequency, exercise duration and intensity. Subjects who exercised 3 or more times weekly, each time for longer than 30 minutes or above with moderate exercise intensity were defined as frequent exercisers.

The study showed that 38.6% of seniors were frequent exercisers, 12.7% were non-exercisers and 48.7% were occasional exercisers. The proportions of frequent, occasional and non-exercisers differed among age groups but not between genders. The frequent and occasional exercisers aged 65 onwards had a higher proportion than those in the 60~64 age group (P<0.05).

Frequent exercisers usually possessed good exercising habits and a long exercise history. 59.8% of frequent exercisers had persisted in exercising for 5 years or more. There were 45.0% of occasional exercisers who had exercised for 5 years or more. The duration of seniors persistent to continuous exercising differed among age groups but not between genders. As age increased, the proportion of seniors persisted in exercising for 5 years or more increased, whereas those exercising for 1~3 years and 3~5 years decreased.

Main purposes for seniors to participate in physical exercise in order of precedence were to prevent and cure diseases (73.8%), to improve exercise ability (38.2%), to relieve pressure and regulate mood (27.1%), to socialize (23.9%), to lose weight and keep fit (15.6%) and others (7.5%). The proportion of females exercising to improve exercise ability (34.5%) was lower than that of males (46.7%). As age increased, the desire to prevent and cure diseases by exercising increased, which accounted for 71.8% in the 60~64 year age group and 75.9% in the 65~69 year age group, an increase of 4.1% (Figures 2-4-1-15, 2-4-1-16 and Table 3-4-2-15).
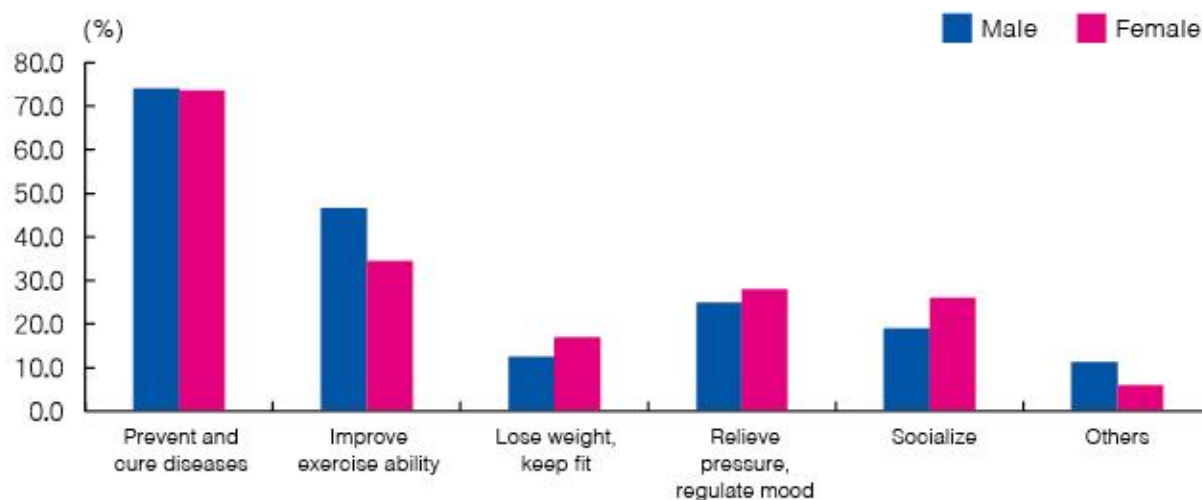
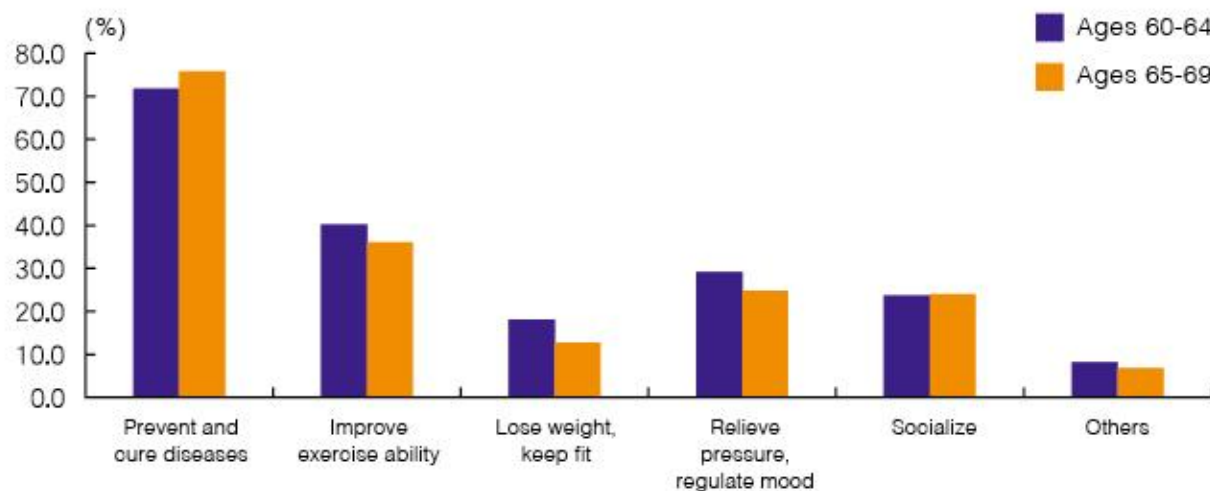**Figure 2-4-1-15 Proportion of exercise purposes of seniors by gender**

Figure 2-4-1-16 Proportion of exercise purposes of seniors by age group

Major locations seniors chose to exercise were park (68.2%), gym and stadium (32.7%), office or home (12.6%), road or street (10.8%) and open area (9.5%). As age increased, the proportion of males choosing office or home and road or street decreased, while those choosing open area increased; for females, the proportion choosing gym and stadium decreased, while the proportion choosing others changed slightly (Table 3-4-2-16).

Frequent exercisers chose park, gym and stadium as their major exercise locations. Males and females usually chose different locations to exercise. Males often chose park, gym and stadium, road or street and open area; while females usually chose park, gym and stadium, office or home. As age increased, the percentage of seniors choosing open ground to exercise increased, whereas those choosing gym, stadium, park, road or street decreased.

Major types of exercise that seniors participated in were walking (47.2%), aerobics and yangko dance (35.2%), martial arts and qigong (30.0%), swimming (14.9%) and jogging (10.6%). Slight difference between genders in the types of exercise was found. Males usually participated in walking (56.2%), martial arts and qigong (25.4%), jogging (21.9%) and swimming (20.1%). For females, most common exercises included aerobics and yangko dance (46.4%), walking (43.3%), and martial arts and qigong (32.0%). The percentage of seniors participated in martial arts and qigong increased with advancing age, 27.5% in the 60~64 age group and 32.7% in the 65~69 age group. No difference in the physical exercise choices between frequent exercisers and occasional exercisers were seen (Figure 2-4-1-17 and Table 3-4-2-17).
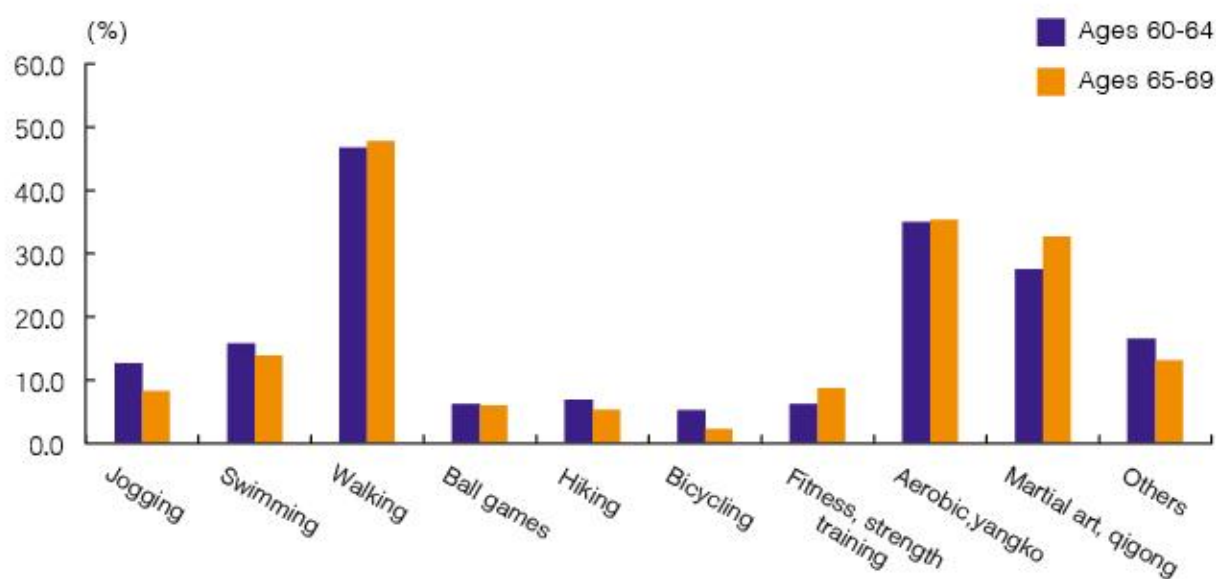
Figure 2-4-1-17 Proportion of types of exercise of seniors

Various obstacles affected seniors to exercise, among which lack of time (36.0%), laziness (20.0%) and physically not suitable to exercise (13.7%) were the major ones. The obstacles that affected both genders, both age groups and frequent exercisers to exercise were the same as above. The major obstacles that hindered non-exercisers to exercise in descending order were lack of time and laziness (both 35.8%), lack of interest (24.7%), too much labor intensive work / and physically not suitable to exercise (both 8.6%) (Table 3-4-2-18).

The study showed that the mostly watched sports events were others (51.5%), followed by swimming (17.2%), football (15.0%), gymnastics (14.8%) and basketball (10.2%). Males frequently watched football (35.4%), basketball (16.2%), swimming (14.6%), badminton (13.7%) and table tennis (12.6%); females mostly chose swimming (18.3%), gymnastics (17.6%) and martial arts (9.2%). As age increased, the proportion of males watching football, basketball and volleyball decreased while those watching swimming and martial arts increased (Table 3-4-2-19).

(3) Occurrence of Diseases

Among the subjects, 59.7% of seniors were diagnosed with diseases. The most common diseases in descending order were hypertension (55.8%), others (24.8%), diabetes (18.3%), gastrointestinal diseases (14.1%) and cardiovascular diseases (9.2%). Significant difference between genders was seen in the occurrence of diseases (P < 0.05). As age increased, the proportion of seniors diagnosed with diseases increased, in which 52.0% in the 60~64 age group and 67.3% in the 65~69 age group were diagnosed with diseases. The top four diseases diagnosed in different age groups were the same, namely, hypertension, others, diabetes and gastrointestinal diseases (Tables 3-4-2-20 and 3-4-2-21).

(4) Perception of the Physical Fitness Study

Among the senior subjects, 57.8% of seniors had heard of the physical fitness study, with similar percentage in males and females. 37.1% of seniors had previously participated in the physical fitness study, including 37.8% of males and 36.8% of females, without significant difference between genders (P < 0.05). As age increased, the proportion decreased in subjects who had heard of and previously participated in the physical fitness study (P < 0.05). As for the meaning of the study, 88.9% considered it as a mean "to understand their fitness status", 39.4% considered it helpful "to recognize the importance of physical exercise" and 30.8% considered it helpful "to improve scientific knowledge of fitness". The meaning of the physical fitness study was the same for both males and females of different age groups (Tables 3-4-2-22 and 3-4-2-23).

(5) Eating Habits

Among the subjects, 92.6% of seniors had breakfast 6 or more days a week, without significant difference between genders. 36.3% of seniors didn't eat out, of which the proportion was lower in males than females, with significant difference between genders (P < 0.05); those eating out for several meals per week accounted for 63.7%, of which males had a higher proportion than females, with significant difference (P < 0.05); those eating out for 1~3 times and 4 or more times per week accounted for 39.9% and 23.8%, respectively. 44.6% of seniors refrained from any high-fat and high-sugary snacks, of which males had a lower proportion than females, with significant difference between genders (P < 0.05). Seniors eating high-fat and high-sugary snacks for a couple of times per week accounted for 55.4%, and more males than females ate such snacks, showing a significant difference between genders (P < 0.05). The proportion of seniors taking high-fat and high-sugary snacks for 1~2 times and 3 or more times a week were 42.1% and 13.3%, respectively (Tables 3-4-2-24, 3-4-2-25 and 3-4-2-26).

3. Anthropometric Measurements

(1) Length Indicators

The average height of male and female seniors decreased with advancing age, ranging from 166.1~166.3cm and 153.7~154.9cm for males and females, respectively. The average height of males was higher than that of females in each age group (P < 0.01) (Figure 2-4-1-18 and Table 3-4-3-1).

The average sitting height also declined with advancing age in both males and females, ranging from 89.1~89.5cm for males and 82.8~84.0cm for females. In each age group, males had a higher average sitting height than females (P < 0.01) (Figure 2-4-1-19 and Table 3-4-3-2).

The average foot length of seniors remained fairly stable, ranging from 24.6~24.8cm and 22.8~22.9cm for males and females, respectively. Males had a longer average foot length than females in each age group (P < 0.01) (Figure 2-4-1-20 and Table 3-4-3-3).
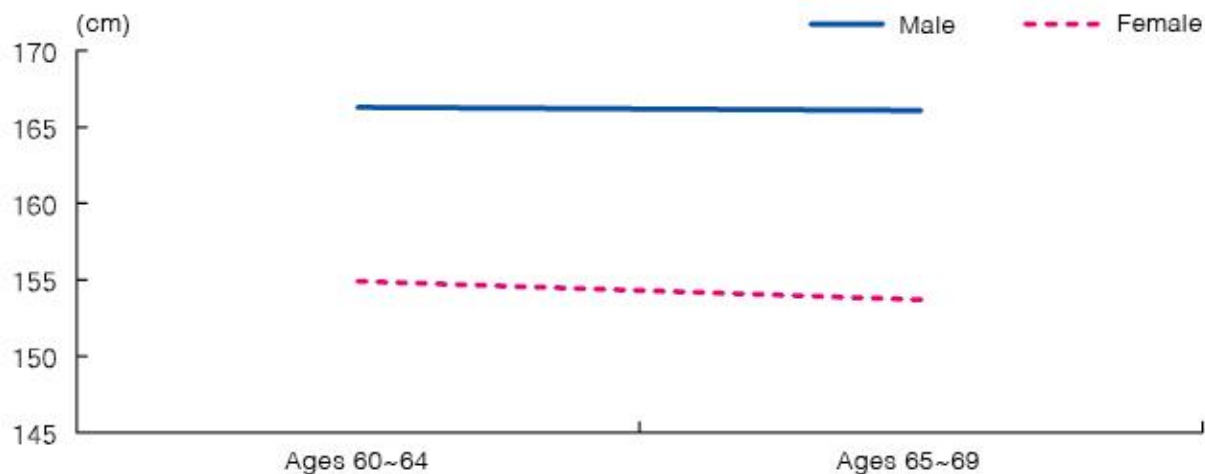
Figure 2-4-1-18 Average height of seniors
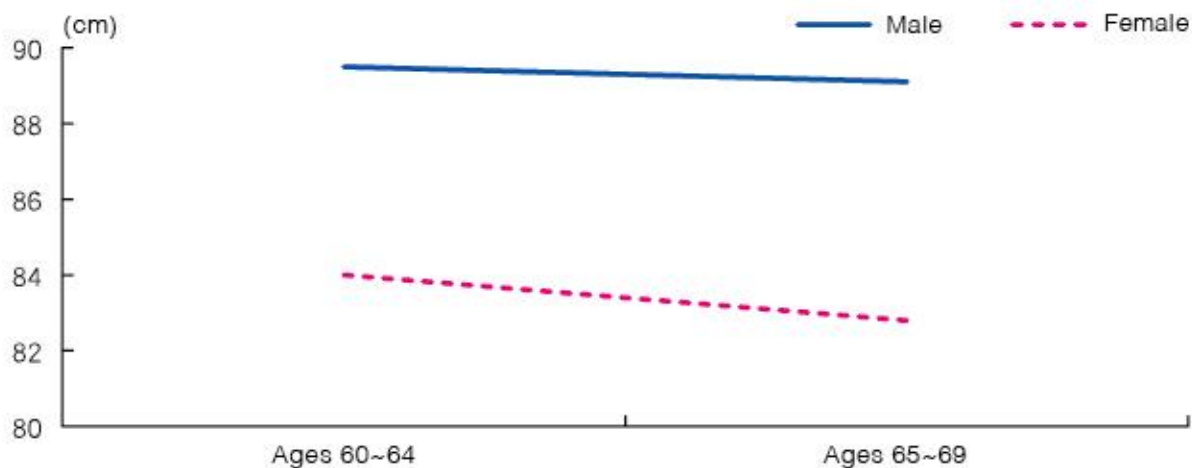
Figure 2-4-1-19 Average sitting height of seniors
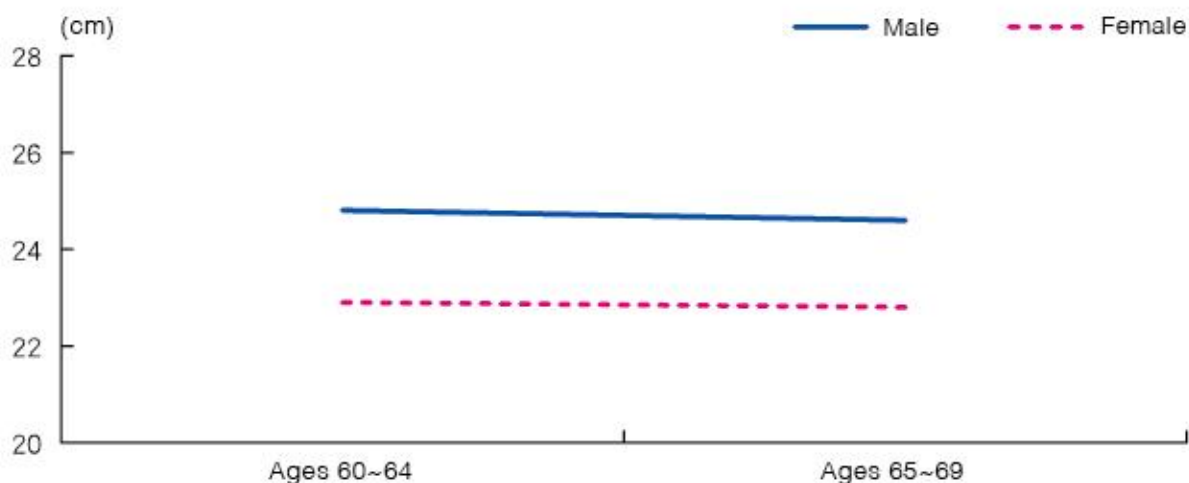
Figure 2-4-1-20 Average foot length of seniors

(2) Weight and BMI

The average weight of male and female seniors decreased as age increased, ranging from 64.7~65.6kg and 56.9~57.8kg for males and females, respectively. The average weight of males was higher than that of females in each age group (P < 0.01) (Figure 2-4-1-21 and Table 3-4-3-4).

BMI of male and female seniors fluctuated slightly in a stable trend with advancing age. The average BMI for males and females ranged from 23.4~23.7 and 24.1~24.1, respectively. Males had a lower average BMI than females in each age group, without significant difference (Figure 2-4-1-22 and Table 3-4-3-5).
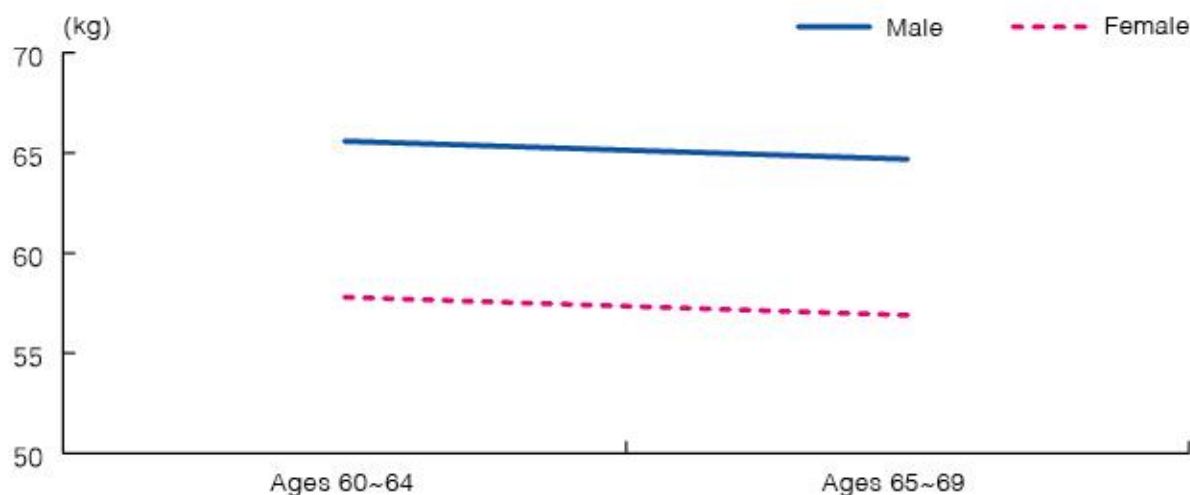
Figure 2-4-1-21 Average weight of seniors
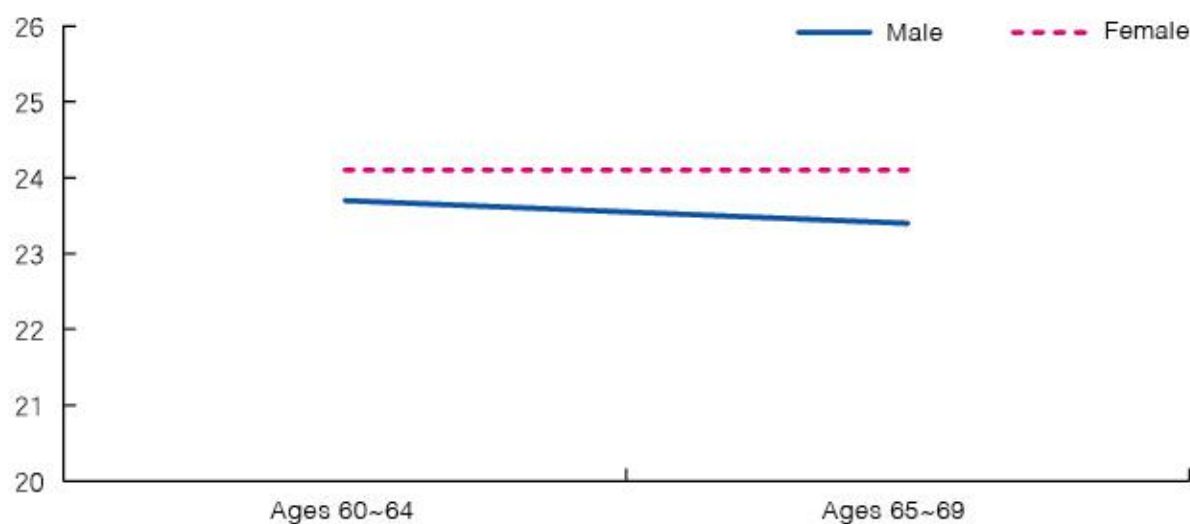
Figure 2-4-1-22 Average BMI of seniors

According to the recommended standard of BMI grouping by Working Group on Obesity in China, obesity is defined as BMI≥28.0. The proportion of seniors with BMI≥28.0 were 5.9% for males and 8.2% for females in the 60~64 age group; 5.0% for males and 11.9% for females in the 65~69 age group. The obesity rate was higher in females than males, without significant difference (Figure 2-4-1-23 and Table 3-4-3-6).
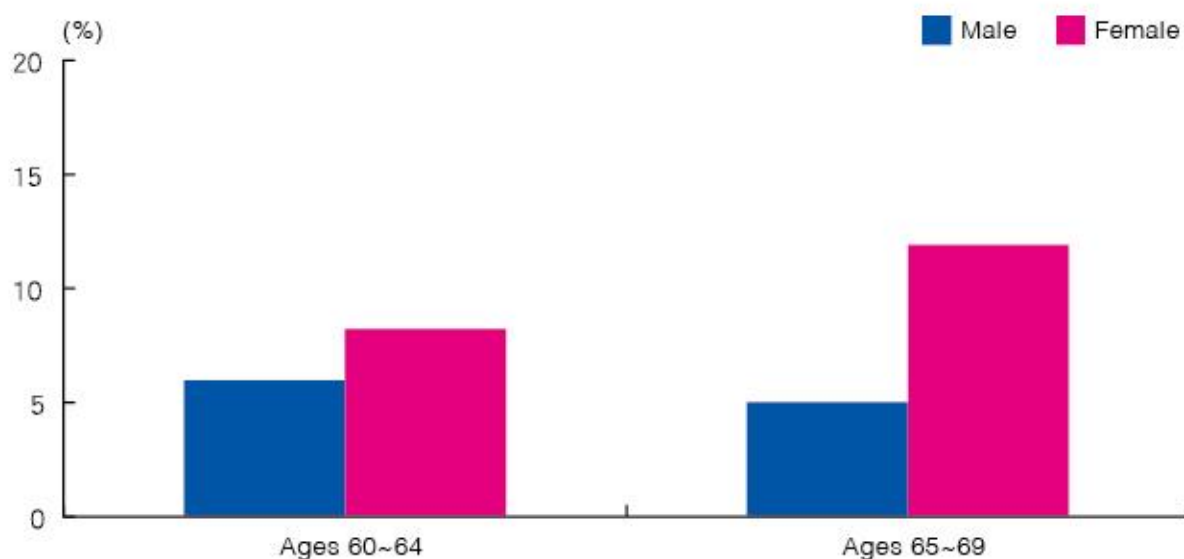
Figure 2-4-1-23 Obesity rate of seniors

(3) Circumference Indicators

The average chest circumference of male seniors decreased with advancing age, ranging from 91.7~91.8cm; the average chest circumference of female seniors increased with advancing age, ranging from 88.9~89.1cm. The average chest circumference of males was significantly higher than that of females in each age group (P < 0.01) (Figure 2-4-1-24 and Table 3-4-3-7).

The average waist circumference of seniors increased with advancing age, ranging from 85.4~86.5cm and 83.1~83.2cm for males and females, respectively. The average waist circumference was significantly higher in males than females in each age group (P < 0.01) (Figure 2-4-1-25 and Table 3-4-3-8).

The average hip circumference of seniors declined as age increased, ranging from 91.0~91.8cm and 94.2~94.5cm for males and females, respectively. The average hip circumference was significantly lower in males than females in each age group (P < 0.01) (Figure 2-4-1-26 and Table 3-4-3-9).

The WHR of seniors remained fairly stable with advancing age, ranging from 0.93~0.95 for males and 0.88~0.88 for females. Males had a larger WHR than females in each age group (P < 0.01) (Figure 2-4-1-27 and Table 3-4-3-10).

According to the internationally recognized ACSM (American College of Sports Medicine) standard, WHR≥1.03 for male seniors and WHR≥0.90 for female seniors indicate that excessive fat accumulates around the waist area, which may result in a higher risk of having diseases such as hypertension, type II diabetes and hyperlipidemia, etc.

Between ages 60~69, the proportion of males with a WHR≥1.03 ranged from 5.0%~6.1% and the proportion of females with a WHR≥0.90 ranged from 33.3%~43.3%.
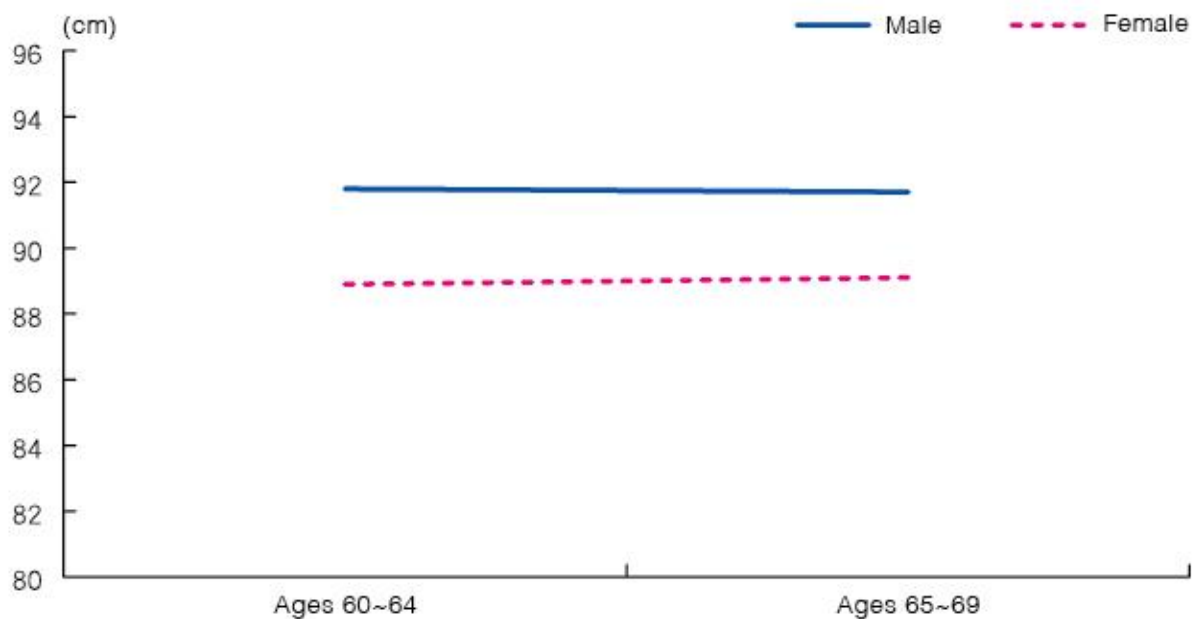
Figure 2-4-1-24 Average chest circumference of seniors
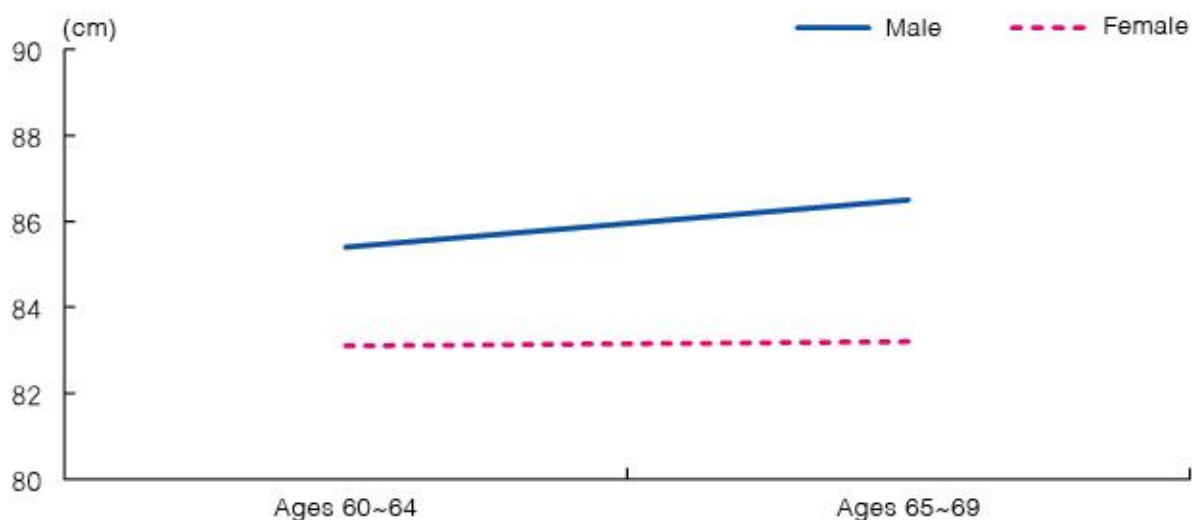
Figure 2-4-1-25 Average waist circumference of seniors
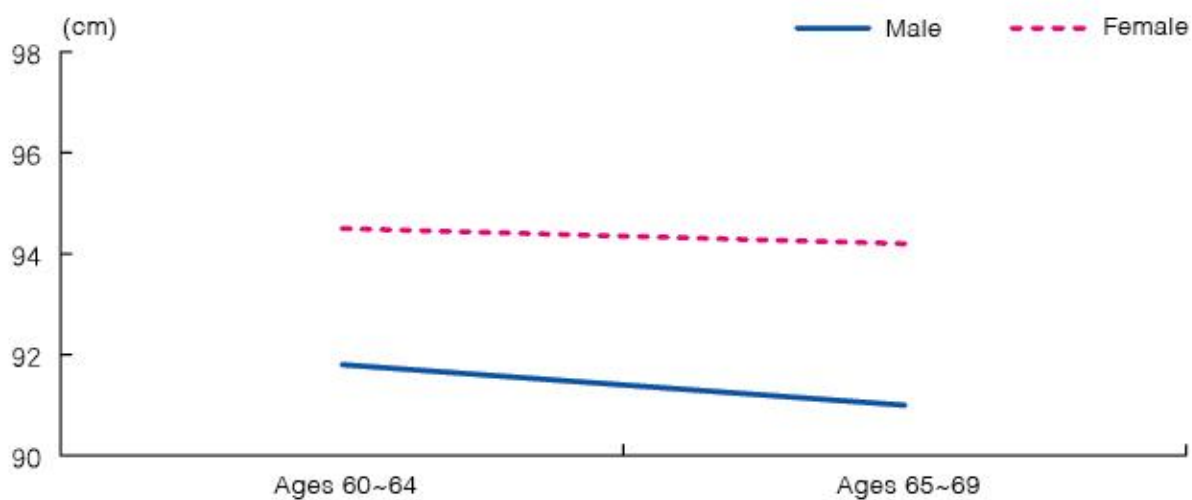
Figure 2-4-1-26 Average hip circumference of seniors
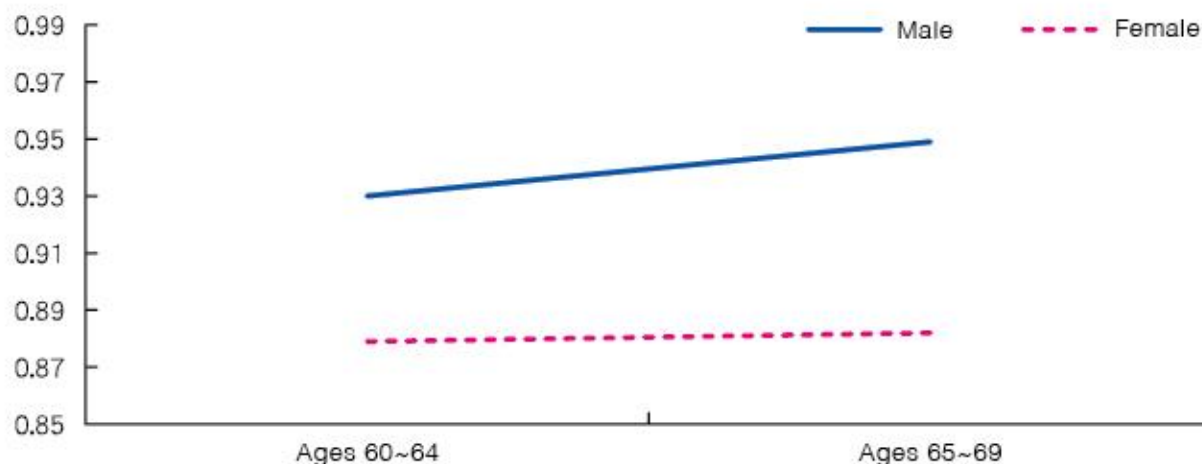
Figure 2-4-1-27 Average WHR of seniors

(4) Width Indicators

The average shoulder width of seniors decreased as age increased, ranging from 37.9~38.4cm and 33.6~34.0cm for males and females, respectively. The average shoulder width of males was significantly higher than that of females in each age group (P < 0.01) (Figure 2-4-1-28 and Table 3-4-3-11).

The average pelvis width of seniors remained fairly stable with advancing age, ranging from 27.8~28.0cm and 27.9~28.2cm for males and females, respectively. The average pelvis width of males was comparable to that of females in each age group, without significant difference (Figure 2-4-1-29 and Table 3-4-3-12).


Figure 2-4-1-28 Average shoulder width of seniors

208
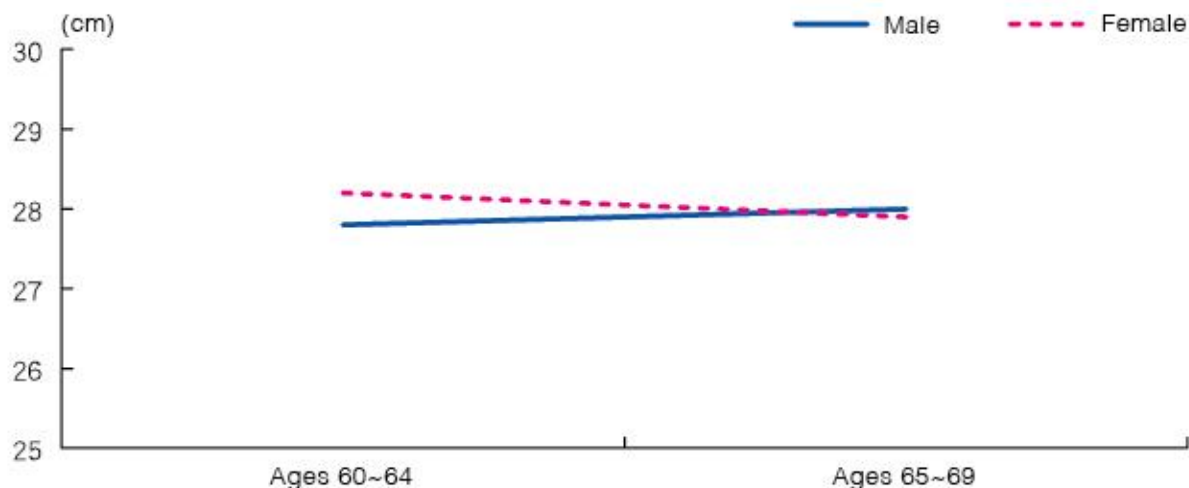
Figure 2-4-1-29 Average pelvis width of seniors

(5) Body Composition

As age increased, the average upper arm skinfold thickness decreased in males, ranging from 10.3~10.6mm; the average upper arm skinfold thickness increased in females, ranging from 23.1~23.6mm. The average upper arm skinfold thickness was significantly lower in males than females in each age group (P < 0.01) (Figure 2-4-1-30 and Table 3-4-3-13).

The average subscapular skinfold thickness increased in males while decreased in females with advancing age. The average subscapular skinfold thickness of males and females ranged from 18.4~18.9mm and 20.3~21.3mm, respectively. The average subscapular skinfold thickness of males was lower than that of females in each age group. Significant difference was found in the 60~64 age group (P < 0.01) (Figure 2-4-1-31 and Table 3-4-3-14).

The average abdominal skinfold thickness of seniors decreased with advancing age, ranging from 22.9~23.3mm and 29.6~30.0mm for males and females, respectively. The average abdominal skinfold thickness of males was significantly lower than that of females in each age group (P < 0.01) (Figure 2-4-1-32 and Table 3-4-3-15).

As age increased, body fat percentage tended to increase in males while decrease in females. Body fat percentage of males and females ranged from 17.9%~18.0% and 29.0%~29.3%, respectively. The average body fat percentage was significantly lower in males than females (P < 0.01) (Figure 2-4-1-33 and Table 3-4-3-16).

Lean body mass of seniors showed a declining trend with advancing age, ranging from 52.7~53.7kg and 40.0~40.6kg for males and females, respectively. The average lean body mass of males was significantly higher than that of females (P < 0.05) (Figure 2-4-1-34 and Table 3-4-3-17).
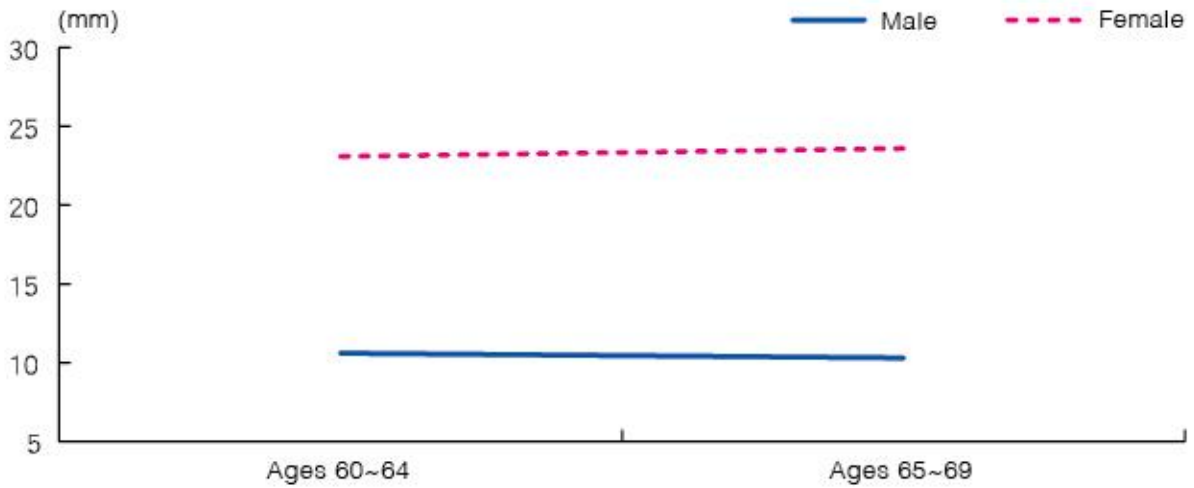
Figure 2-4-1-30 Average upper arm skinfold thickness of seniors
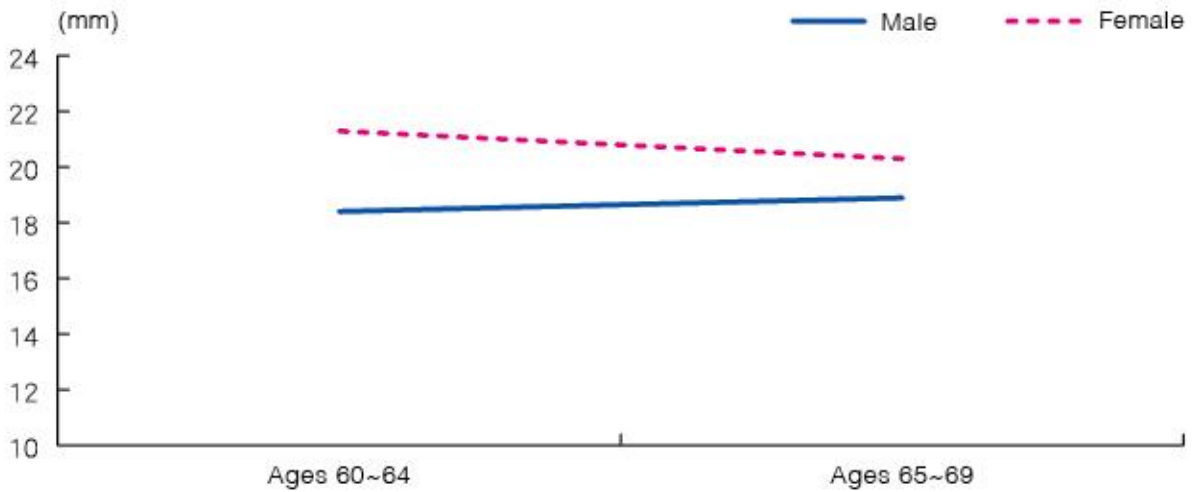
Figure 2-4-1-31 Average subscapular skinfold thickness of seniors
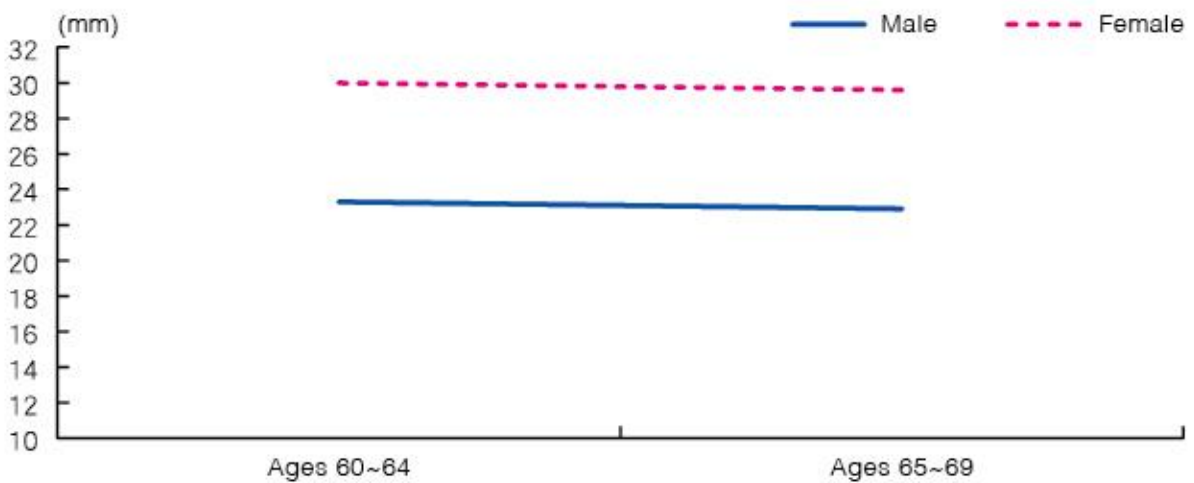
Figure 2-4-1-32 Average abdominal skinfold thickness of seniors

210
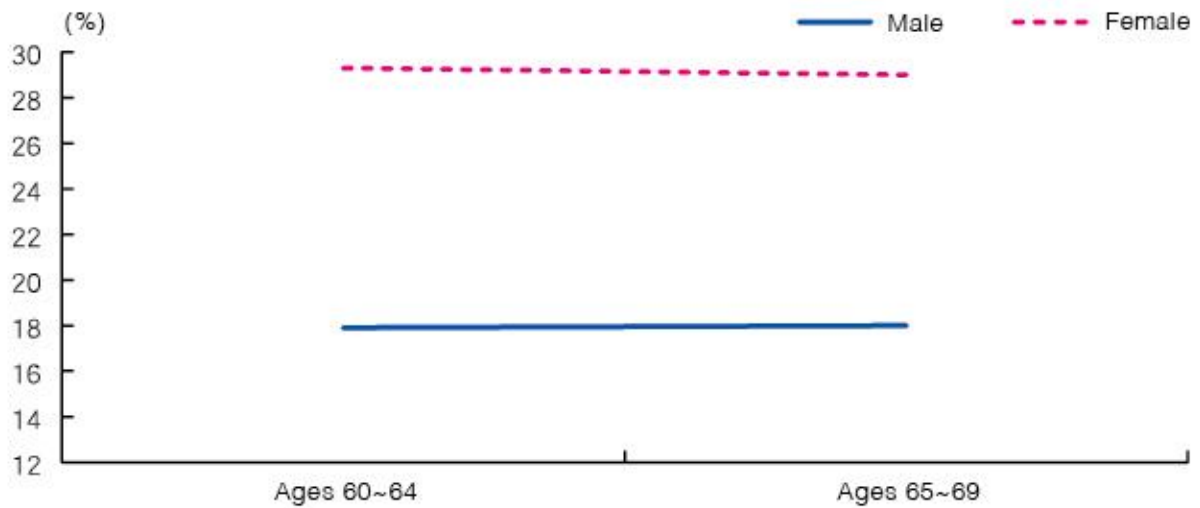
Figure 2-4-1-33 Average body fat percentage of seniors
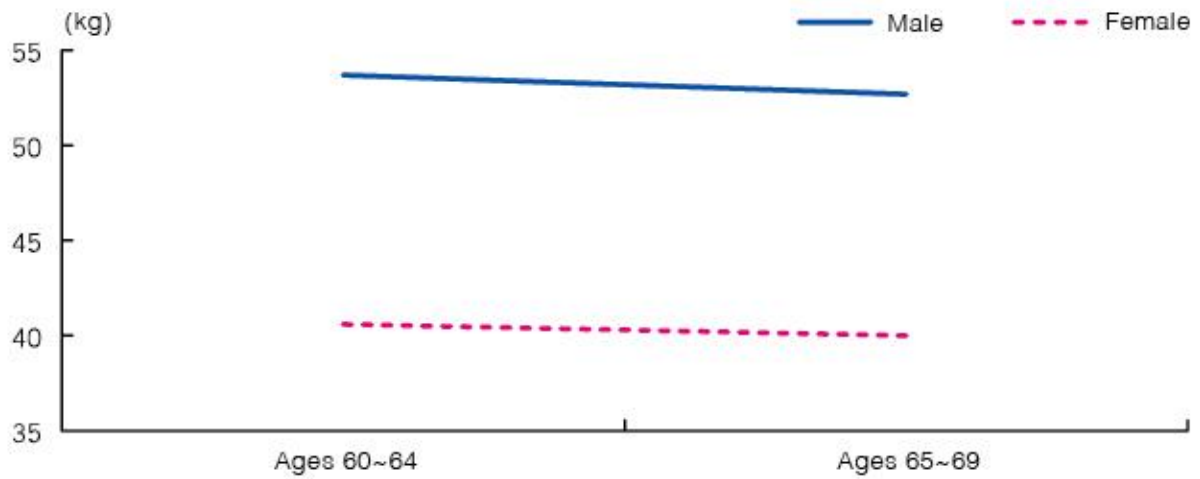
Figure 2-4-1-34 Average lean body mass of seniors

4. Physiological Function

(1) Resting Pulse

The average resting pulse of seniors remained stable as age increased, ranging from 73.3~74.8 bpm for males and 72.9~73.2 bpm for females. The average resting pulse of males was higher than that of females, without significant difference (Figure 2-4-1-35 and Table 3-4-4-1).
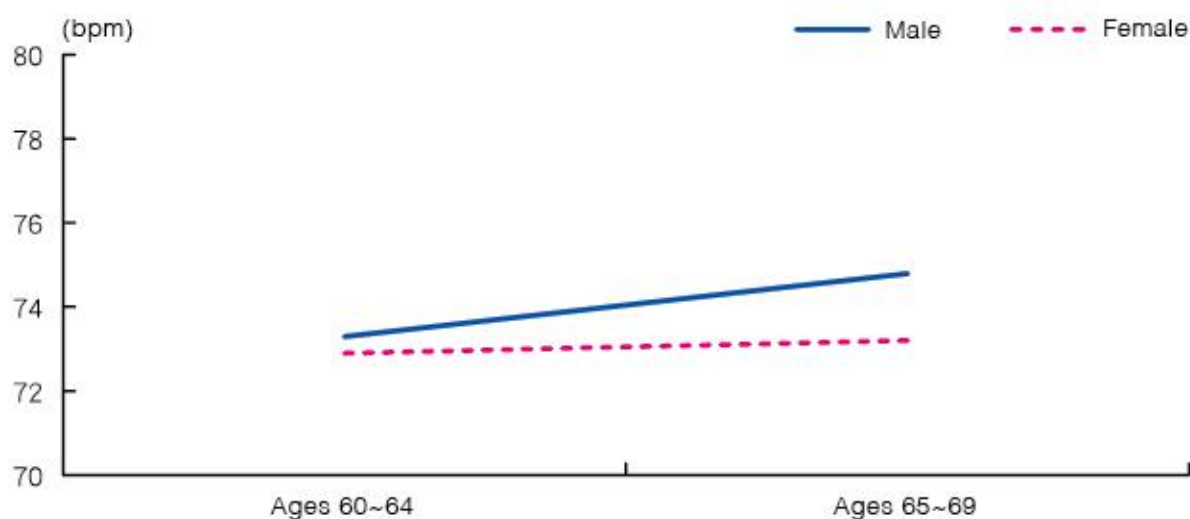
Figure 2-4-1-35 Average resting pulse of seniors

(2) Blood Pressure

The average systolic blood pressure (SBP) of seniors was fairly stable as age increased, ranging from 132.8~133.9 mmHg for males and 130.6~131.4 mmHg for females. The average SBP of males was higher than that of females, without significant difference (Figure 2-4-1-36 and Table 3-4-4-2).

The average diastolic blood pressure (DBP) of seniors decreased with advancing age, ranging from 74.0~75.8 mmHg and 71.6~74.2 mmHg for males and females, respectively. The average DBP was higher in males than females, with significant difference seen in the 65~69 age group ($P < 0.05$) (Figure 2-4-1-37 and Table 3-4-4-3).

The average pressure difference of seniors increased with advancing age. The average pressure difference of males in the 60~64 and 65~69 age groups were 57.0 mmHg and 59.9 mmHg, respectively; as for females, the average pressure difference in the 60~64 and 65~69 age groups were 57.2 mmHg and 59.1 mmHg, respectively. The average pressure difference of males was comparable to that of females in each age group, without significant difference (Figure 2-4-1-38 and Table 3-4-4-4).
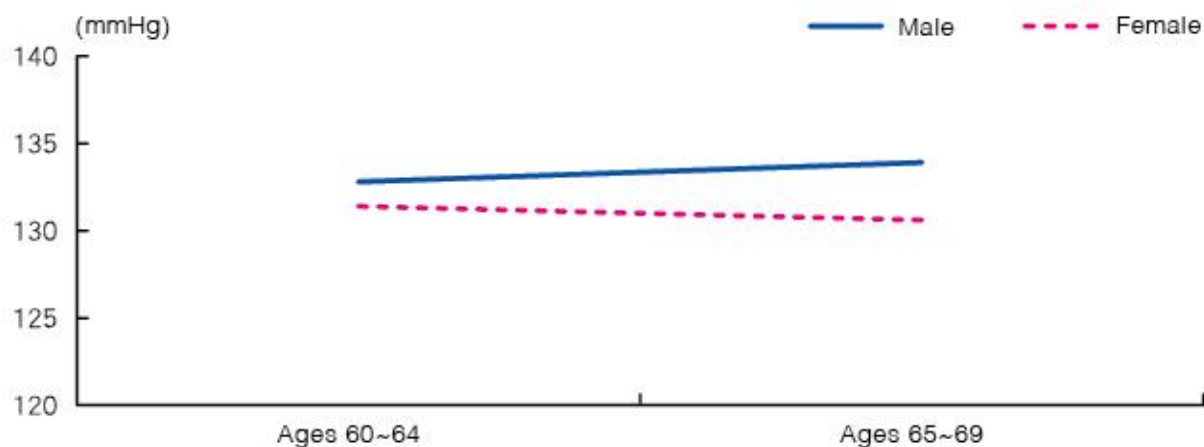
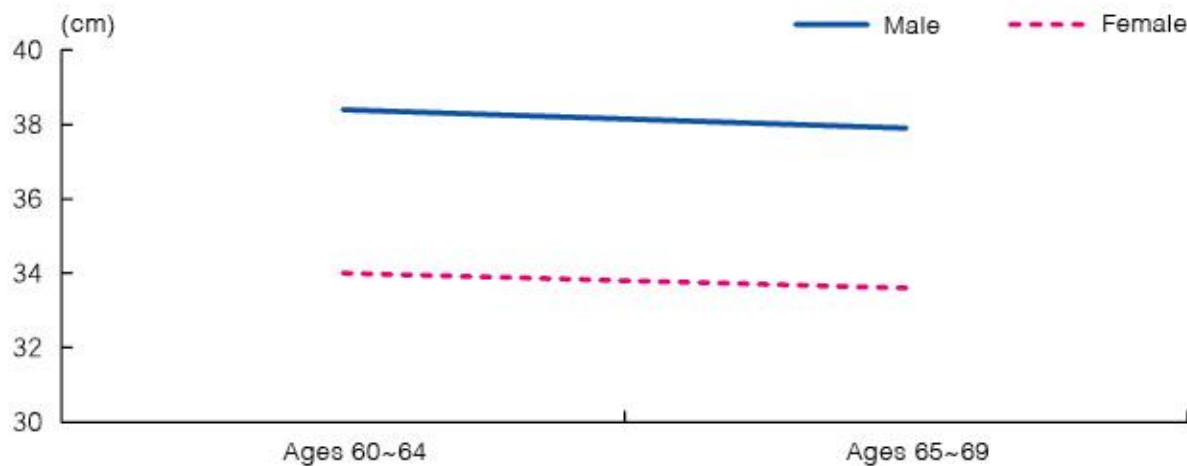**Figure 2-4-1-36 Average SBP of seniors**
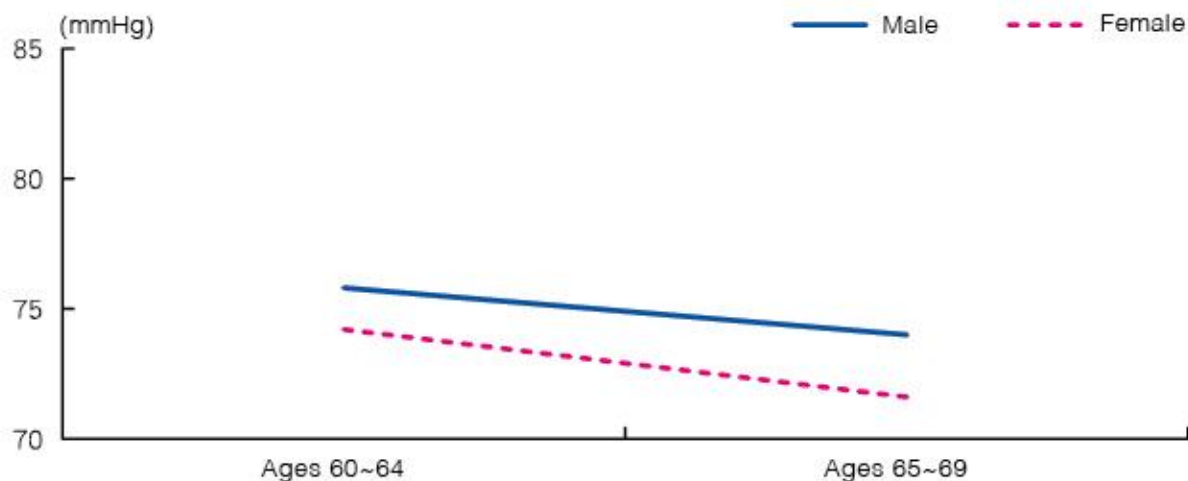
**Figure 2-4-1-37 Average DBP of seniors**
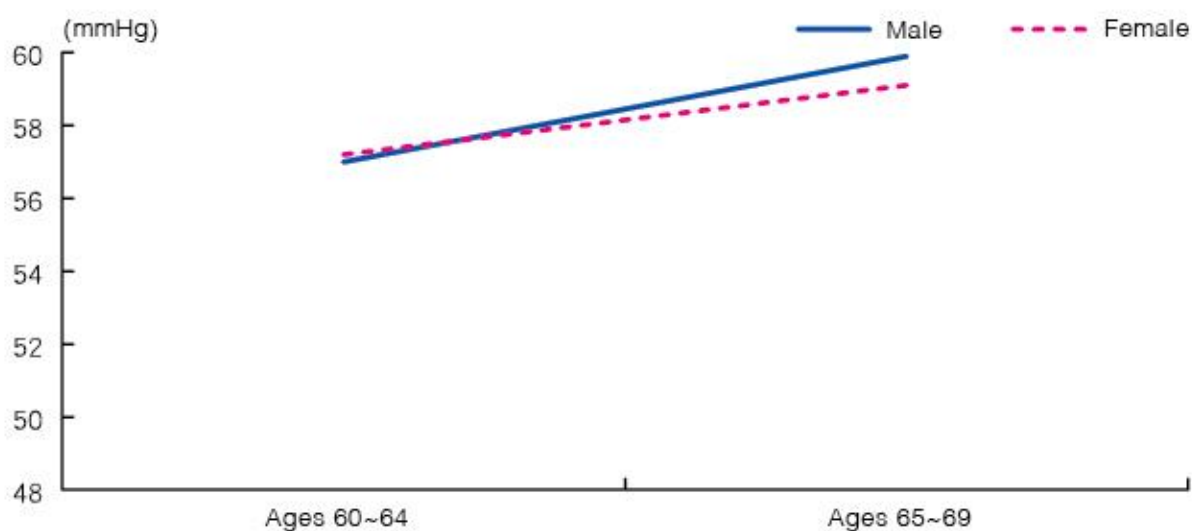
Figure 2-4-1-38 Average pressure difference of seniors

(3) Vital Capacity

The average vital capacity of seniors decreased with advancing age, ranging from 2816.6~3043.7ml and 1816.8~1966.3ml for males and females, respectively. The average vital capacity of males was significantly higher than that of females ($P < 0.01$) (Figure 2-4-1-39 and Table 3-4-4-5).

The average vital capacity/weight of seniors tended to decrease with advancing age. The average vital capacity/weight of males was 47.0 ml/kg and 44.0 ml/kg in the 60~64 and 65~69 year age groups, respectively, with significant difference between age groups ($P < 0.05$). For females, it was 34.7 ml/kg and 32.6 ml/kg in the 60~64 and 65~69 age groups, respectively, with no significant difference between age groups. Males had a higher average vital capacity/weight than females ($P < 0.01$) (Figure 2-4-1-40 and Table 3-4-4-6).
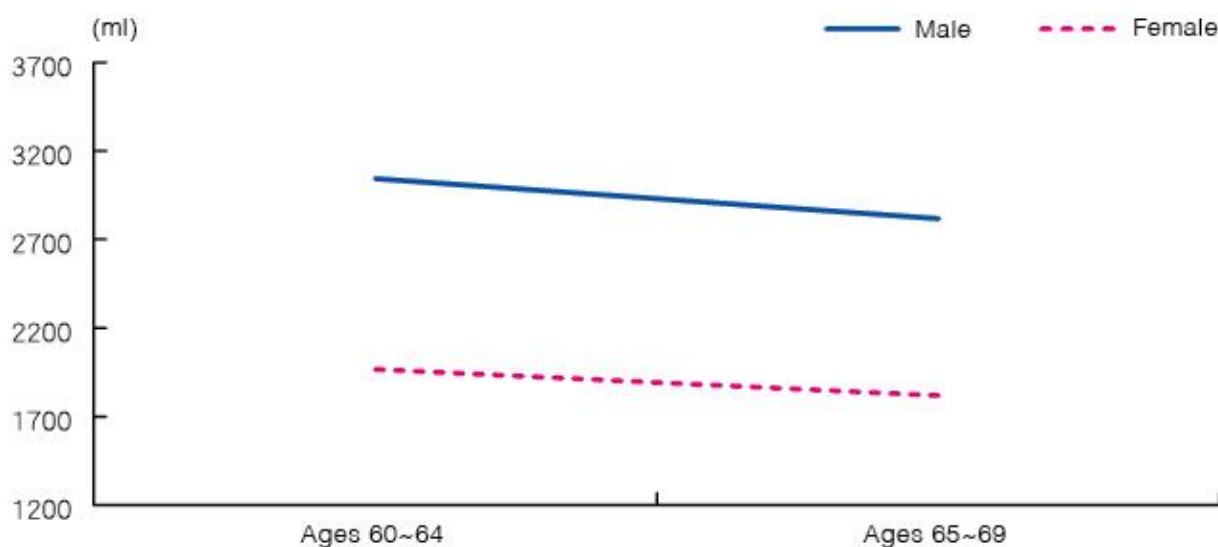
Figure 2-4-1-39 Average vital capacity of seniors
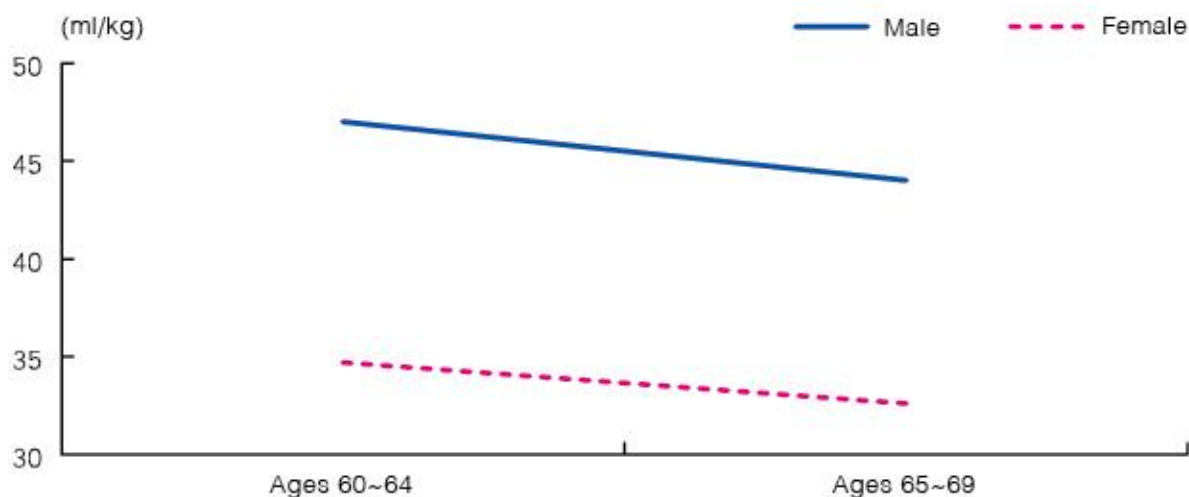
Figure 2-4-1-40 Average vital capacity/weight of seniors

5. Physical Fitness

(1) Strength

Grip strength reflects strength.

The average grip strength of seniors decreased with advancing age, ranging from 37.0~37.7kg and 21.1~23.0kg for males and females, respectively. Males had a significantly higher grip strength than females in each age group ($P < 0.01$) (Figure 2-4-1-41 and Table 3-4-5-1).
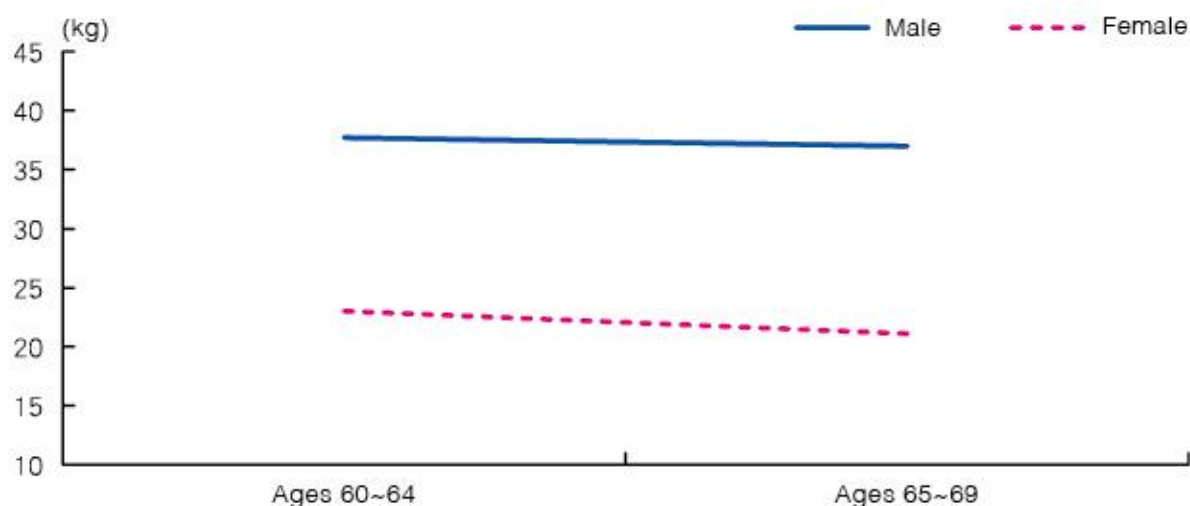
Figure 2-4-1-41 Average grip strength of seniors

(2) Flexibility

Sit and reach reflects flexibility.

As age increased, the average sit and reach remained fairly stable for males and decreased for females. It ranged from 0.9~0.9cm and 6.6~7.8cm for males and females, respectively. The average sit and reach of males was lower than that of females ($P < 0.01$) (Figure 2-4-1-42 and Table 3-4-5-2).
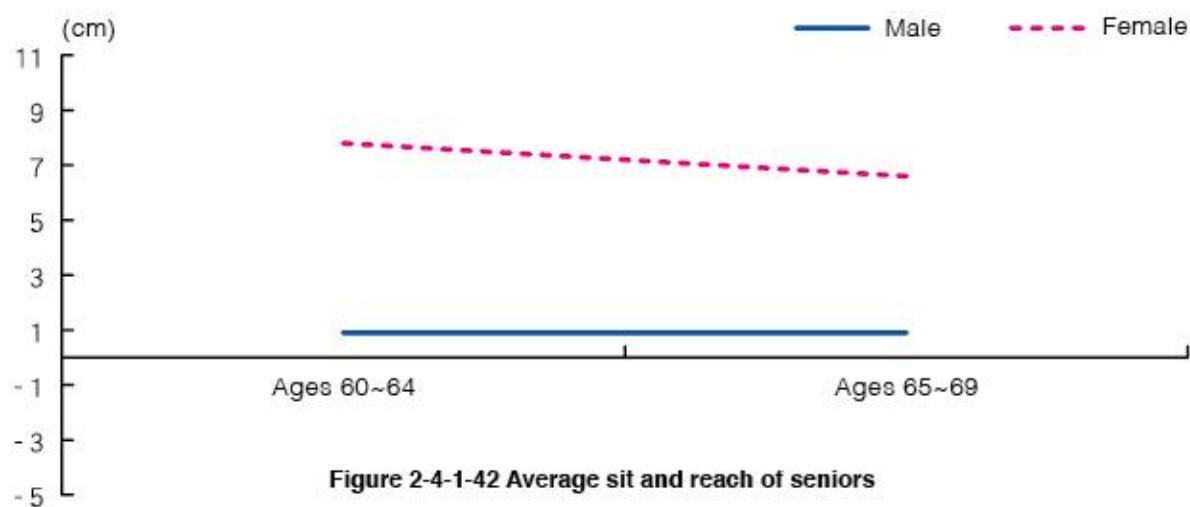
Figure 2-4-1-42 Average sit stud reach of seniors

(3) Reaction

Choice reaction time reflects reaction ability.

The average choice reaction time of seniors increased with advancing age, ranging from 0.50~0.53 seconds and 0.56~0.60 seconds for males and females, respectively. The average reaction time of males was shorter than that of females in each age group (P < 0.01). It indicated that the reaction ability of seniors reduced with advancing age, and males had faster reaction ability than females (Figure 2-4-1-43 and Table 3-4-5-3).
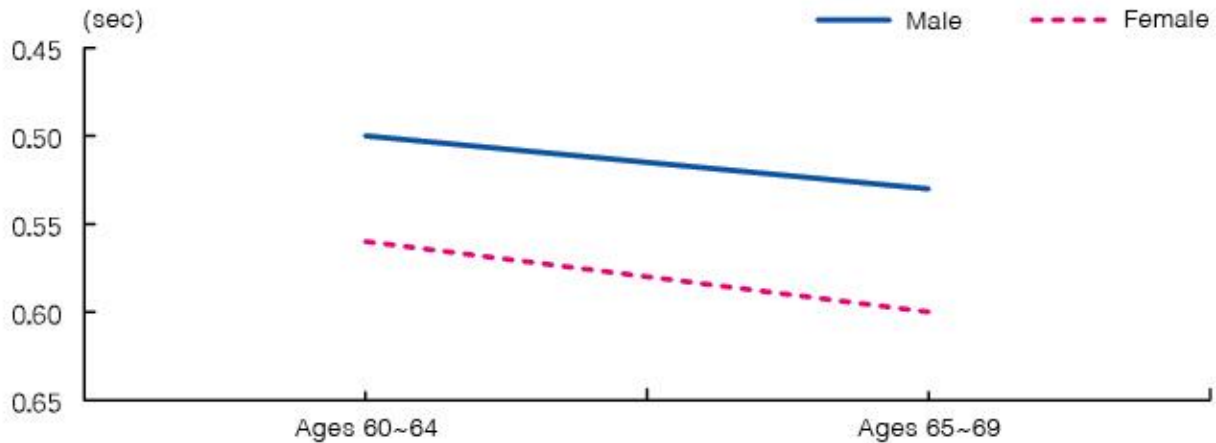
Figure 2-4-1-43 Average choice reaction time of seniors

(4) Balance

One foot stands with eyes closed (OFSEC) reflects balance ability.

The average OFSEC time of seniors decreased with advancing age, ranging from 8.2~12.2 seconds and 7.2~8.4 seconds for males and females, respectively. The average OFSEC time of males was longer than that of females in each age group, with significant difference in the 60~64 age group (P < 0.01) (Figure 2-4-1-44 and Table 3-4-5-4).
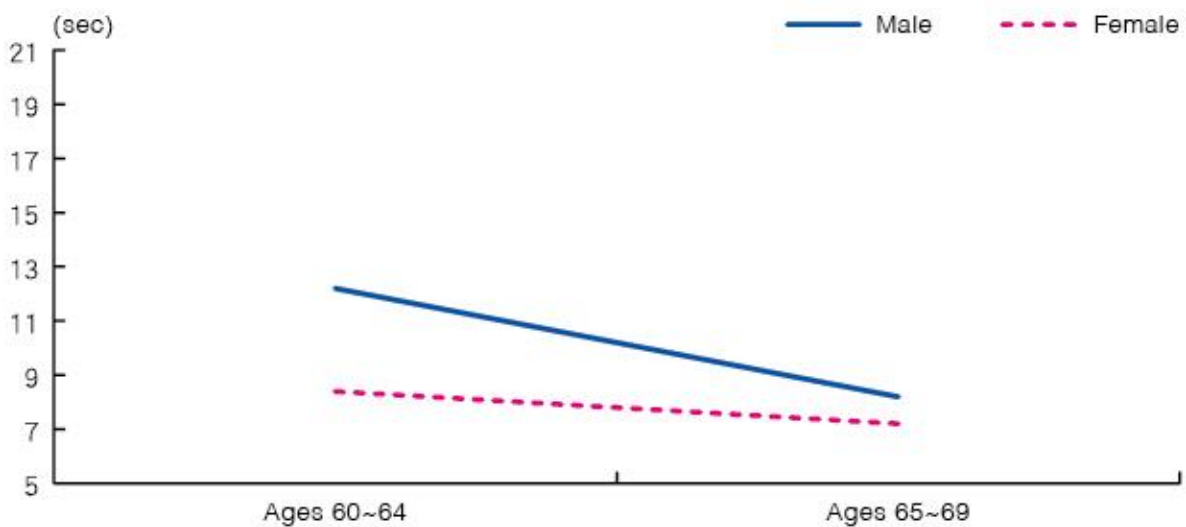
Figure 2-4-1-44 Average OFSEC time of seniors

(II) Comparison of 2015 and 2010 Results on the Physical Fitness Study of Macao Seniors

In order to comprehend the changes and current patterns of the physical status of Macao seniors, to keep abreast of their physical fitness and development trend, and to provide scientific evidence in the assessment of their health, comparative analysis was carried out on the anthropometric, physiological function and physical fitness indicators of seniors aged 60~69 based on the data of 2010 and 2015 physical fitness study of Macao seniors.

1. Comparison of Basic Information of the Subjects

Senior subjects aged 60~69 were all Macao residents in both 2010 and 2015 studies. The characteristics of the samples were basically similar in the two studies (Tables 2-4-2-1 and 2-4-2-2).

Table 2-4-2-1 Comparison of basic characteristics in seniors

Characteristics	2010	2015
Source	7 parishes in Macao	7 parishes in Macao
Age	60~69 years	60~69 years
Group	Totally 2 age groups that differed by 5 years	Totally 2 age groups that differed by 5 years
Category	Male and female	Male and female
Sampling principle	Stratified, random and cluster sampling	Stratified, random and cluster sampling
Sample size	591	638

Table 2-4-2-2 Comparison of sample size of seniors in each age group per parish (ppl)

Year	Parish	60~64 years	65~69 years	Total
2010	Freguesia de São Francisco Xavier	3	1	4
	Freguesia de Nossa Senhora do Carmo	56	29	85
	Freguesia de São Lourenço	47	29	76
	Freguesia da Sé Catedral	42	22	64
	Freguesia de Santo António	80	68	148
	Freguesia de São Lázaro	42	19	61
	Freguesia de Nossa Senhora de Fátima	101	52	153
	Total	**371**	**220**	**591**
2015	Freguesia de São Francisco Xavier	21	33	54
	Freguesia de Nossa Senhora do Carmo	60	52	112
	Freguesia de São Lourenço	22	16	38
	Freguesia da Sé Catedral	21	18	39
	Freguesia de Santo António	64	36	100
	Freguesia de São Lázaro	30	18	48
	Freguesia de Nossa Senhora de Fátima	126	121	247
	Total	**344**	**294**	**638**

2. Comparison of Lifestyle

Among seniors aged 60~69, 4 aspects were studied: living habits, physical exercise, occurrence of diseases and perception of physical fitness study, and the comparison of results were shown as follows:

(1) Living Habits

For living habits, the following areas were studied: sleeping hours, quality of sleep, accumulative daily walking hours, daily sitting hours, smoking, smoking duration, drinking history, drinking frequency and alcohol preference, etc.

Compared with the results in 2010 study, no significant difference was found in the sleeping hours for seniors in the 60~69 year age groups in 2015. The proportion of males sleeping for less than 6 hours increased by 1.6%, seniors sleeping for 6~9 hours decreased by 4.6% and those sleeping for over 9 hours had an increase of 3.1%. For females, the proportion of those sleeping for less than 6 hours increased by 3.8%, and those sleeping for 6~9 hours and over 9 hours decreased by 2.4% and 1.4%, respectively (Table 2-4-2-3).

Table 2-4-2-3 Comparison of sleeping hours in seniors (%)

Sleeping hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 6 hours	21.3	22.9	1.6	30.1	33.9	3.8
6~9 hours	75.2	70.7	-4.5	66.0	63.6	-2.4
9 hours or more	3.4	6.5	3.1	3.9	2.5	-1.4

Note: difference equals to the data in 2015 minus the data in 2010, and * means $p<0.05$, which applies to subsequent tables.

In terms of sleep quality of seniors, no significant difference was found between 2010 and 2015.The proportion of male seniors with average sleep quality increased by 3.6% in 2015, and the proportion of those having poor sleep quality decreased by 3.4%. In 2015, female seniors had a decline of 5.6% in having average sleep quality while had an increment of 3.5% in having poor sleep quality (Table 2-4-2-4).

Table 2-4-2-4 Comparison of sleep quality in seniors (%)

Sleep quality	M			F		
	2010	2015	Difference	2010	2015	Difference
Bad	11.8	8.4	-3.4	19.8	23.3	3.5
Average	58.6	62.2	3.6	54.6	49.0	-5.6
Good	29.6	29.3	-0.3	25.5	27.7	2.2

Compared with the results in 2010, the proportion of male seniors walked for less than 30 minutes and 30~60 minutes daily decreased by 12.7% and 4.1%, respectively, with significant difference (P < 0.05); the proportion of male seniors walking 1~2 hours and 2 hours or more daily increased by 9.7% and 7.1%, respectively, with significant difference (P < 0.05). For female seniors, the proportion of those walked for less than 30 minutes and 30~60 minutes daily both decreased by 6.4%, with significant difference (P < 0.05); those walking 1~2 hours and 2 hours or more daily increased by 8.0% and 4.8%, respectively. Significant difference was seen between 2010 and 2015 studies (P < 0.05) (Table 2-4-2-5).

Table 2-4-2-5 Comparison of daily walking hours in seniors (%)

Accumulative daily walking hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 30 minutes	28.1	15.4	-12.7*	18.8	12.4	-6.4*
30~60 minutes	38.4	34.3	-4.1*	34.5	28.1	-6.4*
1~2 hours	21.2	30.9	9.7*	26.3	34.3	8.0*
2 hours or more	12.3	19.4	7.1*	20.4	25.2	4.8*

In general, compared with the results in 2010 study, the proportion of males with daily sitting hours within 3~6 hours increased by 5.9%, without significant difference; those sat for an average of less than 3 hours daily decreased by 3.7% and no significant difference was seen (Table 2-4-2-6).

Table 2-4-2-6 Comparison of daily sitting hours in seniors (%)

Sitting hours	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 3 hours	27.1	23.4	-3.7	33.5	33.7	0.2
3~6 hours	47.8	53.7	5.9	51.8	51.3	-0.5
6~9 hours	18.7	19.4	0.7	10.8	11.0	0.2
9~12 hours	5.9	3.5	-2.4	3.1	3.4	0.3
12 hours or more	0.5	0.0	-0.5	0.8	0.7	-0.1

In terms of smoking, an increase was found in the proportion of male smokers in 2015, with significant difference between 2010 and 2015 studies ($P < 0.05$); whereas there was no significant difference in females. The proportion of males who never smoked decreased by 7.3%, those smoking less than 10 cigarettes a day increased by 4.6% and those who smoked over 20 cigarettes a day decreased by 1.4%. This showed that some seniors might have realized the hazard of smoking and reduced smoking. The study also indicated that significant difference was found in smoking duration in males between two studies, as revealed by a substantial decline of 8.1% in 2015 in the proportion of smokers who had smoked for more than 15 years ($P < 0.05$) (Tables 2-4-2-7 and 2-4-2-8).

Table 2-4-2-7 Comparison of cigarette consumption in seniors (%)

Cigarette consumption	M			F		
	2010	2015	Difference	2010	2015	Difference
Never	70.0	62.7	-7.3*	99.2	99.8	0.6
Less than 10 cigarettes per day	5.4	10.0	4.6	0.3	0.0	-0.3
10~20 cigarettes per day	6.9	8.5	1.6	0.0	0.2	0.2
20 cigarettes or more per day	4.4	3.0	-1.4	0.0	0.0	0.0
Quitted smoking for less than 2 years	1.5	3.5	2.0	0.3	0.0	-0.3
Quitted smoking for 2 years or more	11.8	12.4	0.6	0.3	0.0	-0.3

Table 2-4-2-8 Comparison of smoking duration in seniors (%)

Smoking years	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 5 years	4.9	6.8	1.9	0.0	0.0	0.0
5~10 years	6.6	6.8	0.2	0.0	0.0	0.0
10~15 years	11.5	17.5	6.0	0.0	0.0	0.0
15 years or more	77.0	68.9	-8.1*	100.0	100.0	0.0

There was no significant difference in the proportion of seniors in drinking between 2010 and 2015 studies. However, an increase was seen in drinking frequency for both males and females. Compared with the results in 2010, the proportion of seniors who consumed alcohol once a month in 2015 decreased by 21.8% in males and 24.7% in females, with significant difference found in both genders (P < 0.05). The proportion of females who consumed alcohol 1~2 times a week increased by 25.2% in 2015, which was significantly different (P < 0.05) (Tables 2-4-2-9 and 2-4-2-10).

Table 2-4-2-9 Comparison of alcohol consumption in seniors (%)

Alcohol consumption	M			F		
	2010	2015	Difference	2010	2015	Difference
Yes	36.5	39.3	2.8	9.5	9.6	0.1
No	63.5	60.7	-2.8	90.5	90.4	-0.1

Table 2-4-2-10 Comparison of drinking frequency in seniors (%)

Frequency of drinking	M			F		
	2010	2015	Difference	2010	2015	Difference
Once a moth	44.6	22.8	-21.8*	67.6	42.9	-24.7*
1~2 times per week	27.0	32.9	5.9	8.1	33.3	25.2*
3~4 times per week	6.8	20.2	13.4	8.1	14.3	6.2
5~7 times per week	21.6	24.1	2.5	16.2	9.5	-6.7

Significant difference was seen in the types of alcohol that the subjects frequently drank (P < 0.05). A decrease of 18.3% was found in male seniors drinking beer, while an increase of 16.3% was seen in drinking rice wine, with significant difference (P < 0.05); male seniors drinking mixed wine decreased by 4.5% without significant difference. In 2015, the proportion of female seniors drinking wine or fruit wine declined by 16.5%, which was significantly different (P < 0.05); and those drinking mixed wine and beer increased by 2.4% and 6.2%, respectively, without significant difference (Table 2-4-2-11).

Table 2-4-2-11 Comparison of alcohol types in seniors (%)

Types of alcohol	M			F		
	2010	2015	Difference	2010	2015	Difference
Liquor	4.1	3.8	-0.3	0.0	0.0	0.0
Beer	57.5	39.2	-18.3*	8.1	14.3	6.2
Rice wine	2.7	19.0	16.3*	13.5	21.4	7.9
Wine or fruit wine	26.0	32.9	6.9*	78.4	61.9	-16.5*
Mixed wine	9.6	5.1	-4.5	0.0	2.4	2.4

(2) Physical Exercise

The study of physical exercise included: activities during leisure time, frequently watched sports, exercise purposes, major types of exercise, exercise frequency, exercise duration, persistence on exercising, main locations of exercise and major obstacles for exercising, etc.

The study showed that significant difference was found in the activities during leisure time in general for seniors between 2010 and 2015. The proportion of male and female seniors in doing physical exercise increased by 20.8% and 29.1%, respectively, which was significantly different ($P < 0.05$). However, a decrease was seen in choosing audio-visual entertainment, house chores and traveling; the largest decrease was found in audio-visual entertainment, 12.3% for males and 18.6% for females, with significant difference ($P < 0.05$) (Table 2-4-2-12).

Table 2-4-2-12 Comparison of activities during leisure time in seniors (%)

Activities during leisure time	M			F		
	2010	2015	Difference	2010	2015	Difference
Physical exercise	48.8	69.6	20.8*	50.8	79.9	29.1*
Chess or poker	10.3	8.5	-1.8	6.2	6.2	0.0
Traveling	11.3	8.4	-2.9	9.0	7.4	-1.6
Social gathering	24.6	26.4	1.8	22.9	22.4	-0.5
Audio-visual entertainment	59.6	47.3	-12.3*	55.9	37.3	-18.6*
House chores	35.5	28.9	-6.6*	74.7	72.3	-2.4
Sleeping	15.8	13.6	-2.2	9.5	10.1	0.6
Others	16.7	17.4	0.7	14.7	12.6	-2.1

Significant difference was seen in the frequently watched sports for seniors between 2010 and 2015 (P<0.05). The proportion decreased in males watching basketball, football, table tennis, swimming, billiards and gymnastics,; and also declined in females watching gymnastics, swimming, football, volleyball, basketball, martial arts and table tennis. Significant difference was found among both genders ($P < 0.05$) (Table 2-4-2-13).

Table 2-4-2-13 Comparison of frequently watched sports in seniors (%)

Sports	M			F		
	2010	2015	Difference	2010	2015	Difference
Basketball	36.3	16.2	-20.1*	18.5	7.6	-10.9*
Volleyball	11.9	8.6	-3.3	20.4	8.7	-11.7*
Football	57.1	35.4	-21.7*	18.5	5.7	-12.8*
Gymnastics	11.3	8.6	-2.7*	38.9	17.6	-21.3*
Swimming	20.2	14.6	-5.6*	39.3	18.3	-21.0*
Martial arts	10.1	10.6	0.5	18.0	9.2	-8.8*
Boxing	3.0	3.6	0.6	0.0	0.4	0.4
Table tennis	20.2	12.6	-7.6*	14.7	7. 4	-7.3*
Billiards	5.4	2.5	-2.9*	0.0	0.4	0.4
Golf	0.6	0.0	-0.6	0.0	0.2	0.2
Badminton	5.4	13.7	8.3*	7.6	6.4	-1.2
Baseball	0.6	0.0	-0.6	0.0	0.0	0.0
Softball	0.0	0.0	0.0	0.0	0.0	0.0
Weight-lifting	1.8	0.5	-1.3	0.0	0.0	0.0
Fencing	0.0	0.0	0.0	0.5	0.7	0.2
Wrestling or judo	3.6	1.0	-2.6	0.0	0.2	0.2
Others	20.2	36.9	16.7*	25.6	58.1	32.5*

The study showed that there was significant difference between 2010 and 2015 results on the purposes of doing physical exercise in seniors ($P < 0.05$), as indicated by a decrease of 9.0% in relieving pressure and regulating mood, and an increase of 8.6% in socializing among males, with significant difference ($P < 0.05$); for females, the proportion of those who exercised for the purposes of preventing and curing diseases as well as improving exercise ability decreased by 6.7% and 1.9%, respectively; and those who exercised for relieving pressure and regulating mood increased by 3.8%, with significant difference ($P < 0.05$) (Table 2-4-2-14).

Table 2-4-2-14 Comparison of exercise purposes in seniors (%)

Exercise purposes	M			F		
	2010	2015	Difference	2010	2015	Difference
Prevent and cure diseases	72.4	74.0	1.6	80.4	73.7	-6.7*
Improve exercise ability	47.1	46.7	-0.4	36.4	34.5	-1.9*
Lose weight and keep fit	14.4	12.4	-2.0*	15.0	17.0	2.0*
Relieve pressure and regulate mood	33.9	24.9	-9.0*	24.2	28.0	3.8*
Socialize	10.3	18.9	8.6*	24.2	26.0	1.8
Others	11.5	11.2	-0.3	8.6	5.9	-2.7*

The results revealed that significant difference was found between 2010 and 2015 studies in the types of sports that seniors frequently participated in (P < 0.05). In 2015, the top three sports chosen by males in descending order were walking, martial arts or qigong, and jogging; for females, they were aerobics or yangko dance, walking, and martial arts or qigong. In 2010, the top three sports were walking, jogging and swimming for males; and they were walking, martial arts or qigong, and aerobics or yangko dance for females. There was a decrease in the proportion of males choosing walking and an increase in martial arts and qigong, which was statistically significant. For females, a decrease was seen in the proportion of those choosing walking, martial arts or qigong, and an increase in aerobics or yangko dance, with significant difference (P < 0.05) (Table 2-4-2-15).

Table 2-4-2-15 Comparison of physical exercise participated by seniors (%)

Exercise events	M			F		
	2010	2015	Difference	2010	2015	Difference
Jogging	18.9	21.9	3.0	6.2	5.7	-0.5
Swimming	17.2	20.1	2.9	17.8	12.6	-5.2
Walking	73.0	56.2	-16.8*	50.6	43.3	-7.3*
Ball games	9.8	11.2	1.4	5.9	3.9	-2.0
Hiking	12.6	10.1	-2.5	4.6	4.4	-0.2
Bicycling	4.6	9.5	4.9	1.9	1.3	-0.6
Equipment work out and strength training	14.4	11.8	-2.6	7.1	5.4	-1.7
Aerobics and yangko dance	9.7	9.5	-0.2	35.3	46.4	11.1*
Martial arts and qigong	13.8	25.4	11.6*	42.3	32.0	-10.3*
Others	8.0	12.4	4.4	11.0	16.0	5.0

Compared with the 2010 study, an increase was seen in the proportion of male seniors who never exercised in 2015; the proportion of male seniors who exercised for at most once a week declined without significant difference; males doing exercise for 1~2 times a week decreased while those exercising 3~4 times a week increased, which were both significantly different (P < 0.05); no significant difference was found in the increment of males exercising for 5 times or more per week. For female seniors, significant difference between 2010 and 2015 was found in the decrease of those who never exercised and the increase of those who exercised for 1~2 times per week (P < 0.05); the proportion of females who exercised for 3~4 times and 5 times or more a week increased, without statistical significance (Table 2-4-2-16).

Table 2-4-2-16 Comparison of exercise frequency per week in seniors (%)

Frequency of exercise per week	M			F		
	2010	2015	Difference	2010	2015	Difference
Never	14.3	15.9	1.6	15.7	11.2	-4.5*
At most once	9.9	8.5	-1.4	5.7	3.4	-2.3
1~2 times	22.7	11.4	-11.3*	10.3	14.9	4.6*
3~4 times	20.7	30.3	9.6*	18.0	19.0	1.0
5 times or more	32.5	33.8	1.3	50.3	51.5	1.2

The results in both studies indicated that the proportion decreased in 2015 by 11.0% in male seniors who exercised for less than 30 minutes each time while increased by 13.8% in exercising for 60 minutes or more each time, with significant difference (P < 0.05). For female seniors, the proportion of those who exercised for less than 30 minutes each time decreased by 7.1% and those exercising for 30~60 minutes increased by 12.0%, with significant difference between two studies (P < 0.05) (Table 2-4-2-17).

Table 2-4-2-17 Comparison of exercise duration in seniors (%)

Duration of exercise	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 30 minutes	27.6	16.6	-11.0*	20.8	13.7	-7.1*
30~60 minutes	47.1	44.4	-2.7	34.9	46.9	12.0*
60 minutes or more	25.3	39.1	13.8*	44.3	39.4	-4.9

The results in 2010 and 2015 studies indicated that there was a significant difference in the duration of persistent exercising of seniors (P < 0.05). Male seniors who persisted in continual exercising for less than 6 months had the largest decrease, and those who persisted in continual exercising for 3~5 years and over 5 years increased, with significant difference (P < 0.05) (Table 2-4-2-18).

Table 2-4-2-18 Comparison of persistent exercising in seniors (%)

Duration of persistent exercising	M			F		
	2010	2015	Difference	2010	2015	Difference
Less than 6 months	17.2	10.1	-7.1*	9.5	10.8	1.3
6~12 months	5.7	8.3	2.6*	6.7	5.9	-0.8
1~3 years	20.1	13.6	-6.5*	19.3	19.3	0.0
3~5 years	7.5	14.2	6.7*	11.0	13.4	2.4*
5 years or more	49.4	53.8	4.4*	53.4	50.5	-2.9*

Male seniors choosing open area, road or street as exercise locations decreased while those choosing gym and stadium increased in 2015; significant difference was seen between 2010 and 2015 (P < 0.05). As for female seniors, the proportion of choosing open area and road or street decreased in varying degrees, of which the decrease in those choosing open area was significantly different (P < 0.05) (Table 2-4-2-19).

Table 2-4-2-19 Comparison of exercise locations in seniors (%)

Exercise location	M			F		
	2010	2015	Difference	2010	2015	Difference
Gym and stadium	24.7	34.9	10.2*	33.0	31.8	-1.2
Park	69.5	71.6	2.1	67.9	66.7	-1.2
Office or home	9.8	9.5	-0.3	15.0	14.0	-1.0
Open area	29.3	12.4	-16.9*	16.5	8.3	-8.2*
Road or street	28.2	20.1	-8.1*	8.0	6.7	-1.3
Recreational club	5.2	4.8	-0.4	5.8	5.2	-0.6

The results in both studies showed that the main obstacles that affected seniors to participate in physical exercise were laziness and lack of time. Significant difference was found between 2010 and 2015 in the main obstacles that hindered seniors to participate in physical exercise (P < 0.05). In the 2015 study, the proportion of seniors who considered laziness as the main obstacle decreased by 11.7% for males and 13.2% for females, with significant difference (P < 0.05) (Table 2-4-2-20).

Table 2-4-2-20 Comparison of obstacles to participating in physical exercise in seniors (%)

Obstacles to participating in physical exercise	M			F		
	2010	2015	Difference	2010	2015	Difference
Lack of interest	15.9	8.1	-7.8*	10.6	5.0	-5.6*
Laziness	37.1	25.4	-11.7*	30.8	17.6	-13.2*
Not necessary to exercise	3.5	1.5	-2.0	1.0	0.4	-0.6
Physically unsuitable to exercise	9.4	8.6	-0.8	16.4	16.0	-0.4
Too much labor intensive work	4.1	6.1	2.0	3.1	2.3	-0.8
Lack of time	27.6	29.4	1.8	38.7	38.9	0.2
Lack of locations and facilities	9.4	8.6	-0.8	5.1	3.0	-2.1
Lack of coaching	7.1	3.0	-4.1	6.8	2.5	-4.3
Lack of organization	6.5	2.5	-4.0	5.8	3.4	-2.4
Financial restraint	3.5	0.5	-3.0	0.0	0.7	0.7
Embarrassment	0.0	0.5	0.5	0.3	0.0	-0.3
Others	21.2	33.0	11.8*	21.9	37.5	15.6*

(3) Occurrence of Diseases

Compared with 2010, the proportion of seniors diagnosed with cancer and cardiovascular diseases decreased in 2015 with significant difference (P < 0.05). For males, an increase was seen in the proportion of those with gastrointestinal diseases and hypertension while a decrease was found in diabetes, with significant difference (P<0.05); for females, the proportion of those with hypertension decreased which was significantly different (P < 0.05) (Table 2-4-2-21).

Table 2-4-2-21 Comparison of diseases in seniors (%)

Types of diseases	M			F		
	2010	2015	Difference	2010	2015	Difference
Cancer	4.4	1.9	-2.5*	6.2	3.3	-2.9*
Cardiovascular disease	17.6	8.6	-9.0*	13.2	9.4	-3.8*
Respiratory disease	7.4	8.6	1.2	6.6	6.5	-0.1
Accidental injury	3.7	3.8	0.1	3.5	6.1	2.6*
Gastrointestinal disease	11.8	16.1	4.6*	13.6	13.4	-0.2
Hypertension	52.9	54.9	2.0*	62.3	56.1	-6.2*
Endocrine disease	0.0	0.9	0.9	1.6	2.2	0.6
Urinary or reproductive disease	11.0	11.6	0.6	1.6	2.5	0.9
Diabetes	21.3	17.7	-3.6*	19.1	18.5	-0.6
Others	19.9	17.3	-2.6*	29.2	27.5	-1.7

(4) Perception of the Physical Fitness Study

According to the 2010 and 2015 data, most seniors considered the physical fitness study as a channel to understand their fitness status. In the 2015 study, a decrease was seen in the proportion of seniors who considered the physical fitness study helpful to understand their fitness status, to recognize the importance of physical exercise and to improve scientific knowledge of fitness, which was significantly different (P < 0.05) (Table 2-4-2-22).

Table 2-4-2-22 Comparison of perception of the physical fitness study in seniors (%)

Perception of the physical fitness study	M			F		
	2010	2015	Difference	2010	2015	Difference
Meaningless	4.4	4.5	0.1	2.6	6.2	3.6
Understand the physical fitness status of oneself	92.6	86.1	-6.5*	95.1	90.1	-5.0*
Recognize the importance of physical exercise	55.7	44.8	-10.9*	51.3	36.9	-14.4*
Improve scientific knowledge of fitness	41.8	31.8	-10.0*	43.3	30.3	-13.0*

3. Comparison of Anthropometric Measurements

(1) Length Indicators

Comparison of the results in two studies showed that the average height of male and female seniors declined with advancing age. The average height of males and females in each age group was higher in 2015 than 2010. Significant difference was observed in females of the 60~64 year age group (P < 0.05) (Table 2-4-2-23).

The average sitting height of male and female seniors decreased with advancing age. The average sitting height of males and females in each age group was higher in 2015 than 2010. Significant difference was observed in the 60~64 year age group (P < 0.05) (Table 2-4-2-24).

The average foot length of male seniors remained fairly stable with advancing age. However, the average foot length of female seniors was longer in 2015 than 2010, with significant difference (P < 0.05) (Table 2-4-2-25).

Table 2-4-2-23 Comparison of average height in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	166.0	166.3	0.3	153.8	154.9	1.1*
65~69	164.7	166.1	1.4	153.3	153.7	0.4

Table 2-4-2-24 Comparison of average sitting height in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	89.0	89.5	0.5*	83.0	84.0	1.0*
65~69	88.4	89.1	0.7	82.5	82.8	0.3

Table 2-4-2-25 Comparison of average foot length in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	24.8	24.8	0.0	22.3	22.9	0.6*
65~69	24.7	24.6	-0.1	22.4	22.8	0.4*

(2) Weight and BMI

As age increased, the average weight of seniors increased in 2010, whereas decreased in 2015. The average weight of males and females in the 60~64 year age group was higher in 2015 than 2010, with significant difference seen in females ($P < 0.05$) (Table 2-4-2-26).

The average BMI of males and females in the 60~64 year age group was higher in 2015 than 2010, with significant difference found in females ($P < 0.05$); the average BMI of males and females in the 65~69 year age group was lower in 2015 than 2010, of which significant difference was observed in males ($P < 0.05$) (Table 2-4-2-27).

The obesity rate was higher in 2015 in males of the 60~64 year age group, while the rate was lower in 2015 in females of each age group and males of the 65~69 year age group, of which significant difference was seen in females of the 60~64 year age group and males of the 65~69 year age group ($P < 0.05$) (Table 2-4-2-28).

Table 2-4-2-26 Comparison of average weight in seniors (kg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	65.1	65.6	0.5	55.2	57.8	2.6*
65~69	66.1	64.7	-1.4	56.9	56.9	0.0

Table 2-4-2-27 Comparison of average BMI in seniors

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	23.6	23.7	0.1	23.4	24.1	0.7*
65~69	24.3	23.4	-0.9*	24.2	24.1	-0.1

Table 2-4-2-28 Comparison of obesity rate in seniors (%)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	2.8	5.9	3.1	10.7	8.2	-2.5*
65~69	9.6	5.0	-4.6*	13.5	11.9	-1.6

(3) Circumference Indicators

Except for males of the 65~69 year age group, the average chest circumference of seniors in each age group was higher in 2015 than 2010, with significant difference in females ($P < 0.05$) (Table 2-4-2-29).

Except for females of the 60~64 year age group, the average waist circumference of seniors in each age group was lower in 2015 than 2010, of which the difference in males of the 65~69 year age group was significant ($P < 0.05$). For females, the average waist circumference in the 60~64 year age group was higher in 2015, with significant difference ($P < 0.05$) (Table 2-4-2-30).

The average hip circumference of male seniors in each age group was lower in 2015 than 2010, of which the difference in males of the 65~69 year age group was significant ($P < 0.05$). The average hip circumference of female seniors in each age group was higher in 2015, with significant difference ($P < 0.05$) (Table 2-4-2-31).

The average WHR of male seniors in each age group was higher in 2015 than 2010, with no significant difference. The average WHR of female seniors in each age group was lower in 2015, with significant difference ($P < 0.05$); a decrease of 0.014 was found in the 60~64 year age group and 0.036 in the 65~69 year age group (Table 2-4-2-32).

Table 2-4-2-29 Comparison of average chest circumference in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	91.6	91.8	0.2	85.8	88.9	3.1*
65~69	92.3	91.7	-0.6	86.8	89.1	2.3*

Table 2-4-2-30 Comparison of average waist circumference in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	86.4	85.4	-1.0	81.3	83.1	1.8*
65~69	89.3	86.5	-2.8*	84.3	83.2	-1.1

Table 2-4-2-31 Comparison of average hip circumference in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	93.0	91.8	-1.2	90.9	94.5	3.6*
65~69	94.6	91.0	-3.6*	91.8	94.2	2.4*

Table 2-4-2-32 Comparison of average WHR in seniors

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	0.929	0.930	0.001	0.893	0.879	-0.014*
65~69	0.943	0.949	0.006	0.918	0.882	-0.036*

(4) Width Indicators

The results of two studies revealed that the average shoulder width of seniors increased steadily with advancing age. The average shoulder width of males was higher in 2015 while that of females was lower in 2015. Significant difference was found in both genders between 2015 and 2010 (P < 0.05) (Table 2-4-2-33).

The average pelvis width of male seniors was higher in 2015 than 2010, with significant difference in the 60~64 year age group (P < 0.05). As for female seniors, the average pelvis width was lower in 2015 with significant difference in the 65~69 year age group (P < 0.05) (Table 2-4-2-34).

Table 2-4-2-33 Comparison of average shoulder width in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	36.7	38.4	1.7*	34.5	34.0	-0.5*
65~69	36.8	37.9	1.1*	34.7	33.6	-1.1*

Table 2-4-2-34 Comparison of average pelvis width in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	27.2	27.8	0.6*	28.5	28.2	-0.3
65~69	27.6	28.0	0.4	28.9	27.9	-1.0*

(5) Body Composition

The results of two studies indicated that the average upper arm skinfold thickness of seniors was higher in 2015 than 2010, except for males in the 65~59 year age group. The difference was significant in females of the 60~64 year age group (P < 0.05) (Table 2-4-2-35).

The average subscapular skinfold thickness of seniors was higher in 2015, except for females in the 65~69 year age group. For females in the 60~64 year age group, significant difference was found (P < 0.05) (Table 2-4-2-36).

The average abdominal skinfold thickness of seniors was higher in 2015 than 2010, of which the difference in females of the 60~64 year age group was significant (P < 0.05) (Table 2-4-2-37).

Table 2-4-2-35 Comparison of average upper arm skinfold thickness in seniors (mm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	9.4	10.6	1.2	21.0	23.1	2.1*
65~69	11.1	10.3	-0.8	22.1	23.6	1.5

Table 2-4-2-36 Comparison of average subscapular skinfold thickness in seniors (mm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	17.1	18.4	1.3	19.2	21.3	2.1*
65~69	18.5	18.9	0.4	20.7	20.3	-0.4

Table 2-4-2-37 Comparison of average abdominal skinfold thickness in seniors (mm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	22.2	23.3	1.1	25.8	30.0	4.2*
65~69	22.4	22.9	0.5	28.1	29.6	1.5

4. Comparison of Physiological Function

(1) Resting Pulse

The average resting pulse of seniors was lower in 2015 than 2010, except for males in the 65~69 year age group. No significant difference was seen between 2010 and 2015 (Table 2-4-2-38).

Table 2-4-2-38 Comparison of average resting pulse in seniors (bpm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	74.7	73.3	-1.4	73.2	72.9	-0.3
65~69	74.4	74.8	0.4	73.9	73.2	-0.7

(2) Blood Pressure

The average SBP of seniors in each age group was higher in 2015 than 2010, except for females in the 65~59 year age group. The difference in females of the 60~64 year age group was significant (P < 0.05) (Table 2-4-2-39).

The average DBP of male and female seniors in each age group was lower in 2015 than 2010. Except for males in the 65~69 year age group, significant differnce was found in all age groups (P < 0.05) (Table 2-4-2-40).

The average pressure difference of male and females in each age group was higher in 2015 than 2010, with significant difference (P < 0.05). In 2015, male seniors had an increase of 5.4 mmHg in the 60~64 year age group, and 4.0 mmHg in the 65~69 year age group; for female seniors, there was an increase of 6.3 mmHg in the 60~64 year age group and 4.3 mmHg in the 65~69 year age group (Table 2-4-2-41).

Table 2-4-2-39 Comparison of average SBP in seniors (mmHg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	131.8	132.8	1.0	127.8	131.4	3.6*
65~69	133.4	133.9	0.5	132.8	130.6	-2.2

Table 2-4-2-40 Comparison of average DBP in seniors (mmHg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	80.1	75.8	-4.3*	76.9	74.2	-2.7*
65~69	77.6	74.0	-3.6	77.9	71.6	-6.3*

Table 2-4-2-41 Comparison of average pressure difference in seniors (mmHg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	51.6	57.0	5.4*	50.9	57.2	6.3*
65~69	55.9	59.9	4.0*	54.8	59.1	4.3*

(3) Vital Capacity

The average vital capacity of seniors in each age group was higher in 2015 than 2010, except for females in the 65~59 year age group. The difference in males of the 65~69 year age group was significant (P < 0.05) (Table 2-4-2-42).

Table 2-4-2-42 Comparison of average vital capacity in seniors (ml)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	2998.2	3043.7	45.5	1896.2	1966.3	70.1
65~69	2671.4	2816.6	145.2*	1817.4	1816.8	-0.6

(4) Vital Capacity/Weight

No significant difference was seen in the average vital capacity/weight of seniors between 2010 and 2015. The average vital capacity/weight of males increased in 2015, with no significant difference between 2010 and 2015; there was an increase of 0.5 ml/kg in the 60~64 year age group and 2.9 ml/kg in the 65~69 year age group. For females, there was no significant difference in the average vital capacity/weight between 2010 and 2015, with a decrease of 0.4 ml/kg in the 60~64 year age group and 0.1 ml/kg in the 65~69 year age group (Table 2-4-2-43).

Table 2-4-2-43 Comparison of average vital capacity/weight in seniors (ml/kg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	46.5	47.0	0.5	35.1	34.7	-0.4
65~69	41.1	44.0	2.9	32.7	32.6	-0.1

5. Comparison of Physical Fitness

(1) Strength

Seniors had greater average grip strength in 2015 than 2010. Significant difference was found in females of the 60~64 year age group and males of the 65~69 year age group (P < 0.05) (Table 2-4-2-44).

Table 2-4-2-44 Comparison of average grip strength in seniors (kg)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	36.1	37.7	1.6	20.2	23.0	2.8*
65~69	34.7	37.0	2.3*	20.5	21.1	0.6

(2) Flexibility

Except for females in the 65~69 age group, the average sit and reach of male and female seniors in each age group was higher in 2015 than 2010. Significant difference was found in males of the 65~69 year age group (P < 0.05) (Table 2-4-2-45).

Table 2-4-2-45 Comparison of average sit and reach in seniors (cm)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	-0.9	0.9	1.8	6.3	7.8	1.5
65~69	-2.3	0.9	3.2*	7.5	6.6	-0.9

(3) Reaction

Except for females in the 65~69 year age group, the average choice reaction time of male and females seniors in each age group was longer in 2015 than 2010. No significant difference was seen between two studies (Table 2-4-2-46).

Table 2-4-2-46 Comparison of average choice reaction time in seniors (sec)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	0.48	0.50	0.02	0.55	0.56	0.01
65~69	0.51	0.53	0.02	0.63	0.60	-0.03

(4) Balance

Average OFSEC time in 2015 was shorter than that in 2010 for both male and female seniors, with no significant difference (Table 2-4-2-47).

Table2-4-2-47 Comparison of average OFSEC time in seniors (sec)

Age group (yrs)	M			F		
	2010	2015	Difference	2010	2015	Difference
60~64	14.4	12.2	-2.2	10.2	8.4	-1.8
65~69	9.7	8.2	-1.5	7.4	7.2	-0.2

(III) Summary

1. Summary of 2015 Results on Physical Fitness Study of Seniors

Nearly 90% of senior subjects aged 60~69 participated in physical exercise, of which as much as 40% were frequent exercisers. Main purpose for seniors to participate in the physical exercise was to prevent and cure diseases. Major locations where seniors exercised were park, gym and stadium Open area was the first choice for males, and females mostly preferred park and indoor area. Seniors mostly participated in low or moderate intensity exercises comprising walking, aerobics, yangko dance, martial arts and qigong, etc. Males preferred exercises of sporty nature, i.e. martial arts and qigong, etc.; while females liked rhythmic exercises including aerobics and yangko dance, etc. As for the frequently watched sports, seniors usually chose the most popular sports, i.e. swimming, football, gymnastics and basketball, etc. Males liked competitive sports, such as football and basketball; gymnastics, martial arts and other artistic sports were the most favorites for females. Physical exercise was the first choice for nearly 80% of seniors during their leisure time. Over 50% of seniors walked for an average of 30 minutes~2 hours daily, sat for a cumulative of 3~6 hours and had 6~9 hours of sleep per day. More than 90% of seniors had breakfast every day, and 60% ate out several times every week. More males than females were fond of high-fat and high-sugary snacks.

Anthropometric indicators of seniors remained fairly stable with advancing age. In general, the indicators of height, weight, chest and waist circumferences were higher in males than females; while hip circumference and skinfold thickness of females were higher than those of males. Vital capacity decreased considerably with advancing age; males had a higher average vital capacity than females. Physical fitness of seniors tended to decline with advancing age; strength, reaction and balance ability of males were generally better than those of females, while females had better flexibility than males.

2. Comparison of 2015 and 2010 Results on the Physical Fitness Study of Seniors

In the past 5 years, seniors aged 60~69 had increased their daily exercise time. Seniors mostly participated in skill-related and fun exercises, similar trend was also observed in the types of sports they watched. Other aspects of physical exercise remained unchanged. Moreover, seniors had increased their daily walking time and no obvious change in pattern was found on sleeping hours, accumulated sitting hours and alcohol consumption, etc. The proportion of seniors with hypertension and diabetes was reduced, but high prevalence of these diseases was still seen.

Female seniors aged 60~69 had an overall increase in the indicators comprising weight, circumferences, skinfold thickness and BMI, etc; there was no increase in the obesity rate. As for male seniors, anthropometric indicators were rather stable. Vital capacity, strength and flexibility were improved significantly in males aged 65~69. However, reaction and balance ability of males aged 60~69 were reduced in 2015, with no significant difference between 2010 and 2015.

Part III
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Statistics

I. Young Children

1. Basic Information of the Subjects

Table 3-1-1-1 Distribution of sampling sites (kindergartens)

Area	Sampling site (kindergarten)	M		F		Total	
		Subjects (n)	Percentage (%)	Subjects (n)	Percentage (%)	Subjects (n)	Percentage (%)
North	Keang Peng School (kindergarten)	96	14.8	84	19.8	**180**	**16.8**
	Hou Kong Middle School (kindergarten)	110	17.0	63	14.9	**173**	**16.1**
Central	Pui Ching Middle School (kindergarten)	104	16.0	107	25.2	**211**	**19.7**
	Chan Sui Ki Perpetual Help College (subsidary school)	151	23.3	46	10.8	**197**	**18.4**
South	Pooi To Middle School (branch school of Praia Grande- kindergarten)	110	17.0	88	20.8	**198**	**18.5**
	Estrela do Mar School (kindergarten)	77	11.9	36	8.5	**113**	**10.5**
	Total	**648**	**100**	**424**	**100**	**1072**	**100**

Table 3-1-1-2 Residential distribution of subjects (%)

Gender	Parish	Keang Peng School (Kindergarten)	Hou Kong Middle School (kindergarten)	Pui Ching Middle School (kindergarten)	Chan Sui Ki Perpetual Help College (subsidary school)	Pooi To Middle School (branch school of Praia Grande - kindergarten)	Estrela do Mar School (kindergarten)
M	São Francisco Xavier	2.1	0.0	0.0	0.7	2.7	0.0
	Nossa Senhora do Carmo	0.0	0.0	14.4	7.9	41.8	3.9
	São Lourenço	1.1	2.7	1.0	4.0	15.5	83.1
	Sé	2.1	1.8	11.5	5.3	17.3	7.8
	Santo António	10.5	57.3	42.3	29.8	5.5	1.3
	São Lázaro	4.2	5.5	8.6	13.9	1.8	0.0
	Nossa Senhora de Fátima	80.0	32.7	22.1	38.4	15.5	3.9
F	São Francisco Xavier	2.4	0.0	2.8	0.0	2.3	2.8
	Nossa Senhora do Carmo	0.0	0.0	11.2	8.7	31.8	5.6
	São Lourenço	1.2	1.6	3.7	10.9	19.3	77.8
	Sé	0.0	3.2	10.3	13.0	15.9	2.8
	Santo António	6.0	61.9	36.4	17.4	12.5	2.8
	São Lázaro	0.0	6.3	15.0	17.4	8.0	0.0
	Nossa Senhora de Fátima	90.5	27.0	20.6	32.6	10.2	8.3

Table 3-1-1-3 Birthplace (%)

Gender	Birthplace	Age 3	Age 4	Age 5	Total*
M	Mainland	0.0	1.1	0.0	**0.3**
	Macao	93.7	93.9	92.8	**93.4**
	Hong Kong	6.3	4.4	5.9	**5.6**
	Others	0.0	0.6	1.4	**0.7**
F	Mainland	2.3	1.5	2.8	**2.2**
	Macao	93.8	94.7	88.0	**92.0**
	Hong Kong	3.1	1.5	7.7	**4.2**
	Others	0.8	2.3	1.4	**1.5**

*Note: 6-year age group is excluded from statistical analysis due to its insufficient sample size, which applies to subsequent tables.

Table 3-1-1-4 Kindergarten attendance (%)

Gender	Kindergarten attendance	Age 3	Age 4	Age 5	Total
M	No	0.0	0.0	0.0	**0.0**
	Half day	1.0	0.0	1.8	**1.0**
	Full day	99.0	100.0	98.2	**99.0**
F	No	0.0	0.0	0.0	**0.0**
	Half day	4.7	3.1	0.7	**2.7**
	Full day	95.3	96.9	99.3	**97.3**

Table 3-1-1-5 Caretaker at home (%)

Gender	Caretaker	Age 3	Age 4	Age 5	Total
M	Parents	58.5	58.3	60.6	**59.2**
	Senior relatives	28.8	27.8	25.3	**27.2**
	Babysitters (domestic helpers)	12.7	13.3	13.1	**13.3**
	Others	0.0	0.6	0.9	**0.5**
F	Parents	56.3	62.3	67.6	**62.3**
	Senior relatives	25.0	26.2	19.0	**23.3**
	Babysitters (domestic helpers)	18.8	11.5	13.4	**14.5**
	Others	0.0	0.0	0.0	**0.0**

2. Lifestyle

Table 3-1-2-1 Gestational age (%)

Gender	Age group (yrs)	Subjects (n)	Premature	Full term	Post term
M	3	206	15.0	82.5	2.4
	4	180	13.9	84.4	1.7
	5	220	10.9	84.1	5.0
F	3	124	7.3	87.9	4.8
	4	130	13.1	81.5	5.4
	5	140	10.7	86.4	2.9
Total		**1000**	**12.1**	**84.3**	**3.6**

Table 3-1-2-2 Birth weight (kg)

Gender	Age group (yrs)	Subjects (n)	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	186	3.2	0.62	2.0	2.4	2.9	3.2	3.5	3.8	4.3
	4	156	3.2	0.47	2.4	2.6	2.9	3.2	3.5	3.7	4.1
	5	179	3.2	0.51	2.1	2.6	2.9	3.2	3.5	3.8	4.2
F	3	108	3.1	0.39	2.6	2.7	2.8	3.1	3.4	3.7	3.9
	4	112	3.1	0.48	2.0	2.6	2.8	3.1	3.4	3.6	4.0
	5	119	3.1	0.48	2.3	2.6	2.8	3.1	3.4	3.6	4.0

Table 3-1-2-3 Birth length (cm)

Gender	Age group (yrs)	Subjects (n)	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	178	48.7	3.98	41.0	45.0	48.0	49.0	50.5	52.0	53.0
	4	148	49.0	2.80	43.5	46.5	48.0	49.0	50.3	51.5	53.0
	5	163	47.6	7.52	26.4	45.5	48.0	49.0	50.0	52.0	53.0
F	3	107	48.2	5.82	38.0	46.0	48.0	49.0	50.0	51.0	53.0
	4	107	48.0	4.93	44.0	46.0	48.0	48.5	50.0	51.0	52.0
	5	117	48.4	3.38	40.0	46.0	47.5	49.0	50.0	51.0	52.0

Table 3-1-2-4 Feeding pattern within 4 months after birth (%)

Gender	Age group (yrs)	Subjects (n)	Breast feeding	Formula feeding	Mixed feeding
M	3	206	18.0	33.0	49.0
	4	180	24.4	32.2	43.3
	5	221	22.2	44.3	33.5
F	3	128	30.5	27.3	42.2
	4	131	29.0	33.6	37.4
	5	142	20.4	39.4	40.1
Total		**1008**	**23.4**	**35.6**	**41.0**

Table 3-1-2-5 Average sleeping hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Less than 8 hrs	8~10 hrs	10 hrs or more
M	3	206	1.0	64.1	35.0
	4	180	1.7	67.8	30.6
	5	221	2.3	82.4	15.4
F	3	128	0.8	71.1	28.1
	4	131	3.1	72.5	24.4
	5	142	2.8	80.3	16.9
Total		**1008**	**1.9**	**73.0**	**25.1**

Table 3-1-2-6 Average time spent on daily outdoor activities (%)

Gender	Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2 hrs or more
M	3	206	26.2	48.1	22.3	3.4
	4	180	26.1	55.0	15.0	3.9
	5	221	27.1	43.0	23.5	6.3
F	3	128	20.3	53.1	18.8	7.8
	4	131	32.8	45.0	19.8	2.3
	5	142	28.2	53.5	13.4	4.9
Total		**1008**	**26.8**	**49.2**	**19.2**	**4.8**

Table 3-1-2-7 Average time spent on watching TV, video and playing video games per day (%)

Gender	Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2~3 hrs	3 hrs or more
M	3	204	20.1	39.2	28.4	9.3	2.9
	4	180	17.8	45.6	22.8	9.4	4.4
	5	221	15.8	40.3	28.5	10.4	5.0
F	3	128	18.0	45.3	23.4	7.0	6.3
	4	131	26.0	41.2	23.7	7.6	1.5
	5	142	21.1	40.1	26.1	10.6	2.1
Total		**1006**	**19.4**	**41.7**	**25.8**	**9.2**	**3.8**

Table 3-1-2-8 Participation of extracurricular hobby classes (%)

Gender	Age group (yrs)	Subjects participated in hobby classes	Physical exercise	Tutoring	Music & dancing	Drawing & calligraphy	Others	Chess
M	3	66	25.8	39.4	40.9	24.2	19.7	0.0
	4	114	24.6	36.8	38.6	36.0	20.2	3.5
	5	173	32.4	41.6	52.0	41.1	14.4	2.3
F	3	51	11.8	21.6	58.8	23.5	15.7	0.0
	4	88	21.5	27.3	73.8	34.1	13.6	2.2
	5	106	12.2	34.9	82.1	43.4	11.3	1.9
Total		**598**	**23.2**	**35.5**	**57.4**	**36.1**	**15.5**	**2.0**

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Table 3-1-2-9 Participation of physical exercises (%)

Gender	Age group (yrs)	Subjects (n)	Swimming	Track & field	Ball games	Gymnastics	Skating	Dancing	Rope Skipping	Martial arts, Taekwondo	Bicycling	Judo	Karate	Others	Yoga
M	3	196	18.4	16.3	29.6	9.7	3.1	3.1	0.0	1.0	41.3	0.0	0.0	40.8	0.0
	4	176	27.8	14.2	29.5	6.8	4.0	5.7	0.6	1.1	57.4	0.0	1.7	25.0	0.0
	5	218	40.8	16.5	28.4	9.2	5.0	7.3	0.0	7.8	53.2	0.9	1.4	24.3	0.0
F	3	121	8.3	9.1	9.9	14.0	0.0	18.2	0.0	0.0	21.5	0.0	0.8	59.5	0.8
	4	126	22.2	7.1	13.5	6.3	4.0	43.7	2.4	1.6	36.5	0.0	1.6	32.5	0.0
	5	136	29.4	8.8	8.1	7.4	6.6	44.9	6.6	0.7	41.9	0.0	0.0	26.5	0.7
Total		**973**	**25.9**	**12.9**	**21.8**	**8.8**	**3.9**	**17.5**	**1.3**	**2.5**	**43.9**	**0.2**	**0.9**	**33.5**	**0.2**

Table 3-1-2-10 Frequency of having flu or fever within the past year (%)

Gender	Age group (yrs)	Subjects (n)	Never	1~2 times	3~5 times	6 or more times
M	3	206	1.0	25.2	51.9	21.8
	4	180	2.2	37.2	48.3	12.2
	5	221	2.7	35.7	48.0	13.6
F	3	128	1.6	28.9	53.1	16.4
	4	131	3.8	36.6	41.2	18.3
	5	142	3.5	39.4	48.6	8.5
Total		**1008**	**2.4**	**33.6**	**48.7**	**15.3**

Table 3-1-2-11 Occurrence of diseases (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	3	206	23.3	76.7
	4	179	22.9	77.1
	5	221	24.4	75.6
F	3	128	14.8	85.2
	4	131	17.6	82.4
	5	142	19.0	81.0
Total		**1007**	**21.1**	**78.9**

Table 3-1-2-12 Prevalence of diseases (%)

Gender	Age group (yrs)	Subjects diagnosed with disease (n)	Chronic bronchitis	Pneumonia	Asthma	Others
M	3	48	37.5	27.1	6.3	39.6
	4	41	19.5	29.3	12.2	36.6
	5	54	27.8	37.0	12.9	31.5
F	3	19	26.3	42.1	5.3	26.3
	4	23	26.1	56.5	4.3	30.4
	5	27	22.2	40.7	18.5	40.7
Total		**212**	**27.4**	**36.3**	**10.4**	**34.9**

Table 3-1-2-13 Daily tooth brushing (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	3	206	84.0	16.0
	4	180	92.2	7.8
	5	221	91.4	8.6
F	3	128	84.4	15.6
	4	131	87.0	13.0
	5	142	92.3	7.7
Total		**1008**	**88.7**	**11.3**

Table 3-1-2-14 Daily tooth flossing (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	3	206	1.9	98.1
	4	180	5.0	95.0
	5	221	3.6	96.4
F	3	128	3.9	96.1
	4	131	2.3	97.7
	5	142	7.0	93.0
Total		**1008**	**3.9**	**96.1**

Table 3-1-2-15　Visiting a clinic for dental examination in the past 12 months (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	3	206	14.1	85.9
	4	180	17.8	82.2
	5	221	29.9	70.1
F	3	128	10.9	89.1
	4	131	19.1	80.9
	5	142	31.0	69.0
Total		**1008**	**20.8**	**79.2**

Table 3-1-2-16　Occurrence of dental caries (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No	Don't know
M	3	206	8.7	43.7	47.6
	4	180	12.8	52.8	34.4
	5	220	25.0	36.4	38.6
F	3	128	8.6	42.2	49.2
	4	131	13.0	45.8	41.2
	5	142	26.8	30.3	43.0
Total		**1007**	**16.1**	**41.9**	**42.0**

Table 3-1-2-17　Treatment of dental caries at a clinic (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	3	18	33.3	66.7
	4	23	60.9	39.1
	5	55	70.9	29.1
F	3	11	27.3	72.7
	4	17	47.1	52.9
	5	38	50.0	50.0
Total		**162**	**54.9**	**45.1**

Table 3-1-2-18 Frequency of having breakfast per week (%)

Gender	Age group (yrs)	Subjects (n)	0 day	1~2 days	3~5 days	6 or more days
M	3	206	0.5	2.9	5.3	91.3
	4	180	0.6	1.1	11.1	87.2
	5	218	0.0	2.3	10.1	87.6
F	3	125	0.8	4.0	6.4	88.8
	4	129	0.0	1.6	7.8	90.7
	5	142	0.0	0.7	8.5	90.8
Total		**1000**	**0.3**	**2.1**	**8.3**	**89.3**

Table 3-1-2-19 Frequency of eating out per week (%)

Gender	Age group (yrs)	Subjects (n)	0 meal	1~3 meals	4~6 meals	7~9 meals	10 or more meals
M	3	203	7.9	68.0	21.7	1.5	1.0
	4	180	9.4	71.7	16.1	1.7	1.1
	5	219	10.5	70.3	15.5	0.9	2.7
F	3	125	11.2	69.6	17.6	0.0	1.6
	4	128	11.7	69.5	13.3	1.6	3.9
	5	142	10.6	66.9	16.2	4.2	2.1
Total		**997**	**10.0**	**69.4**	**17.0**	**1.6**	**2.0**

Table 3-1-2-20   Frequency of consuming high-fat and high-sugary snacks per week (%)

Gender	Age group (yrs)	Subjects (n)	0 time	1~2 times	3~5 times	6 or more times
M	3	205	2.4	40.0	37.6	20.0
	4	180	2.8	35.0	43.9	18.3
	5	220	1.4	44.1	36.8	17.7
F	3	128	2.3	36.7	31.3	29.7
	4	131	2.3	31.3	43.5	22.9
	5	142	0.0	45.8	35.2	19.0
Total		**1006**	**1.9**	**39.3**	**38.2**	**20.7**

3. Anthropometric Measurements

Table 3-1-3-1 Height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	205	99.0	4.00	92.5	94.0	96.5	98.8	101.7	103.7	107.4
	4	180	106.4	4.65	99.1	101.0	102.7	106.0	109.7	113.0	115.2
	5	219	112.0	4.74	103.4	105.9	108.5	112.6	115.1	118.1	121.1
F	3	128	98.3	4.48	90.1	92.9	95.1	98.0	100.6	105.0	108.0
	4	131	105.0	4.69	96.7	99.5	102.0	104.7	107.5	110.6	113.6
	5	141	111.8	4.47	102.5	106.1	109.0	112.3	115.1	116.9	118.6

Table 3-1-3-2 Sitting height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	206	57.3	2.31	53.3	54.4	55.7	57.2	58.6	60.1	62.1
	4	180	60.2	2.42	56.0	57.1	58.5	60.0	62.0	63.4	65.0
	5	221	62.5	2.41	58.5	59.3	60.8	62.4	64.2	65.6	66.7
F	3	128	56.0	2.36	51.6	52.7	54.5	56.1	57.5	59.0	60.5
	4	131	59.2	3.46	54.8	56.1	57.2	58.7	60.3	62.1	63.9
	5	142	61.8	2.30	57.3	58.7	60.2	62.0	63.5	64.6	65.5

Table 3-1-3-3 Foot length (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	15.6	0.88	14.2	14.4	15.0	15.6	16.3	16.8	17.4
	4	179	16.5	0.91	15.0	15.5	15.9	16.5	17.1	17.8	18.3
	5	221	17.3	0.93	15.5	16.2	16.7	17.3	18.0	18.6	19.1
F	3	127	15.6	0.86	13.9	14.5	15.0	15.5	16.1	16.8	17.2
	4	130	16.6	0.88	15.0	15.3	16.0	16.5	17.1	17.6	18.5
	5	141	17.4	0.94	15.6	16.3	17.0	17.5	18.0	18.5	19.2

Table 3-1-3-4 Weight (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	206	15.3	1.90	12.6	13.3	14.0	15.2	16.5	17.7	19.1
	4	180	17.4	2.46	13.9	14.8	15.8	17.1	18.6	20.0	23.2
	5	221	19.5	3.15	15.5	16.3	17.5	19.0	21.0	22.7	26.8
F	3	128	14.9	1.95	11.9	12.6	13.6	14.5	16.0	17.5	18.9
	4	131	16.9	2.41	13.3	14.2	15.4	16.7	17.8	20.0	22.2
	5	142	19.0	2.53	14.4	16.2	17.5	18.8	20.1	22.4	24.6

Table 3-1-3-5 BMI

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	205	15.6	1.29	13.6	14.2	14.7	15.5	16.3	17.1	17.8
	4	180	15.4	1.62	13.2	13.7	14.4	15.1	16.1	17.1	18.5
	5	219	15.5	1.74	13.2	13.8	14.5	15.2	16.1	17.6	20.0
F	3	128	15.3	1.26	13.0	13.9	14.6	15.1	16.0	17.2	18.2
	4	131	15.3	1.34	13.2	13.9	14.4	15.1	16.1	16.8	18.0
	5	141	15.2	1.39	13.2	13.7	14.2	15.2	15.8	16.8	18.1

Table 3-1-3-6 Weight status according to height-for-weight standards (%)

Gender	Age group (yrs)	n	Underweight	Slightly underweight	Normal	Overweight	Obese
M	3	205	0.5	6.3	83.9	5.4	3.9
	4	180	2.2	11.7	71.7	7.2	7.2
	5	219	1.8	9.6	71.7	5.5	11.4
	Total	**604**	**1.5**	**9.1**	**75.8**	**6.0**	**7.6**
F	3	128	6.3	10.2	75.0	6.3	2.3
	4	131	4.6	8.4	79.4	5.3	2.3
	5	141	5.7	9.9	73.8	7.1	3.5
	Total	**400**	**5.5**	**9.5**	**76.0**	**6.2**	**2.8**

Note: the results are calculated according to the National Physical Fitness Standards for Chinese Citizens.

Table 3-1-3-7 Chest circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	51.4	2.34	47.5	48.7	49.8	51.3	53.0	54.6	55.7
	4	180	53.2	3.01	48.2	50.0	51.3	52.9	54.6	57.0	59.7
	5	220	55.3	3.67	50.5	51.5	52.6	54.8	56.8	59.2	64.2
F	3	128	50.4	2.36	46.4	47.5	49.0	50.3	52.0	53.6	55.0
	4	131	52.3	2.76	48.1	49.5	50.7	52.3	54.0	55.0	58.5
	5	141	53.9	3.24	49.1	50.4	51.9	53.5	55.7	57.5	61.1

Table 3-1-3-8 Waist circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	48.6	2.89	43.0	45.0	46.6	48.5	50.5	52.3	54.0
	4	180	49.8	3.93	44.0	46.0	47.5	49.2	51.8	54.2	59.5
	5	220	51.6	4.35	45.5	47.5	48.9	50.5	53.2	57.1	63.0
F	3	128	48.2	3.12	42.1	44.8	46.0	47.8	50.3	52.1	54.4
	4	131	50.2	3.47	44.8	46.8	48.1	49.5	52.0	53.7	58.7
	5	142	50.7	3.89	45.2	46.8	48.2	50.2	52.6	55.5	58.0

Table 3-1-3-9 Hip circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	52.4	3.19	46.8	48.3	50.1	52.0	54.2	56.8	59.0
	4	180	55.1	4.05	49.3	51.0	52.4	54.8	57.5	59.3	62.6
	5	219	57.7	5.01	51.0	52.9	54.5	57.5	60.2	63.5	69.5
F	3	128	52.7	3.45	46.7	48.4	50.5	52.3	54.5	57.8	60.0
	4	131	55.2	3.62	49.0	51.0	52.8	55.0	57.0	59.4	62.3
	5	142	57.7	3.73	51.8	54.1	55.5	57.5	60.0	62.5	65.5

Table 3-1-3-10 Waist to Hip Ratio (WHR)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	0.929	0.043	0.867	0.884	0.900	0.924	0.952	0.987	1.027
	4	180	0.906	0.058	0.829	0.854	0.875	0.901	0.928	0.960	0.975
	5	219	0.897	0.072	0.823	0.847	0.870	0.892	0.914	0.943	0.973
F	3	128	0.915	0.043	0.842	0.862	0.887	0.914	0.941	0.975	0.998
	4	131	0.909	0.043	0.831	0.861	0.879	0.909	0.933	0.956	0.996
	5	142	0.878	0.039	0.806	0.836	0.857	0.876	0.900	0.931	0.954

Table 3-1-3-11   Shoulder width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	21.6	1.26	19.5	20.1	20.8	21.6	22.5	23.1	24.0
	4	180	23.0	1.27	20.9	21.3	22.1	23.0	24.0	24.6	25.1
	5	219	24.1	1.49	21.8	22.3	23.2	24.0	25.0	26.0	27.0
F	3	126	21.9	1.25	19.8	20.3	21.1	21.8	22.5	23.5	24.5
	4	128	23.0	1.43	20.9	21.5	22.1	23.1	23.9	24.4	25.8
	5	142	24.1	1.44	21.5	22.3	23.2	24.1	25.1	25.8	26.7

Table 3-1-3-12   Pelvis width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	203	15.9	1.03	13.9	14.6	15.2	15.9	16.6	17.2	17.9
	4	180	16.5	1.30	14.6	15.1	15.8	16.4	17.2	17.9	18.2
	5	220	17.3	1.12	15.4	16.0	16.5	17.3	18.1	18.7	19.6
F	3	128	16.0	1.56	14.0	14.4	15.1	15.9	16.6	17.5	18.5
	4	131	16.6	1.11	14.7	15.5	15.9	16.5	17.4	18.0	18.7
	5	142	17.5	1.16	15.3	16.1	16.7	17.4	18.3	18.9	19.5

Table 3-1-3-13 Upper arm skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	8.4	2.05	5.0	6.0	7.0	8.0	10.0	11.0	12.0
	4	179	8.6	2.90	5.0	6.0	7.0	8.0	10.0	11.5	15.0
	5	220	8.9	3.06	5.0	6.0	7.0	8.5	10.0	12.5	17.5
F	3	128	9.9	2.93	5.0	6.0	8.0	10.0	12.0	14.0	15.5
	4	131	10.7	3.55	5.0	7.0	8.0	10.0	13.5	15.5	18.0
	5	142	10.2	3.64	4.5	6.0	7.5	10.0	12.0	14.0	19.5

Table 3-1-3-14 Subscapular skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	5.1	1.67	3.0	3.5	4.0	5.0	6.0	7.0	9.0
	4	179	5.2	2.63	2.0	3.0	4.0	5.0	6.0	7.0	11.5
	5	220	5.1	2.33	2.5	3.0	4.0	5.0	6.0	7.0	11.0
F	3	128	5.4	2.23	2.0	3.0	4.0	5.0	6.5	8.0	11.5
	4	131	5.8	2.83	2.0	3.0	4.0	5.0	7.0	9.5	13.0
	5	142	5.3	3.03	2.0	3.0	3.5	5.0	6.0	8.0	12.5

Table 3-1-3-15   Abdominal skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	5.1	1.95	2.5	3.0	4.0	5.0	6.0	8.0	9.0
	4	178	5.8	3.35	2.0	3.0	4.0	5.0	7.0	9.0	15.5
	5	220	6.7	3.88	2.5	3.0	4.0	5.5	8.0	11.0	18.0
F	3	128	6.6	2.95	2.0	3.0	4.5	6.0	8.0	11.0	14.0
	4	131	7.6	4.42	2.5	3.5	4.5	6.5	9.5	13.0	18.0
	5	141	7.1	3.77	2.0	3.5	4.0	6.0	9.0	11.5	17.0

4. Physiological Function

Table 3-1-4-1 Resting heart rate (bpm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	204	93.5	12.00	72.0	78.0	84.0	93.0	101.0	110.0	119.0
	4	180	90.1	12.24	70.0	74.0	80.0	89.5	99.0	106.0	114.0
	5	220	89.1	11.42	70.0	73.5	81.0	88.5	95.5	104.0	113.0
F	3	128	97.0	12.37	75.0	80.0	88.0	97.0	105.0	113.0	123.0
	4	131	93.6	10.66	74.0	79.0	86.0	95.0	101.0	106.0	115.0
	5	142	90.4	11.57	69.0	74.0	83.0	90.0	98.0	103.0	112.0

5. Physical Fitness

Table 3-1-5-1 10m shuttle run (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	206	9.8	1.64	7.5	7.9	8.7	9.4	10.6	11.4	14.6
	4	179	7.8	0.98	6.5	6.8	7.1	7.6	8.3	9.2	10.2
	5	220	6.9	0.63	5.9	6.2	6.4	6.9	7.2	7.7	8.4
F	3	128	9.9	1.40	7.7	8.2	8.9	9.9	10.8	11.7	13.2
	4	129	8.2	1.01	6.7	7.1	7.4	7.9	8.6	9.5	10.6
	5	142	7.1	0.81	6.1	6.2	6.5	6.9	7.4	7.9	9.0

Table 3-1-5-2 Successive jumps with both feet (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	162	13.7	5.28	5.8	8.0	9.4	12.3	18.0	21.2	24.0
	4	174	9.1	3.45	5.1	5.6	6.5	8.4	10.8	13.9	17.3
	5	211	6.9	2.52	4.3	4.7	5.2	6.1	7.5	9.7	13.9
F	3	103	13.2	5.56	6.0	7.3	8.7	11.7	16.4	21.5	26.4
	4	126	9.1	3.08	4.9	5.6	6.9	8.5	10.8	13.5	16.2
	5	142	6.7	1.82	4.5	4.9	5.4	6.3	7.8	9.3	11.2

Table 3-1-5-3 Standing long jump (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	202	54.3	17.92	26.0	30.0	40.0	53.0	69.0	77.0	88.0
	4	180	77.6	14.92	45.0	58.5	69.0	78.0	88.0	95.0	106.0
	5	221	94.1	15.69	64.0	75.0	84.0	93.0	104.0	115.0	125.0
F	3	125	49.9	15.64	23.0	31.0	38.0	50.0	60.0	71.0	79.0
	4	129	75.4	13.61	47.0	55.0	68.0	76.0	85.0	93.0	101.0
	5	142	87.6	13.89	62.0	69.0	79.0	86.0	98.0	104.0	111.0

Table 3-1-5-4 Tennis ball distance throw (m)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	206	2.7	0.96	1.0	1.5	2.0	2.5	3.5	4.0	5.0
	4	180	4.0	1.10	2.0	2.5	3.5	4.0	5.0	5.5	6.0
	5	221	5.2	1.58	2.5	3.5	4.0	5.0	6.0	7.5	8.0
F	3	127	2.2	0.76	1.0	1.5	1.5	2.0	2.5	3.0	4.0
	4	131	3.3	0.90	2.0	2.0	2.5	3.5	4.0	4.5	5.0
	5	142	4.2	1.18	2.0	2.5	3.5	4.5	5.0	5.5	6.5

Table 3-1-5-5   Sit and reach (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	205	10.2	3.92	2.3	5.2	7.9	10.3	13.0	14.7	17.6
	4	179	7.8	4.12	1.4	3.0	4.6	7.5	11.0	12.9	15.3
	5	221	7.6	4.24	-1.0	2.4	4.5	7.8	10.6	12.8	15.6
F	3	128	10.4	3.88	2.2	4.5	8.4	11.0	13.0	14.6	16.6
	4	131	8.9	4.45	-1.0	2.5	6.0	9.2	11.8	14.4	17.0
	5	142	10.0	4.40	1.5	4.2	7.0	10.5	13.0	15.6	17.1

Table 3-1-5-6 Walking on balance beam (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	3	182	22.1	13.06	5.9	8.3	12.4	19.7	28.0	41.6	53.8
	4	178	12.6	8.52	3.9	4.5	6.7	10.8	16.1	22.8	33.4
	5	220	7.6	4.97	2.7	3.4	4.3	5.9	8.9	14.2	18.8
F	3	116	22.5	14.37	6.9	8.7	12.7	19.2	25.9	45.0	60.1
	4	128	12.8	8.58	3.7	4.4	7.0	10.1	16.0	25.5	32.5
	5	142	9.4	6.51	3.2	4.1	5.1	7.4	11.6	16.3	27.0

6. Health

Table 3-1-6-1 Prevalence of decayed primary teeth (%)

Gender	Age group (yrs)	Subjects (n)	Decayed primary teeth (d)	Filled primary teeth (f)	Missing primary teeth (m)	Decayed-missing-filled primary teeth (dmf)
M	3	206	42.2	2.9	0.0	42.7
	4	180	47.8	7.8	0.0	48.9
	5	221	62.0	13.1	0.9	63.3
F	3	128	37.5	1.6	0.8	37.5
	4	131	52.7	3.8	0.0	53.4
	5	142	56.3	12.0	0.7	59.9

Table 3-1-6-2   Prevalence of decayed permanent teeth (%)

Gender	Age group (yrs)	Subjects (n)	Decayed permanent teeth (D)	Filled permanent teeth (F)	Missing permanent teeth (M)	Decayed-missing-filled permanent teeth (DMF)
M	3	206	0.0	0.0	0.0	0.0
	4	180	0.0	0.0	0.0	0.0
	5	221	0.5	0.5	0.0	0.5
F	3	128	0.0	0.0	0.0	0.0
	4	131	0.0	0.0	0.0	0.0
	5	142	0.7	0.7	0.0	0.7

II. Children and Adolescents (Students)

1. Basic Information of the Subjects

Table 3-2-1-1 Distribution of sampling sites (schools/universities)

Subject	Area/Parish	Sampling site (school)	M Subjects (n)	M Percentage (%)	F Subjects (n)	F Percentage (%)	Total Subjects (n)	Total Percentage (%)
Primary & secondary school students (aged 6-18)	North	Keang Peng School	376	15.1	329	16.9	705	15.9
		Hou Kong Middle School	530	21.2	405	20.8	935	21.0
	Central	Pui Ching Middle School	423	16.9	372	19.1	795	17.9
		Colegio Dom Bosco (Yuet Wah) Chinese Section	159	6.4	25	1.3	184	4.1
		Yuet Wah College (Chinese Section)	211	8.5	0	0.0	211	4.7
		Sacred Heart Canossian College	0	0.0	204	10.5	204	4.6
	South	Pooi To Middle School	426	17.1	331	17.0	757	17.0
		Estrela do Mar School	368	14.7	246	12.6	614	13.8
		Others *	3	0.1	37	2	40	0.9
		Total	2496	100.0	1949	100.0	4445	100.0
University students (aged 19-22)	Nossa Senhora do Carmo	University of Macau	105	27.9	97	23.4	202	25.6
		Macao University of Science and Technology	79	21.0	66	15.9	145	18.4
	Sé	Macao Polytechnic Institute	44	11.7	58	14.0	102	12.9
	Santo António	Kiang Wu Nursing College of Macau	10	2.7	77	18.6	87	11.0
	Nossa Senhora de Fátima	Institute for Tourism Studies	25	6.6	49	11.8	74	9.4
		Others *	113	30	67	16.1	180	22.8
		Total	376	100.0	414	100.0	790	100.0

* Note:

Primary & secondary school students (aged 6-18): a few subjects from universities (including the University of Macau, Macao University of Science and Technology, Macao Polytechnic Institute, Kiang Wu Nursing College of Macao, Institute for Tourism Studies, etc.) were under 19 years of age and thus grouped into category of "Others".

University students (aged 19-22): a few subjects over 19 years of age from schools [including Keang Peng School (primary and secondary school sections), Hou Kong Middle School and its affiliated primary school, Pui Ching Middle School, Yuet Wah College (Chinese Section), Sacred Heart Canossian College, Pooi To Middle School (including Taipa Primary Branch, branch school of Praia Grande and primary school section) and Estrela do Mar School (including branch school)] , together with students from universities other than mentioned above were grouped into category of "Others".

Table 3-2-1-2 Residential distribution of subjects (%)

Gender	Parish	Keang Peng School	Hou Kong Middle School	Pui Ching Middle School	Colégio Dom Bosco (Yuet Wah) Chinese Section	Yuet Wah College (Chinese Section)	Sacred Heart Canossian College	Pooi To Middle School	Estrela do Mar School	University of Macau	Macao University of Science and Technology	Macao Polytechnic Institute	Kiang Wu Nursing College of Macau	Institute for Tourism Studies	Others	Total
M	Freguesia de São Francisco Xavier	1.8	2.6	0.0	1.9	0.0	0.0	2.3	1.2	3.8	6.3	2.2	0.0	4.0	0.0	**1.8**
	Freguesia de Nossa Senhora do Carmo	1.3	2.8	18.0	10.2	4.4	0.0	23.9	2.4	10.5	6.3	6.5	0.0	0.0	0.0	**8.9**
	Freguesia de São Lourenço	1.0	3.0	3.5	3.2	2.2	0.0	15.5	65.9	12.4	11.4	17.4	10.0	16.0	13.3	**14.8**
	Freguesia da Sé	1.6	5.6	7.5	6.4	9.7	0.0	23.2	7.5	9.5	8.9	8.7	0.0	16.0	0.0	**9.0**
	Freguesia de Santo António	4.4	43.8	34.2	21.7	21.7	0.0	10.7	6.5	21.9	21.5	19.6	50.0	12.0	13.3	**21.5**
	Freguesia de São Lázaro	1.8	5.4	13.8	8.3	10.2	0.0	7.0	1.7	5.7	7.6	2.2	0.0	0.0	6.7	**6.4**
	Freguesia de Nossa Senhora de Fátima	88.0	36.8	23.0	48.4	51.8	0.0	17.4	14.7	36.2	38.0	43.5	40.0	52.0	66.7	**37.7**
F	Freguesia de São Francisco Xavier	1.5	2.7	0.0	0.0	0.0	1.0	1.5	1.1	3.8	2.7	1.7	0.0	2.0	0.0	**1.5**
	Freguesia de Nossa Senhora do Carmo	1.8	2.5	15.2	0.0	0.0	3.3	18.8	4.1	4.8	8.2	0.0	0.0	5.9	11.1	**7.2**
	Freguesia de São Lourenço	0.6	3.2	3.2	0.0	0.0	1.9	18.8	69.4	7.6	8.2	5.0	4.3	3.9	22.2	**13.1**
	Freguesia da Sé	0.3	7.0	5.9	4.0	0.0	1.9	22.8	7.4	6.7	4.1	5.0	6.4	5.9	22.2	**7.5**
	Freguesia de Santo António	3.8	46.3	39.1	8.0	0.0	26.8	15.8	5.9	22.9	17.8	23.3	31.9	15.7	0.0	**24.0**
	Freguesia de São Lázaro	0.9	5.5	15.4	20.0	0.0	5.7	6.4	2.6	4.8	2.7	6.7	4.3	7.8	22.2	**6.4**
	Freguesia de Nossa Senhora de Fátima	91.1	32.8	21.3	68.0	0.0	59.3	15.8	9.6	49.5	56.2	58.3	53.2	58.8	22.2	**40.5**

Table 3-2-1-3 Birthplace (%)

Gender	Birthplace	Ages 6~12 (primary school)	Ages 13~18 (secondary school)	Ages 19~22 (university)	Total
M	Mainland	10.6	19.7	11.2	**14.3**
	Macao	83.9	75.9	85.6	**81.0**
	Hong Kong	3.2	2.4	2.1	**2.8**
	Others	2.2	1.9	1.1	**1.9**
F	Mainland	13.0	24.6	21.7	**19.0**
	Macao	81.0	72.0	76.1	**76.7**
	Hong Kong	3.6	1.6	1.4	**2.5**
	Others	2.4	1.8	0.7	**1.9**

Table 3-2-1-4 School attendance (%)

Gender	Schooling	Ages 6~12 (primary school)	Ages 13~18 (secondary school)	Ages 19~22 (university)	Total
M	Never	0.1	0.2	0.3	**0.2**
	Half day	1.6	3.0	13.6	**3.7**
	Full day	98.2	96.8	76.6	**94.8**
	Boarding	0.0	0.1	9.6	**1.3**
F	Never	0.0	0.1	0.0	**0.0**
	Half day	1.5	1.1	9.4	**2.8**
	Full day	98.5	98.4	86.0	**96.2**
	Boarding	0.0	0.4	4.6	**1.0**

2. Lifestyle

Table 3-2-2-1   Total time spent commuting to and from school per day (male) (%)

Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2 hrs or more
6	180	68.9	22.8	7.2	1.1
7	238	70.2	21.8	6.7	1.3
8	188	70.2	24.5	4.3	1.1
9	217	70.0	22.6	6.0	1.4
10	169	76.9	16.6	5.3	1.2
11	171	77.8	19.3	2.3	0.6
12	190	65.8	24.2	7.4	2.6
13	181	62.4	29.3	8.3	0.0
14	199	63.8	26.6	9.0	0.5
15	184	62.0	29.3	8.2	0.5
16	199	60.8	31.2	7.0	1.0
17	214	60.3	28.5	10.7	0.5
18	162	64.2	25.3	9.9	0.6
19	105	54.3	38.1	5.7	1.9
20	92	51.1	29.3	17.4	2.2
21	85	44.7	29.4	22.4	3.5
22	93	33.3	45.2	18.3	3.2

Table 3-2-2-2   Total time spent commuting to and from school per day (female) (%)

Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2 hrs or more
6	140	67.9	26.4	5.7	0.0
7	185	64.3	29.2	5.9	0.5
8	132	76.5	16.7	4.5	2.3
9	142	76.8	17.6	4.9	0.7
10	148	77.0	20.3	2.7	0.0
11	149	73.8	22.1	2.0	2.0
12	141	70.2	24.8	3.5	1.4
13	124	66.9	27.4	5.6	0.0
14	143	69.9	25.9	4.2	0.0
15	158	57.6	29.7	10.8	1.9
16	150	54.7	34.7	10.0	0.7
17	162	67.3	25.9	6.8	0.0
18	173	55.5	35.8	7.5	1.2
19	123	45.5	39.8	9.8	4.9
20	104	41.3	40.4	15.4	2.9
21	90	30.0	43.3	22.2	4.4
22	97	27.8	47.4	22.7	2.1

Table 3-2-2-3 Transportation means to and from school (male) (%)

Age group (yrs)	Subjects (n)	On foot	By motorcycle	By bus	By car
6	180	52.2	10.0	19.4	18.3
7	238	53.8	10.9	18.9	16.4
8	188	60.1	10.6	13.8	15.4
9	216	51.4	12.0	22.2	14.4
10	169	51.5	11.2	18.3	18.9
11	171	63.7	8.2	17.5	10.5
12	190	57.9	5.3	24.7	12.1
13	181	53.6	6.1	30.4	9.9
14	199	58.3	3.5	31.7	6.5
15	184	54.9	2.2	34.8	8.2
16	199	62.3	2.0	28.6	7.0
17	214	65.0	1.9	29.9	3.3
18	162	69.8	0.6	25.9	3.7
19	105	64.8	7.6	24.8	2.9
20	92	29.3	32.6	33.7	4.3
21	85	20.0	36.5	36.5	7.1
22	93	16.1	36.6	36.6	10.8

Table 3-2-2-4 Transportation means to and from school (female) (%)

Age group (yrs)	Subjects (n)	On foot	By motorcycle	By bus	By car
6	140	62.1	10.0	14.3	13.6
7	185	54.1	8.6	24.3	13.0
8	132	59.8	6.8	18.9	14.4
9	142	63.4	5.6	18.3	12.7
10	148	58.1	6.8	24.3	10.8
11	149	63.8	8.1	16.8	11.4
12	141	59.6	5.7	25.5	9.2
13	124	49.2	4.8	37.9	8.1
14	144	67.4	3.5	21.5	7.6
15	158	57.0	3.8	33.5	5.7
16	150	56.7	2.0	38.0	3.3
17	162	70.4	0.0	25.3	4.3
18	173	60.7	2.9	35.3	1.2
19	123	48.0	4.9	45.5	1.6
20	104	33.7	20.2	46.2	0.0
21	90	20.0	18.9	51.1	10.0
22	97	12.4	22.7	53.6	11.3

Table 3-2-2-5   Average accumulative time spent on daily outdoor activities (male) (%)

Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2 hrs or more
6	180	56.1	31.7	10.0	2.2
7	238	55.0	31.9	10.1	2.9
8	188	53.2	36.2	8.0	2.7
9	218	47.2	34.4	12.8	5.5
10	170	51.8	29.4	14.7	4.1
11	171	45.6	31.6	12.3	10.5
12	190	37.4	30.5	19.5	12.6
13	181	35.9	29.8	13.3	21.0
14	199	40.2	26.6	17.1	16.1
15	184	41.8	25.0	17.4	15.8
16	200	36.5	30.5	14.5	18.5
17	214	35.0	29.0	19.2	16.8
18	163	40.5	33.1	16.0	10.4
19	106	34.9	34.0	19.8	11.3
20	92	35.9	27.2	21.7	15.2
21	85	30.6	40.0	18.8	10.6
22	93	53.8	23.7	9.7	12.9

Table 3-2-2-6   Average accumulative time spent on daily outdoor activities (female) (%)

Age group (yrs)	Subjects (n)	Less 30 mins	30 mins~1 hr	1~2 hrs	2 hrs or more
6	140	50.7	38.6	8.6	2.1
7	185	49.2	34.6	11.4	4.9
8	132	54.5	35.6	8.3	1.5
9	142	49.3	33.1	10.6	7.0
10	148	52.7	33.8	9.5	4.1
11	149	52.3	26.8	15.4	5.4
12	141	48.2	24.8	12.1	14.9
13	124	45.2	18.5	17.7	18.5
14	144	41.7	31.9	13.2	13.2
15	158	51.9	27.8	12.0	8.2
16	150	57.3	24.0	11.3	7.3
17	162	52.5	27.2	14.2	6.2
18	172	65.7	20.9	4.1	9.3
19	122	55.7	31.1	5.7	7.4
20	104	58.7	22.1	14.4	4.8
21	90	54.4	27.8	12.2	5.6
22	97	50.5	27.8	12.4	9.3

Table 3-2-2-7　Time spent daily on homework (male) (%)

Age group (yrs)	Subjects (n)	Less than 30 mins	30 mins~1 hr	1~2 hrs	2~3 hrs	3 hrs or more
6	180	19.4	32.2	36.7	7.8	3.9
7	238	9.7	29.0	41.2	16.0	4.2
8	187	17.6	33.7	30.5	12.3	5.9
9	217	12.9	35.0	30.4	12.4	9.2
10	170	11.8	30.6	28.8	17.6	11.2
11	171	12.3	29.2	32.2	19.9	6.4
12	190	12.1	35.3	33.2	12.1	7.4
13	180	14.4	32.8	36.7	9.4	6.7
14	199	25.6	34.7	30.7	6.5	2.5
15	183	21.3	37.2	24.6	11.5	5.5
16	200	23.5	32.0	29.0	9.0	6.5
17	214	27.1	34.6	22.4	8.4	7.5
18	163	25.8	22.1	30.7	11.0	10.4
19	106	26.4	30.2	24.5	9.4	9.4
20	92	22.8	34.8	28.3	7.6	6.5
21	85	27.1	37.6	14.1	11.8	9.4
22	93	30.1	34.4	18.3	10.8	6.5

Table 3-2-2-8　Time spent daily on homework (female) (%)

Age group (yrs)	Subjects (n)	Less 30 mins	30 mins~1 hr	1~2 hrs	2~3 hrs	3 hrs or more
6	140	15.0	35.0	37.1	12.1	0.7
7	185	13.0	38.9	33.5	9.2	5.4
8	131	12.2	32.1	30.5	14.5	10.7
9	141	14.2	36.2	30.5	12.1	7.1
10	148	11.5	35.1	30.4	14.2	8.8
11	149	9.4	42.3	31.5	11.4	5.4
12	141	8.5	33.3	29.1	20.6	8.5
13	124	11.3	20.2	39.5	17.7	11.3
14	144	18.8	23.6	27.1	20.8	9.7
15	158	16.5	24.1	29.7	17.1	12.7
16	150	15.3	24.0	25.3	20.7	14.7
17	162	15.4	21.0	27.8	24.7	11.1
18	173	16.8	19.7	24.3	13.3	26.0
19	123	12.2	22.8	26.0	13.8	25.2
20	104	12.5	30.8	26.0	9.6	21.2
21	90	10.0	24.4	27.8	25.6	12.2
22	97	11.3	26.8	22.7	20.6	18.6

Table 3-2-2-9 Average time spent on watching TV, video and playing video games per day (male) (%)

Age group (yrs)	Subjects (n)	Less 30 mins	30 mins~1 hr	1~2 hrs	2~3 hrs	3 hrs or more
6	180	28.3	45.0	20.6	2.8	3.3
7	238	24.4	40.3	24.8	10.5	0.0
8	188	22.9	38.8	22.9	8.0	7.4
9	218	22.9	36.2	25.7	7.8	7.3
10	170	22.4	34.1	24.7	9.4	9.4
11	171	14.6	25.7	28.1	15.2	16.4
12	190	11.6	25.3	34.2	13.7	15.3
13	181	6.1	22.1	30.4	13.3	28.2
14	199	4.5	21.6	28.6	16.6	28.6
15	184	7.1	17.9	39.1	19.0	16.8
16	200	4.5	15.5	33.5	22.5	24.0
17	214	7.5	12.6	32.7	22.4	24.8
18	163	8.0	10.4	32.5	18.4	30.7
19	106	2.8	13.2	35.8	20.8	27.4
20	92	12.0	12.0	30.4	18.5	27.2
21	85	4.7	17.6	24.7	24.7	28.2
22	93	4.3	10.8	24.7	22.6	37.6

Table 3-2-2-10 Average time spent on watching TV, video and playing video games per day (female) (%)

Age group (yrs)	Subjects (n)	Less 30 mins	30 mins~1 hr	1~2 hrs	2~3 hrs	3 hrs or more
6	140	32.9	39.3	20.7	5.0	2.1
7	185	29.7	43.8	16.8	7.0	2.7
8	132	26.5	39.4	21.2	11.4	1.5
9	142	23.2	33.1	28.2	7.7	7.7
10	148	29.1	37.8	20.3	7.4	5.4
11	149	18.8	32.2	28.9	10.1	10.1
12	141	8.5	27.7	30.5	17.7	15.6
13	124	7.3	28.2	26.6	17.7	20.2
14	144	4.2	22.2	29.9	20.1	23.6
15	158	7.6	11.4	34.2	22.2	24.7
16	150	6.7	15.3	38.0	23.3	16.7
17	162	6.2	13.0	40.1	17.3	23.5
18	174	5.7	17.8	30.5	21.3	24.7
19	122	4.9	16.4	32.8	18.9	27.0
20	104	6.7	12.5	22.1	24.0	34.6
21	90	8.9	7.8	25.6	23.3	34.4
22	97	6.2	14.4	24.7	28.9	25.8

Table 3-2-2-11 Average daily sleeping hours (male) (%)

Age group (yrs)	Subjects (n)	Less than 8 hrs	8~10 hrs	10 hrs or more
6	180	10.0	87.2	2.8
7	238	9.2	88.7	2.1
8	188	14.9	84.6	0.5
9	217	16.1	81.1	2.8
10	170	24.7	72.9	2.4
11	171	30.4	67.3	2.3
12	189	34.9	61.9	3.2
13	181	52.5	47.0	0.6
14	199	52.8	44.7	2.5
15	184	59.2	37.5	3.3
16	200	71.5	27.0	1.5
17	214	76.2	22.9	0.9
18	163	77.3	20.9	1.8
19	106	79.2	20.8	0.0
20	92	72.8	27.2	0.0
21	85	62.4	37.6	0.0
22	93	72.0	28.0	0.0

Table 3-2-2-12 Average daily sleeping hours (female) (%)

Age group (yrs)	Subjects (n)	Less than 8 hrs	8~10 hrs	10 hrs or more
6	139	12.2	85.6	2.2
7	185	9.2	89.2	1.6
8	131	16.0	80.9	3.1
9	142	25.4	71.1	3.5
10	148	18.9	75.7	5.4
11	148	26.4	69.6	4.1
12	141	38.3	60.3	1.4
13	124	63.7	35.5	0.8
14	144	79.9	19.4	0.7
15	158	74.1	24.7	1.3
16	150	82.0	18.0	0.0
17	161	84.5	14.3	1.2
18	174	86.2	12.1	1.7
19	123	85.4	14.6	0.0
20	104	76.0	24.0	0.0
21	90	81.1	18.9	0.0
22	97	81.4	18.6	0.0

Table 3-2-2-13   Hobby class participation (male) (%)

Age group(yrs)	Subjects (n)	None	Physical exercise	Tutoring	Chess	Music & dancing	Drawing & calligraphy	Others
6	180	28.9	33.8	31.7	2.2	23.3	21.7	8.9
7	236	28.0	32.6	28.8	4.2	23.7	17.4	15.3
8	188	23.9	36.7	28.7	9.0	19.1	16.5	13.3
9	218	18.3	50.0	27.5	7.3	18.3	15.6	20.6
10	170	17.6	49.4	25.9	14.7	19.4	13.5	20.6
11	171	22.8	43.3	26.9	9.9	11.7	9.4	29.8
12	190	25.3	36.8	29.4	6.8	13.7	4.7	31.1
13	180	25.6	36.7	26.7	7.2	15.6	6.1	23.3
14	199	31.7	34.7	20.1	5.5	17.6	5.0	20.1
15	183	35.5	28.4	15.9	1.6	14.2	4.9	23.0
16	200	38.5	29.5	17.0	3.5	15.5	4.0	19.0
17	214	38.8	31.3	20.1	3.3	14.1	2.8	20.5
18	163	39.9	35.6	19.6	4.3	15.3	1.8	17.2
19	106	34.0	39.7	16.0	4.7	16.0	1.9	21.7
20	92	47.8	34.8	6.5	2.2	18.5	3.3	13.0
21	85	40.0	38.8	7.1	3.5	10.6	5.9	11.8
22	93	39.8	37.6	3.2	2.2	15.1	7.5	16.1

Table 3-2-2-14   Hobby class participation (female) (%)

Age group(yrs)	Subjects (n)	None	Physical exercise	Tutoring	Chess	Music & dancing	Drawing & calligraphy	Others
6	140	21.4	17.9	22.9	0.0	54.3	31.4	9.3
7	185	20.0	15.7	21.6	1.1	61.1	31.4	13.0
8	131	22.9	21.4	20.6	3.1	44.3	36.6	13.0
9	142	14.8	37.3	20.4	0.7	49.3	32.4	21.8
10	147	17.7	26.5	22.4	2.7	46.9	21.1	25.9
11	149	20.1	24.8	22.1	2.0	39.6	14.1	26.8
12	141	23.4	20.6	28.4	2.1	34.0	20.6	22.7
13	124	25.8	22.6	25.8	1.6	32.3	23.4	24.2
14	142	20.4	19.7	23.2	2.8	43.0	19.7	23.2
15	158	15.8	22.8	25.9	0.6	43.7	12.0	22.2
16	150	24.7	14.0	24.7	1.3	32.0	10.7	32.0
17	162	27.8	20.4	33.3	1.9	32.1	12.3	22.2
18	174	36.8	20.1	22.4	0.6	24.7	5.7	23.0
19	122	51.6	9.8	10.7	0.8	24.6	6.6	18.9
20	104	61.5	9.6	15.4	0.0	14.4	7.7	11.5
21	90	53.3	21.1	7.8	2.2	16.7	5.6	11.1
22	97	45.4	27.9	7.2	4.1	20.6	5.2	17.5

Table 3-2-2-15 Frequency of physical education (PE) class per week (male) (%)

Age group (yrs)	Subjects (n)	1 time	2 times	3 times	4 or more times	0 time
6	180	18.3	80.6	1.1	0.0	0.0
7	238	17.6	81.9	0.4	0.0	0.0
8	188	21.3	75.5	2.7	0.0	0.5
9	217	24.0	75.1	0.5	0.5	0.0
10	169	32.0	66.9	0.0	1.2	0.0
11	171	35.1	63.7	1.2	0.0	0.0
12	190	55.8	43.7	0.0	0.0	0.5
13	181	57.5	42.5	0.0	0.0	0.0
14	199	59.3	39.7	0.0	0.5	0.5
15	184	66.8	30.4	1.6	1.1	0.0
16	199	67.8	31.2	0.0	1.0	0.0
17	214	71.0	26.6	1.9	0.5	0.0
18	162	62.3	32.7	3.7	1.2	0.0
19	105	48.6	20.0	3.8	1.9	25.7
20	92	31.5	12.0	0.0	2.2	54.3
21	85	20.0	2.4	1.2	4.7	71.8
22	92	19.6	6.5	1.1	4.3	68.5

Table 3-2-2-16 Frequency of physical education (PE) class per week (female) (%)

Age group (yrs)	Subjects (n)	1 time	2 times	3 times	4 or more times	0 time
6	140	19.3	80.7	0.0	0.0	0.0
7	185	14.6	84.9	0.5	0.0	0.0
8	132	22.0	77.3	0.8	0.0	0.0
9	142	19.0	78.9	1.4	0.0	0.7
10	148	24.3	71.6	2.0	2.0	0.0
11	149	28.9	69.1	0.7	1.3	0.0
12	141	46.1	53.2	0.7	0.0	0.0
13	124	50.0	47.6	0.8	1.6	0.0
14	144	57.6	42.4	0.0	0.0	0.0
15	158	65.2	31.6	0.0	2.5	0.6
16	150	69.3	29.3	0.0	1.3	0.0
17	162	63.6	35.8	0.6	0.0	0.0
18	173	45.7	32.9	1.7	1.2	18.5
19	122	25.4	13.1	0.8	0.0	60.7
20	102	12.7	6.9	1.0	2.0	77.5
21	90	14.4	0.0	1.1	0.0	84.4
22	97	6.2	2.1	0.0	1.0	90.7

Table 3-2-2-17   Session participation in each physical education (PE) class (male) (%)

Age group(yrs)	Subjects who participated in PE classes (n)	1 session	2 sessions	More than 2 sessions
6	179	77.7	22.3	0.0
7	238	75.2	23.5	1.3
8	187	69.5	29.9	0.5
9	217	68.2	30.9	0.9
10	169	55.0	44.4	0.6
11	171	60.8	38.6	0.6
12	189	39.7	60.3	0.0
13	181	35.9	62.4	1.7
14	198	31.8	68.2	0.0
15	184	27.2	72.3	0.5
16	199	25.6	74.4	0.0
17	214	24.3	75.7	0.0
18	162	29.6	69.8	0.6
19	78	30.8	67.9	1.3
20	42	38.1	61.9	0.0
21	24	33.3	50.0	16.7
22	29	48.3	37.9	13.8

Table 3-2-2-18   Session participation in each physical education (PE) class (female) (%)

Age group(yrs)	Subjects who participated in PE classes (n)	1 session	2 sessions	More than 2 sessions
6	140	74.3	25.0	0.7
7	185	75.7	23.2	1.1
8	131	68.7	29.0	2.3
9	141	68.8	31.2	0.0
10	148	66.9	30.4	2.7
11	149	67.1	32.9	0.0
12	141	49.6	50.4	0.0
13	124	47.6	51.6	0.8
14	144	54.2	45.8	0.0
15	157	42.7	57.3	0.0
16	150	38.7	61.3	0.0
17	162	39.5	60.5	0.0
18	141	53.2	45.4	1.4
19	48	45.8	50.0	4.2
20	23	34.8	60.9	4.3
21	14	28.6	71.4	0.0
22	9	66.7	22.2	11.1

Table 3-2-2-19 Self-perceived Intensity of PE class (male) (%)

Age group (yrs)	Subjects who participated in PE classes (n)	Low	Moderate	High
6	178	29.8	51.1	19.1
7	235	25.1	56.2	18.7
8	185	26.5	49.2	24.3
9	217	23.0	58.1	18.9
10	169	18.9	56.2	24.9
11	171	23.4	51.5	25.1
12	188	14.9	55.9	29.3
13	181	16.6	62.4	21.0
14	198	17.7	65.2	17.2
15	184	17.4	64.1	18.5
16	198	24.2	59.1	16.7
17	213	21.1	61.0	17.8
18	162	24.7	59.9	15.4
19	77	26.0	58.4	15.6
20	41	19.5	75.6	4.9
21	24	12.5	79.2	8.3
22	29	13.8	65.5	20.7

Table 3-2-2-20 Self-perceived Intensity of PE class (female) (%)

Age group (yrs)	Subjects who participated in PE classes (n)	Low	Moderate	High
6	140	30.7	58.6	10.7
7	185	27.6	61.1	11.4
8	131	28.2	58.8	13.0
9	141	23.4	66.0	10.6
10	148	19.6	65.5	14.9
11	148	18.2	68.2	13.5
12	141	13.5	63.8	22.7
13	124	16.1	68.5	15.3
14	144	13.9	66.7	19.4
15	156	18.6	64.1	17.3
16	150	12.0	63.3	24.7
17	162	15.4	67.9	16.7
18	140	18.6	67.9	13.6
19	48	20.8	58.3	20.8
20	23	17.4	69.6	13.0
21	14	21.4	78.6	0.0
22	9	22.2	55.6	22.2

Table 3-2-2-21 Frequency of extracurricular physical exercise per week (male) (%)

Age group (yrs)	Subjects (n)	Never	Less than 1 time	1~2 times	3~4 times	5 times or more
6	180	26.1	25.0	42.2	6.1	0.6
7	238	23.5	19.3	45.8	9.2	2.1
8	188	25.0	19.7	44.1	6.9	4.3
9	217	18.4	17.1	41.0	18.4	5.1
10	170	21.2	17.1	42.4	14.1	5.3
11	171	24.0	15.2	44.4	11.1	5.3
12	190	25.3	12.1	39.5	14.7	8.4
13	181	21.5	13.8	40.3	10.5	13.8
14	199	24.1	15.6	42.2	7.5	10.6
15	184	23.9	14.1	37.5	12.0	12.5
16	200	23.5	14.5	29.0	20.0	13.0
17	214	18.7	16.8	37.9	14.5	12.1
18	163	20.9	17.8	36.8	11.7	12.9
19	106	17.9	17.0	42.5	18.9	3.8
20	92	20.7	15.2	31.5	28.3	4.3
21	85	38.8	8.2	29.4	14.1	9.4
22	93	28.0	23.7	26.9	12.9	8.6

Table 3-2-2-22 Frequency of extracurricular physical exercise per week (female) (%)

Age group (yrs)	Subjects (n)	Never	Less than 1 time	1~2 times	3~4 times	5 times or more
6	140	27.9	31.4	35.0	5.7	0.0
7	185	27.6	21.6	39.5	9.7	1.6
8	131	27.5	21.4	41.2	8.4	1.5
9	142	21.8	16.9	43.0	13.4	4.9
10	148	22.3	23.0	35.1	14.2	5.4
11	149	25.5	18.1	36.9	14.1	5.4
12	140	24.3	15.7	42.1	12.9	5.0
13	124	29.8	19.4	28.2	8.1	14.5
14	144	31.9	18.8	31.9	6.9	10.4
15	158	29.1	19.6	32.9	12.7	5.7
16	150	38.7	22.0	25.3	11.3	2.7
17	162	30.9	27.2	32.7	6.2	3.1
18	173	46.8	25.4	19.1	4.0	4.6
19	123	56.9	18.7	22.8	1.6	0.0
20	103	59.2	20.4	16.5	1.9	1.9
21	90	47.8	16.7	24.4	8.9	2.2
22	97	40.2	25.8	21.6	8.2	4.1

Table 3-2-2-23 Duration of each extracurricular physical exercise (male) (%)

Age group (yrs)	Participants (n)	Less than 30 mins	30 mins~1 hrs	1~2 hrs	2 hrs or more
6	133	21.1	55.6	22.6	0.8
7	182	20.9	52.2	24.7	2.2
8	141	24.8	49.6	24.8	0.7
9	177	16.4	47.5	32.2	4.0
10	134	19.4	47.0	23.9	9.7
11	130	13.8	49.2	29.2	7.7
12	142	7.0	40.1	33.1	19.7
13	142	14.1	30.3	35.2	20.4
14	150	12.0	36.0	32.0	20.0
15	140	11.4	24.3	35.0	29.3
16	153	4.6	34.6	36.6	24.2
17	174	10.3	27.6	34.5	27.6
18	128	11.7	29.7	31.3	27.3
19	87	9.2	26.4	37.9	26.4
20	73	8.2	32.9	42.5	16.4
21	52	7.7	21.2	40.4	30.8
22	66	13.6	30.3	36.4	19.7

Table 3-2-2-24 Duration of each extracurricular physical exercise (female) (%)

Age group (yrs)	Participants (n)	Less than 30 mins	30 mins~1 hrs	1~2 hrs	2 hrs or more
6	101	31.7	46.5	21.8	0.0
7	134	26.9	51.5	20.1	1.5
8	95	31.6	50.5	13.7	4.2
9	111	19.8	50.5	26.1	3.6
10	114	21.9	46.5	25.4	6.1
11	111	18.0	45.9	30.6	5.4
12	107	16.8	43.0	28.0	12.1
13	86	15.1	36.0	33.7	15.1
14	98	18.4	40.8	26.5	14.3
15	112	13.4	33.0	38.4	15.2
16	92	15.2	53.3	21.7	9.8
17	111	15.3	47.7	28.8	8.1
18	93	20.4	46.2	19.4	14.0
19	53	20.8	52.8	17.0	9.4
20	42	16.7	50.0	28.6	4.8
21	43	18.6	46.5	27.9	7.0
22	48	18.8	45.8	31.3	4.2

Table 3-2-2-25 Self-perceived Intensity of extracurricular physical exercise (male) (%)

Age group (yrs)	Participants (n)	Low	Moderate	High
6	132	19.7	52.3	28.0
7	181	22.1	51.9	26.0
8	140	26.4	51.4	22.1
9	177	19.2	56.5	24.3
10	134	14.9	56.7	28.4
11	130	15.4	53.8	30.8
12	142	13.4	56.3	30.3
13	142	11.3	53.5	35.2
14	150	16.0	50.0	34.0
15	140	5.0	54.3	40.7
16	152	9.9	44.7	45.4
17	174	6.9	36.8	56.3
18	129	11.6	41.9	46.5
19	87	5.7	51.7	42.5
20	73	5.5	49.3	45.2
21	52	7.7	50.0	42.3
22	65	10.8	49.2	40.0

Table 3-2-2-26 Self-perceived Intensity of extracurricular physical exercise (female) (%)

Age group (yrs)	Participants (n)	Low	Moderate	High
6	101	26.7	55.4	17.8
7	134	20.9	66.4	12.7
8	96	21.9	66.7	11.5
9	111	18.9	65.8	15.3
10	114	20.2	60.5	19.3
11	111	18.0	69.4	12.6
12	107	16.8	60.7	22.4
13	86	14.0	62.8	23.3
14	98	10.2	59.2	30.6
15	111	8.1	54.1	37.8
16	91	5.5	53.8	40.7
17	112	9.8	58.9	31.3
18	93	14.0	55.9	30.1
19	53	11.3	58.5	30.2
20	42	4.8	57.1	38.1
21	43	7.0	72.1	20.9
22	48	8.3	62.5	29.2

Table 3-2-2-27 Types of extracurricular physical exercise (male) (%)

Age group (yrs)	Participants (n)	Swimming	Track & field	Ball games	Gymnastics	Skating	Dancing	Rope Skipping	Martial arts, Taekwondo	Bicycling	Judo	Karate	Yoga	Others
6	133	36.1	11.3	26.3	3.8	8.3	5.3	9.0	11.3	40.6	4.5	3.0	0.0	11.3
7	181	42.0	8.3	43.1	7.7	5.5	2.8	8.3	7.2	38.1	3.3	3.3	0.0	14.4
8	141	48.2	9.9	39.0	5.0	9.2	2.1	10.6	8.5	36.2	5.0	2.8	0.0	8.5
9	177	40.1	24.9	60.5	9.0	5.6	1.7	10.7	6.2	22.0	2.3	4.0	1.1	15.3
10	134	30.6	20.9	60.4	7.5	7.5	2.2	9.0	7.5	24.6	4.5	0.7	0.0	16.4
11	130	31.5	25.4	70.8	5.4	3.8	1.5	3.1	3.8	22.3	3.8	3.1	0.0	20.0
12	142	25.4	21.1	69.7	2.8	2.8	1.4	5.6	4.9	26.1	4.2	0.7	0.0	18.3
13	142	25.4	27.5	60.6	2.1	6.3	0.0	4.9	2.1	17.6	0.7	1.4	0.0	22.5
14	151	19.2	24.5	61.6	1.3	2.0	0.7	2.0	1.3	15.9	1.3	0.7	0.0	17.2
15	140	20.0	27.9	72.9	0.7	4.3	1.4	2.9	2.1	23.6	1.4	0.0	0.0	10.7
16	153	17.0	32.7	75.2	3.3	1.3	2.6	3.9	3.3	21.6	0.0	0.0	0.0	16.3
17	174	17.8	36.8	72.4	0.6	1.7	1.1	1.1	2.3	19.0	0.6	1.7	0.0	18.4
18	129	15.5	46.5	68.2	3.9	0.8	1.6	3.9	1.6	13.2	2.3	1.6	0.0	17.8
19	87	28.7	35.6	71.3	2.3	0.0	3.4	1.1	5.7	23.0	0.0	2.3	1.1	19.5
20	73	19.2	34.2	63.0	0.0	0.0	1.4	1.4	6.8	30.1	0.0	0.0	1.4	20.5
21	51	9.8	33.3	72.5	2.0	5.9	2.0	2.0	3.9	19.6	2.0	0.0	2.0	17.6
22	66	18.2	33.3	63.6	3.0	0.0	4.5	0.0	7.6	12.1	3.0	0.0	0.0	18.2

Table 3-2-2-28 Types of extracurricular physical exercise (female) (%)

Age group (yrs)	Participants (n)	Swimming	Track & field	Ball games	Gymnastics	Skating	Dancing	Rope Skipping	Martial arts, Taekwondo	Bicycling	Judo	Karate	Yoga	Others
6	101	35.6	12.9	8.9	11.9	9.9	36.6	15.8	1.0	28.7	0.0	2.0	0.0	14.9
7	134	33.6	10.4	14.9	11.2	12.7	37.3	24.6	3.0	33.6	0.7	0.7	2.2	15.7
8	95	28.4	11.6	27.4	8.4	15.8	26.3	32.6	1.1	30.5	1.1	1.1	0.0	20.0
9	111	30.6	18.9	34.2	9.9	16.2	36.0	16.2	0.9	24.3	1.8	0.0	0.9	13.5
10	115	34.8	18.3	31.3	8.7	8.7	30.4	18.3	2.6	22.6	0.9	2.6	0.0	15.7
11	109	23.9	25.7	50.5	5.5	14.7	22.9	27.5	0.9	16.5	0.0	0.9	3.7	15.6
12	107	21.5	27.1	40.2	1.9	11.2	13.1	15.0	4.7	21.5	0.9	0.9	2.8	19.6
13	86	17.4	31.4	43.0	2.3	5.8	17.4	10.5	3.5	17.4	0.0	2.3	0.0	25.6
14	96	18.8	29.2	50.0	2.1	12.5	19.8	20.8	0.0	22.9	0.0	0.0	1.0	14.6
15	111	18.0	30.6	47.7	4.5	1.8	23.4	10.8	0.0	21.6	2.7	0.9	2.7	11.7
16	89	18.0	24.7	42.7	1.1	4.5	14.6	11.2	1.1	25.8	2.2	1.1	3.4	19.1
17	111	23.4	42.3	38.7	1.8	3.6	14.4	2.7	0.9	27.0	0.9	0.9	1.8	15.3
18	92	14.1	39.1	45.7	3.3	1.1	7.6	5.4	2.2	20.7	0.0	3.3	1.1	17.4
19	53	22.6	30.2	37.7	0.0	1.9	15.1	9.4	1.9	32.1	0.0	0.0	3.8	17.0
20	42	31.0	31.0	35.7	4.8	2.4	7.1	2.4	2.4	42.9	2.4	2.4	2.4	9.5
21	47	12.8	23.4	38.3	0.0	6.4	10.6	4.3	2.1	14.9	2.1	0.0	6.4	27.7
22	58	22.4	36.2	43.1	0.0	0.0	13.8	3.4	5.2	17.2	0.0	0.0	10.3	6.9

Table 3-2-2-29 Ball games frequently participated (male) (%)

Age group (yrs)	Participants (n)	Basketball	Volleyball	Football	Table tennis	Badminton	Tennis	Golf	Billiards	Others
6	35	14.3	2.9	60.0	2.9	11.4	2.9	0.0	0.0	5.7
7	77	19.5	3.9	36.4	15.6	19.5	2.6	0.0	0.0	2.6
8	54	29.6	5.6	18.5	14.8	24.1	1.9	0.0	0.0	5.6
9	107	32.7	7.5	20.6	15.9	16.8	2.8	0.9	0.0	2.8
10	81	22.2	2.5	18.5	25.9	19.8	2.5	0.0	0.0	8.6
11	92	37.0	5.4	22.8	15.2	16.3	1.1	1.1	0.0	1.1
12	99	40.4	1.0	19.2	17.2	14.1	2.0	2.0	0.0	4.0
13	86	50.0	5.8	8.1	10.5	18.6	1.2	0.0	0.0	5.8
14	93	37.6	2.2	20.4	14.0	19.4	3.2	0.0	0.0	3.2
15	102	53.9	5.9	10.8	7.8	17.6	2.0	0.0	0.0	2.0
16	115	52.2	2.6	17.4	7.0	13.9	0.9	0.0	0.0	6.1
17	126	54.8	1.6	15.9	7.9	13.5	0.0	0.0	0.8	5.6
18	88	53.4	4.5	21.6	5.7	12.5	0.0	0.0	0.0	2.3
19	61	55.7	0.0	21.3	4.9	8.2	0.0	0.0	0.0	9.8
20	46	39.1	2.2	26.1	4.3	19.6	2.2	0.0	0.0	6.5
21	37	56.8	2.7	13.5	0.0	13.5	2.7	0.0	0.0	10.8
22	42	40.5	4.8	14.3	7.1	16.7	2.4	0.0	0.0	14.3

Table 3-2-2-30 Ball games frequently participated (female) (%)

Age group (yrs)	Participants (n)	Basketball	Volleyball	Football	Table tennis	Badminton	Tennis	Golf	Billiards	Others
6	9	11.1	0.0	0.0	22.2	33.3	22.2	0.0	0.0	11.1
7	19	21.1	0.0	0.0	15.8	47.4	5.3	0.0	0.0	10.5
8	26	23.1	0.0	0.0	11.5	57.7	3.8	0.0	0.0	3.8
9	38	21.1	5.3	5.3	36.8	26.3	2.6	0.0	0.0	2.6
10	36	19.4	0.0	0.0	22.2	55.6	0.0	0.0	0.0	2.8
11	55	18.2	12.7	1.8	16.4	47.3	0.0	0.0	0.0	3.6
12	43	11.6	23.3	0.0	9.3	53.5	0.0	2.3	0.0	0.0
13	37	32.4	10.8	0.0	2.7	45.9	2.7	2.7	0.0	2.7
14	48	41.7	8.3	0.0	4.2	39.6	2.1	2.1	0.0	2.1
15	53	17.0	24.5	0.0	7.5	45.3	1.9	1.9	0.0	1.9
16	37	29.7	13.5	0.0	2.7	54.1	0.0	0.0	0.0	0.0
17	43	37.2	11.6	0.0	4.7	46.5	0.0	0.0	0.0	0.0
18	42	28.6	9.5	2.4	4.8	42.9	0.0	0.0	2.4	9.5
19	20	10.0	0.0	0.0	0.0	90.0	0.0	0.0	0.0	0.0
20	15	13.3	0.0	0.0	6.7	66.7	0.0	0.0	0.0	13.3
21	18	11.1	22.2	0.0	0.0	50.0	0.0	0.0	0.0	16.7
22	25	16.0	12.0	0.0	12.0	52.0	8.0	0.0	0.0	0.0

Table 3-2-2-31 Occurrence of diseases in the past five years (male) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	180	17.2	82.8
7	238	11.3	88.7
8	188	16.5	83.5
9	218	17.4	82.6
10	170	10.0	90.0
11	171	9.4	90.6
12	190	16.3	83.7
13	181	16.0	84.0
14	198	15.2	84.8
15	184	14.1	85.9
16	200	19.0	81.0
17	214	13.1	86.9
18	163	9.2	90.8
19	106	3.8	96.2
20	92	9.8	90.2
21	85	12.9	87.1
22	92	10.9	89.1

Table 3-2-2-32 Occurrence of diseases in the past five years (female) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	140	10.7	89.3
7	185	11.9	88.1
8	132	11.3	88.7
9	142	9.2	90.8
10	148	9.5	90.5
11	149	10.7	89.3
12	141	16.3	83.7
13	124	12.1	87.9
14	144	16.0	84.0
15	158	17.1	82.9
16	150	15.4	84.6
17	162	9.9	90.1
18	174	12.1	87.9
19	122	9.0	91.0
20	104	8.6	91.4
21	90	4.4	95.6
22	97	15.5	84.5

Table 3-2-2-33   Prevalence of diseases in the past five years (male) (%)

Age group (yrs)	Subjects diagnosed with disease (n)	Chronic bronchitis	Pneumonia	Asthma	Accidental injury	Anemia	Hepatitis	Others
6	31	16.1	32.3	19.4	3.2	0.0	0.0	25.8
7	27	29.6	37.0	14.8	11.1	3.7	0.0	29.6
8	31	19.4	25.8	9.7	3.2	3.2	0.0	41.9
9	38	15.8	21.1	21.1	13.2	2.6	0.0	42.1
10	17	35.3	11.8	11.8	11.8	0.0	5.9	41.2
11	16	6.3	6.3	31.3	18.8	6.3	0.0	37.5
12	31	6.5	9.7	16.1	32.3	9.7	0.0	32.3
13	29	10.3	0.0	20.7	34.5	0.0	0.0	48.3
14	30	13.3	0.0	13.3	20.0	0.0	0.0	63.3
15	26	11.5	3.8	11.5	19.2	3.8	0.0	65.4
16	38	15.8	15.8	10.5	28.9	2.6	0.0	39.5
17	28	14.3	3.6	10.7	25.0	3.6	0.0	50.0
18	15	13.3	6.7	13.3	46.7	0.0	0.0	46.7
19	4	25.0	0.0	0.0	75.0	0.0	0.0	25.0
20	9	11.1	0.0	0.0	44.4	11.1	22.2	22.2
21	11	18.2	9.1	9.1	27.3	0.0	0.0	36.4
22	10	10.0	10.0	0.0	50.0	10.0	0.0	30.0

Table 3-2-2-34   Diseases diagnosed in the past five years (female) (%)

Age group (yrs)	Subjects diagnosed with disease (n)	Chronic bronchitis	Pneumonia	Asthma	Accidental injury	Anemia	Hepatitis	Others
6	15	20.0	20.0	20.0	0.0	6.7	0.0	33.3
7	22	9.1	45.5	9.1	0.0	0.0	0.0	27.3
8	15	13.3	33.3	6.7	0.0	13.3	0.0	46.7
9	13	0.0	15.4	7.7	7.7	0.0	0.0	61.5
10	14	14.3	21.4	28.6	14.3	7.1	0.0	42.9
11	16	12.5	12.5	0.0	31.3	0.0	0.0	50.0
12	23	13.0	8.7	13.0	21.7	13.0	0.0	43.5
13	15	26.7	0.0	13.3	20.0	13.3	0.0	53.3
14	23	8.7	0.0	0.0	34.8	13.0	0.0	47.8
15	27	3.7	7.4	3.7	22.2	7.4	0.0	44.4
16	23	17.4	8.7	4.3	21.7	21.7	0.0	30.4
17	16	12.5	6.3	6.3	18.8	6.3	0.0	56.3
18	21	14.3	4.8	4.8	9.5	38.1	0.0	38.1
19	11	18.2	18.2	9.1	45.5	27.3	0.0	0.0
20	9	11.1	0.0	33.3	0.0	33.3	0.0	22.2
21	4	0.0	0.0	0.0	25.0	25.0	0.0	50.0
22	15	26.7	6.7	0.0	20.0	6.7	0.0	26.7

Table 3-2-2-35 Dally tooth brushing (male) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	180	93.3	6.7
7	238	91.2	8.8
8	188	93.6	6.4
9	217	95.4	4.6
10	170	94.1	5.9
11	171	95.9	4.1
12	190	95.3	4.7
13	181	97.8	2.2
14	199	96.5	3.5
15	184	98.4	1.6
16	200	98.5	1.5
17	214	98.6	1.4
18	163	97.5	2.5
19	106	100.0	0.0
20	92	94.6	5.4
21	85	97.6	2.4
22	93	98.9	1.1

Table 3-2-2-36 Dally tooth brushing (female) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	140	95.0	5.0
7	185	94.1	5.9
8	132	94.7	5.3
9	142	94.4	5.6
10	148	96.6	3.4
11	149	96.0	4.0
12	141	99.3	0.7
13	124	100.0	0.0
14	144	99.3	0.7
15	158	100.0	0.0
16	150	98.7	1.3
17	162	98.8	1.2
18	174	98.3	1.7
19	123	100.0	0.0
20	104	100.0	0.0
21	90	98.9	1.1
22	97	99.0	1.0

Table 3-2-2-37 Daily tooth flossing (male) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	180	7.2	92.8
7	238	5.0	95.0
8	188	5.9	94.1
9	217	7.4	92.6
10	170	7.6	92.4
11	171	3.5	96.5
12	190	10.5	89.5
13	180	10.6	89.4
14	199	7.0	93.0
15	184	7.1	92.9
16	200	4.5	95.5
17	214	7.5	92.5
18	163	8.6	91.4
19	106	4.7	95.3
20	92	6.5	93.5
21	85	3.5	96.5
22	93	4.3	95.7

Table 3-2-2-38 Daily tooth flossing (female) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	140	5.7	94.3
7	185	7.0	93.0
8	131	8.4	91.6
9	142	3.5	96.5
10	148	6.8	93.2
11	149	7.4	92.6
12	141	8.5	91.5
13	123	9.8	90.2
14	144	7.6	92.4
15	158	10.1	89.9
16	150	9.3	90.7
17	162	4.3	95.7
18	174	9.2	90.8
19	123	13.8	86.2
20	104	18.3	81.7
21	90	17.8	82.2
22	97	9.3	90.7

Table 3-2-2-39 Visiting a clinic for dental examination in the past 12 months (male) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	180	39.4	60.6
7	237	60.8	39.2
8	188	68.1	31.9
9	217	63.1	36.9
10	170	48.2	51.8
11	171	31.6	68.4
12	189	31.7	68.3
13	181	27.1	72.9
14	199	23.1	76.9
15	183	34.4	65.6
16	200	23.0	77.0
17	214	27.6	72.4
18	163	29.4	70.6
19	106	23.6	76.4
20	92	28.3	71.7
21	85	22.4	77.6
22	93	29.0	71.0

Table 3-2-2-40 Visiting a clinic for dental examination in the past 12 months (female) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	140	55.7	44.3
7	185	65.9	34.1
8	132	66.7	33.3
9	142	60.6	39.4
10	148	45.3	54.7
11	149	29.5	70.5
12	141	36.9	63.1
13	124	34.7	65.3
14	144	27.8	72.2
15	158	40.5	59.5
16	150	38.7	61.3
17	162	35.2	64.8
18	174	36.2	63.8
19	123	32.5	67.5
20	104	38.5	61.5
21	90	51.1	48.9
22	97	33.0	67.0

Table 3-2-2-41 Occurrence of dental carles (male) (%)

Age group (yrs)	Subjects (n)	Yes	No	Don't know
6	180	27.2	29.4	43.3
7	237	33.8	26.6	39.7
8	188	43.1	24.5	32.4
9	218	39.9	28.0	32.1
10	169	30.8	33.1	36.1
11	170	26.5	30.6	42.9
12	189	11.1	36.5	52.4
13	180	9.4	37.2	53.3
14	199	11.1	31.7	57.3
15	183	10.9	36.1	53.0
16	200	15.0	29.0	56.0
17	214	19.2	28.0	52.8
18	163	17.8	32.5	49.7
19	106	16.0	32.1	51.9
20	92	20.7	31.5	47.8
21	85	15.3	25.9	58.8
22	93	24.7	33.3	41.9

Table 3-2-2-42 Occurrence of dental carles (female) (%)

Age group (yrs)	Subjects (n)	Yes	No	Don't know
6	140	35.0	35.0	30.0
7	185	43.8	25.4	30.8
8	132	32.6	35.6	31.8
9	142	33.8	31.7	34.5
10	148	31.8	21.6	46.6
11	149	21.5	26.2	52.3
12	141	19.1	40.4	40.4
13	124	13.7	30.6	55.6
14	144	16.7	25.7	57.6
15	158	17.7	41.8	40.5
16	150	32.0	34.0	34.0
17	162	27.8	28.4	43.8
18	173	33.5	23.1	43.4
19	123	29.3	28.5	42.3
20	104	36.5	24.0	39.4
21	90	27.8	27.8	44.4
22	97	34.0	21.6	44.3

Table 3-2-2-43   Treatment of dental caries at a clinic (male) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	49	73.5	26.5
7	79	68.4	31.6
8	81	76.5	23.5
9	87	77.0	23.0
10	52	84.6	15.4
11	44	65.9	34.1
12	21	57.1	42.9
13	17	70.6	29.4
14	22	81.8	18.2
15	20	65.0	35.0
16	30	56.7	43.3
17	41	46.3	53.7
18	29	69.0	31.0
19	17	29.4	70.6
20	19	57.9	42.1
21	13	30.8	69.2
22	23	52.2	47.8

Table 3-2-2-44   Treatment of dental caries at a clinic (female) (%)

Age group (yrs)	Subjects (n)	Yes	No
6	49	69.4	30.6
7	81	76.5	23.5
8	43	86.0	14.0
9	48	83.3	16.7
10	47	83.0	17.0
11	32	81.3	18.8
12	26	65.4	34.6
13	17	47.1	52.9
14	24	62.5	37.5
15	28	78.6	21.4
16	48	75.0	25.0
17	45	64.4	35.6
18	58	72.4	27.6
19	36	69.4	30.6
20	38	60.5	39.5
21	25	72.0	28.0
22	33	63.6	36.4

Table 3-2-2-45 Frequency of breakfast per week (male) (%)

Age group (yrs)	Subjects (n)	0 day	1~2 days	3~5 days	6 or more days
6	180	1.1	1.7	6.7	90.6
7	236	0.4	1.7	3.8	94.1
8	187	0.5	1.6	5.3	92.5
9	217	0.0	0.9	8.3	90.8
10	170	1.2	0.6	11.8	86.5
11	171	0.0	2.3	9.9	87.7
12	190	3.7	4.2	20.5	71.6
13	181	2.2	6.1	18.8	72.9
14	198	4.5	8.6	24.2	62.6
15	182	1.1	8.2	34.6	56.0
16	200	2.0	5.0	34.5	58.5
17	214	1.4	4.7	35.0	58.9
18	163	4.9	6.1	33.1	55.8
19	106	2.8	9.4	37.7	50.0
20	92	2.2	14.1	38.0	45.7
21	85	4.7	7.1	36.5	51.8
22	93	3.2	16.1	43.0	37.6

Table 3-2-2-46 Frequency of having breakfast per week (female) (%)

Age group (yrs)	Subjects (n)	0 day	1~2 days	3~5 days	6 or more days
6	139	1.4	0.0	7.2	91.4
7	185	1.1	1.6	5.4	91.9
8	132	0.0	2.3	3.8	93.9
9	141	0.0	0.0	9.2	90.8
10	146	0.7	2.7	8.9	87.7
11	149	2.7	4.0	17.4	75.8
12	141	0.7	7.8	21.3	70.2
13	123	3.3	11.4	20.3	65.0
14	143	3.5	14.0	32.2	50.3
15	158	0.6	8.2	32.3	58.9
16	149	0.7	4.7	34.9	59.7
17	162	1.2	6.8	32.7	59.3
18	171	2.3	5.8	37.4	54.4
19	123	1.6	8.1	40.7	49.6
20	104	1.0	15.4	29.8	53.8
21	90	0.0	14.4	37.8	47.8
22	97	4.1	13.4	43.3	39.2

Table 3-2-2-47 Frequency of eating out per week (male) (%)

Age group (yrs)	Subjects (n)	0 meal	1~3 meals	4~6 meals	7~9 meals	10 meals or more
6	180	8.9	68.9	16.1	3.3	2.8
7	238	12.6	68.1	14.7	2.1	2.5
8	188	13.8	67.6	11.7	1.6	5.3
9	217	11.5	53.9	20.7	4.6	9.2
10	169	11.2	62.7	11.8	3.6	10.7
11	171	13.5	64.9	11.1	4.1	6.4
12	189	11.1	59.3	15.9	4.2	9.5
13	181	12.2	55.2	19.9	5.0	7.7
14	199	7.5	58.8	21.6	3.5	8.5
15	184	6.0	51.1	21.7	9.8	11.4
16	199	8.5	52.8	23.1	8.5	7.0
17	213	7.0	53.1	23.9	9.4	6.6
18	163	11.7	51.5	23.3	6.7	6.7
19	106	10.4	56.6	18.9	10.4	3.8
20	92	5.4	47.8	26.1	10.9	9.8
21	85	4.7	58.8	25.9	8.2	2.4
22	93	4.3	55.9	18.3	11.8	9.7

Table 3-2-2-48 Frequency of eating out per week (female) (%)

Age group (yrs)	Subjects (n)	0 meal	1~3 meals	4~6 meals	7~9 meals	10 meals or more
6	140	13.6	67.9	12.1	1.4	5.0
7	185	10.3	67.6	16.2	2.2	3.8
8	132	12.1	72.7	10.6	0.0	4.5
9	142	9.2	62.7	20.4	3.5	4.2
10	148	16.2	66.9	8.8	2.7	5.4
11	149	19.5	59.7	11.4	4.7	4.7
12	140	15.7	57.1	17.9	2.9	6.4
13	124	8.9	57.3	17.7	3.2	12.9
14	144	14.6	53.5	20.1	6.3	5.6
15	158	11.4	57.6	19.6	5.7	5.7
16	150	9.3	61.3	15.3	4.7	9.3
17	162	16.7	48.8	22.2	4.9	7.4
18	173	8.1	48.6	28.9	7.5	6.9
19	122	4.1	50.8	23.0	12.3	9.8
20	104	5.8	53.8	24.0	4.8	11.5
21	89	1.1	48.3	28.1	14.6	7.9
22	97	4.1	51.5	29.9	7.2	7.2

Table 3-2-2-49 Frequency of consuming high-fat and high-sugary snacks per week (male) (%)

Age group (yrs)	Subjects (n)	0 time	1~2 times	3~5 times	6 or more times
6	179	0.6	42.5	42.5	14.5
7	236	3.0	44.1	40.7	12.3
8	188	3.7	44.1	32.4	19.7
9	218	3.2	39.9	39.0	17.9
10	170	3.5	41.8	40.0	14.7
11	171	1.2	43.9	37.4	17.5
12	190	5.8	44.2	32.1	17.9
13	181	2.2	32.0	40.9	24.9
14	199	3.0	32.2	41.2	23.6
15	184	2.7	35.9	28.8	32.6
16	199	2.0	32.7	37.7	27.6
17	214	2.3	36.4	35.5	25.7
18	163	2.5	36.8	38.7	22.1
19	105	1.9	43.8	34.3	20.0
20	92	3.3	35.9	32.6	28.3
21	85	3.5	45.9	32.9	17.6
22	93	2.2	26.9	49.5	21.5

Table 3-2-2-50 Frequency of consuming high-fat and high-sugary snacks per week (female) (%)

Age group (yrs)	Subjects (n)	0 time	1~2 times	3~5 times	6 or more times
6	139	2.2	43.9	36.7	17.3
7	184	1.1	42.9	39.1	16.8
8	132	2.3	45.5	39.4	12.9
9	142	0.0	43.7	35.2	21.1
10	148	1.4	50.0	37.2	11.5
11	148	2.7	37.8	37.8	21.6
12	141	1.4	36.2	46.1	16.3
13	124	0.8	32.3	41.1	25.8
14	144	0.7	26.4	39.6	33.3
15	158	1.9	33.5	44.3	20.3
16	150	2.0	29.3	45.3	23.3
17	162	0.6	29.0	43.2	27.2
18	174	1.7	29.9	41.4	27.0
19	123	0.0	30.1	47.2	22.8
20	104	1.0	33.7	45.2	20.2
21	90	3.3	30.0	41.1	25.6
22	97	1.0	36.1	45.4	17.5

3. Anthropometric Measurements

Table 3-2-3-1 Height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	120.1	5.1	111.0	114.4	116.7	120.0	123.8	126.4	130.0
	7	238	125.0	5.1	115.4	118.8	121.3	125.1	129.0	131.6	134.0
	8	187	131.1	5.8	120.1	124.0	127.1	131.0	134.8	138.4	141.5
	9	218	136.6	6.5	124.4	128.8	132.7	136.3	140.7	144.4	149.4
	10	170	142.1	6.5	130.3	135.1	137.9	141.5	145.7	149.4	156.2
	11	171	147.4	7.7	135.0	138.6	141.6	147.4	152.5	157.7	161.4
	12	190	156.3	7.8	141.4	145.6	150.7	156.5	161.6	166.9	169.7
	13	181	162.8	7.8	147.5	151.5	158.5	163.2	168.4	172.4	175.3
	14	199	167.9	6.5	154.7	159.3	163.6	168.1	172.0	175.1	181.5
	15	184	169.9	6.1	158.5	162.0	165.4	169.9	174.6	177.6	180.0
	16	200	171.3	5.8	160.7	163.5	167.5	171.6	175.4	178.4	183.0
	17	214	172.3	6.0	161.4	164.5	168.4	172.5	176.1	180.7	183.7
	18	163	171.1	6.2	160.4	163.4	166.3	171.7	175.7	179.0	183.8
	19	106	172.5	5.9	162.9	165.2	168.2	171.9	176.3	180.6	183.4
	20	92	172.0	5.7	161.0	164.8	169.0	171.4	175.7	178.5	182.2
	21	85	171.7	6.5	160.7	162.7	168.1	171.4	175.5	179.3	184.2
	22	93	172.3	5.1	162.2	167.5	168.5	172.0	176.2	178.8	184.8
F	6	140	117.6	5.1	108.5	111.0	114.0	117.6	121.2	124.5	127.5
	7	185	123.9	5.4	113.6	116.5	120.4	124.4	127.2	131.1	133.5
	8	132	129.8	6.7	119.1	123.2	125.5	129.7	133.4	138.5	142.4
	9	142	135.9	6.8	123.2	127.4	131.1	135.7	141.0	145.1	149.5
	10	148	143.1	7.2	128.2	133.7	138.5	143.2	147.5	152.7	156.7
	11	149	150.9	6.6	136.8	142.4	147.4	151.2	154.9	159.4	162.3
	12	141	154.1	7.1	140.4	143.9	149.6	154.4	158.5	163.3	167.6
	13	124	157.1	5.3	148.0	150.8	153.5	157.0	160.4	164.4	167.2
	14	144	159.1	5.2	149.5	152.2	155.6	159.1	162.6	166.5	168.2
	15	158	159.4	5.7	148.5	152.5	155.7	159.8	163.1	167.1	170.1
	16	150	159.9	5.9	148.3	153.1	156.1	159.6	164.0	166.9	173.3
	17	162	159.2	5.5	148.0	152.2	155.2	159.5	162.6	165.8	170.5
	18	174	160.4	5.1	151.0	153.4	157.3	160.5	163.8	165.8	169.8
	19	123	159.4	5.8	146.4	152.4	155.4	159.2	163.3	166.6	170.3
	20	104	160.1	4.9	150.5	153.6	156.1	160.3	163.7	166.6	168.5
	21	90	160.3	4.9	150.8	154.6	157.4	160.2	163.8	166.6	170.5
	22	97	159.6	4.2	151.6	153.2	157.4	159.9	162.3	164.1	168.8

Table 3-2-3-2   Sitting height (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	66.1	2.54	61.6	62.7	64.3	66.0	67.9	69.5	71.3
	7	238	68.0	2.80	62.7	64.4	66.0	68.0	70.0	71.5	73.0
	8	188	70.6	3.27	65.2	66.5	68.5	70.3	72.9	74.4	76.1
	9	218	72.6	3.29	66.3	68.7	70.5	72.6	74.6	76.9	78.5
	10	170	74.7	3.22	69.3	71.2	73.0	74.5	76.5	78.5	80.9
	11	170	77.0	4.04	70.4	72.0	74.2	77.0	79.3	82.1	86.6
	12	190	81.2	4.25	72.5	76.0	78.3	81.3	84.3	86.6	88.7
	13	181	85.3	4.51	76.5	79.2	82.1	86.1	88.0	90.6	93.0
	14	199	88.0	3.69	80.6	83.1	85.6	88.1	90.3	93.0	94.7
	15	184	89.6	3.49	83.0	84.7	87.6	89.5	92.0	93.8	96.4
	16	200	91.1	3.24	85.3	86.8	88.4	91.0	93.5	95.4	97.2
	17	214	91.4	3.09	85.6	87.2	89.4	91.5	93.8	95.2	96.5
	18	163	91.1	3.19	85.3	86.6	89.0	91.2	93.7	94.5	96.9
	19	106	91.6	3.32	86.4	87.4	89.1	91.1	94.1	96.2	97.5
	20	92	91.9	3.27	84.7	88.2	90.4	91.6	93.5	96.4	98.2
	21	85	91.1	3.57	85.1	87.2	88.9	90.7	93.2	95.2	98.2
	22	93	91.1	2.71	86.7	88.1	89.3	90.6	92.8	95.2	97.2
F	6	140	64.3	2.80	59.0	60.7	62.5	64.4	66.2	67.9	69.0
	7	185	67.2	3.22	62.3	63.6	65.5	67.1	68.7	70.2	72.2
	8	132	69.6	2.97	64.4	66.0	67.5	69.4	71.7	73.8	75.0
	9	142	72.0	3.46	65.8	68.0	69.5	72.0	74.0	76.6	79.4
	10	148	75.6	4.16	67.8	70.8	72.7	75.4	77.8	81.5	84.5
	11	149	79.9	3.81	71.2	74.7	77.5	80.2	82.5	85.0	86.7
	12	141	81.6	4.01	74.0	76.0	78.9	81.9	84.5	86.6	88.8
	13	123	83.9	3.10	77.8	79.9	82.1	83.7	85.6	87.4	90.8
	14	144	84.9	2.88	79.2	81.3	83.2	84.7	87.0	88.6	90.1
	15	158	85.5	2.98	80.5	81.4	83.5	85.6	87.4	89.1	91.4
	16	149	86.3	3.12	80.7	82.6	84.1	85.8	88.2	90.7	92.7
	17	162	86.1	3.01	80.2	82.3	84.0	86.4	88.0	90.0	91.4
	18	174	86.4	2.80	80.7	83.1	84.5	86.6	88.2	89.6	92.1
	19	123	85.8	3.01	81.0	82.4	83.4	85.5	88.0	89.9	91.8
	20	104	86.6	2.70	81.2	82.9	84.7	86.7	88.4	90.0	91.0
	21	90	86.5	2.70	81.4	83.0	84.7	86.3	88.3	90.0	92.9
	22	97	86.3	2.28	81.2	83.0	84.8	86.3	88.2	89.2	90.1

Table 3-2-3-3 Foot length (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	18.5	1.00	16.7	17.2	18.0	18.6	19.3	19.6	20.3
	7	238	19.3	1.08	17.4	18.1	18.6	19.2	20.0	20.6	21.4
	8	188	20.3	1.30	18.1	18.5	19.4	20.3	21.1	22.0	23.1
	9	218	21.1	1.29	18.6	19.5	20.3	21.1	22.0	22.9	23.6
	10	170	22.1	1.26	20.0	20.4	21.2	22.1	22.8	23.7	24.5
	11	171	22.8	1.35	20.3	21.0	22.0	23.0	23.7	24.5	25.0
	12	190	24.0	1.28	21.5	22.4	23.2	24.0	24.9	25.7	26.4
	13	181	24.6	1.21	22.2	23.1	23.8	24.6	25.5	26.2	26.7
	14	199	25.2	1.14	23.3	23.7	24.2	25.2	26.0	26.6	27.5
	15	184	25.2	1.22	23.1	23.4	24.4	25.3	26.0	26.6	27.7
	16	200	25.2	1.21	23.0	23.6	24.4	25.1	26.0	26.6	27.8
	17	214	25.4	1.07	23.4	24.0	24.6	25.3	26.0	26.8	27.5
	18	163	25.2	1.20	22.7	23.7	24.2	25.1	26.0	26.7	27.4
	19	106	25.3	1.05	23.5	24.0	24.3	25.3	26.0	26.6	27.5
	20	91	25.3	1.16	23.1	23.7	24.4	25.3	26.0	26.4	28.1
	21	85	25.5	1.34	23.2	23.7	24.5	25.5	26.4	27.0	28.2
	22	93	25.5	1.17	23.1	24.0	25.0	25.4	26.1	26.8	28.4
F	6	139	18.1	0.96	16.2	16.9	17.4	18.1	18.8	19.3	20.0
	7	182	19.1	1.07	17.1	17.8	18.3	19.1	19.8	20.5	21.1
	8	131	20.0	1.11	18.0	18.7	19.1	19.9	20.8	21.5	22.5
	9	142	20.8	1.20	18.7	19.2	20.0	21.0	21.8	22.4	22.7
	10	147	21.7	1.26	19.4	20.1	21.0	21.7	22.6	23.3	23.9
	11	149	22.6	1.07	20.3	21.1	21.8	22.6	23.3	23.9	24.5
	12	141	22.8	1.21	20.4	21.2	22.0	22.7	23.5	24.3	25.0
	13	123	22.8	0.96	21.2	21.5	22.1	22.8	23.5	24.1	24.5
	14	144	23.1	1.03	21.0	21.8	22.4	23.1	23.8	24.4	25.0
	15	157	23.0	1.11	20.8	21.5	22.2	23.1	23.6	24.5	24.9
	16	150	23.1	1.17	21.1	21.7	22.2	23.0	24.0	24.6	25.3
	17	161	22.9	1.07	21.0	21.6	22.1	22.8	23.6	24.3	24.9
	18	173	23.1	0.99	21.4	22.0	22.4	23.1	23.8	24.3	25.2
	19	123	22.8	1.05	20.9	21.5	22.0	23.0	23.6	24.0	24.6
	20	104	23.0	0.97	21.4	21.7	22.3	23.1	23.8	24.1	24.6
	21	90	23.1	0.91	21.0	22.2	22.5	23.2	23.8	24.2	24.8
	22	97	22.9	0.94	21.0	21.8	22.3	22.9	23.6	24.3	24.6

Table 3-2-3-4 Weight (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	23.0	4.91	17.1	18.5	19.9	21.7	24.3	29.6	34.5
	7	238	25.4	5.41	18.7	19.8	21.4	24.0	27.8	33.4	37.5
	8	188	29.5	7.49	20.5	22.7	24.3	27.1	32.5	39.8	51.5
	9	218	33.5	8.10	22.8	24.7	27.7	32.0	37.3	45.6	53.7
	10	170	38.2	9.58	25.9	28.2	31.2	35.6	44.9	52.0	59.1
	11	170	42.3	11.55	26.6	29.1	34.2	39.0	49.6	59.0	66.3
	12	190	48.4	11.48	31.1	33.8	39.9	46.5	55.8	63.5	73.4
	13	181	54.4	13.11	35.1	39.8	45.7	52.0	61.8	72.6	83.8
	14	199	57.3	13.15	38.6	43.1	47.4	53.9	65.4	75.8	87.7
	15	183	61.1	14.27	43.8	46.7	51.6	58.3	66.2	80.4	91.6
	16	200	64.0	13.23	46.5	50.7	54.5	60.7	70.9	82.9	97.0
	17	214	63.2	12.45	46.4	50.2	54.8	60.7	68.4	81.2	94.3
	18	163	62.3	10.91	46.8	49.6	54.1	60.7	67.9	76.4	88.7
	19	106	65.2	10.85	50.5	53.2	57.5	63.0	71.4	78.8	91.8
	20	91	64.9	12.92	45.6	52.4	56.4	64.0	68.4	81.7	106.0
	21	85	66.9	11.70	50.2	53.8	58.9	64.1	74.1	84.4	92.9
	22	93	64.3	10.04	50.3	52.0	55.9	62.0	72.6	79.5	81.4
F	6	140	21.1	3.59	15.4	17.2	18.6	20.7	22.5	26.1	28.6
	7	185	24.7	5.27	17.3	19.1	21.3	23.8	27.1	32.2	36.2
	8	132	28.2	6.25	20.2	21.6	23.8	26.8	31.0	36.1	44.0
	9	142	31.9	7.36	21.8	24.3	26.9	30.8	35.4	42.4	48.6
	10	148	36.7	9.28	24.8	26.9	30.6	34.6	41.5	47.9	58.9
	11	149	43.4	9.59	28.7	32.3	35.9	42.7	50.0	56.5	63.2
	12	141	45.8	9.87	31.3	33.7	39.0	45.1	51.5	57.0	67.8
	13	124	50.5	10.36	35.2	38.3	43.6	48.5	56.3	64.3	73.8
	14	143	52.5	9.41	36.9	41.5	46.3	51.6	57.6	65.2	71.6
	15	158	53.7	9.31	39.7	43.7	47.1	52.4	59.1	66.9	74.1
	16	150	54.4	9.08	41.2	44.2	48.1	52.5	59.0	66.4	76.0
	17	162	53.4	9.95	41.0	43.3	46.8	51.5	56.7	66.9	77.5
	18	174	54.3	8.35	41.0	44.1	48.2	53.7	59.6	64.2	71.2
	19	123	53.3	8.66	40.6	43.3	46.8	51.7	57.4	65.1	73.3
	20	103	53.3	8.55	41.4	43.6	46.1	52.3	58.5	63.0	71.5
	21	90	53.5	8.11	41.3	45.4	47.7	52.5	57.5	63.3	77.7
	22	97	52.4	6.99	40.4	43.7	47.5	51.7	55.6	63.0	68.3

Table 3-2-3-5 BMI

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	15.8	2.27	13.2	13.8	14.4	15.2	16.6	18.9	21.2
	7	238	16.1	2.64	13.1	13.6	14.4	15.3	17.1	19.8	23.0
	8	187	17.0	3.18	13.2	14.1	14.9	15.9	18.0	22.1	25.1
	9	218	17.8	3.23	13.5	14.2	15.4	17.1	19.6	22.7	25.1
	10	170	18.7	3.61	14.1	14.7	16.0	17.7	21.5	24.0	26.5
	11	170	19.2	3.93	13.7	14.8	15.9	18.3	22.0	24.9	27.6
	12	190	19.7	3.87	14.3	15.4	16.8	19.0	21.6	25.3	28.7
	13	181	20.4	4.11	15.3	16.2	17.4	19.2	22.7	25.8	28.1
	14	199	20.2	3.92	15.1	16.1	17.3	19.1	22.8	26.0	29.7
	15	183	21.1	4.54	15.6	16.7	18.0	20.1	23.3	26.5	31.9
	16	200	21.8	4.20	16.2	17.5	19.0	20.7	23.5	28.5	32.1
	17	214	21.2	3.87	16.3	17.2	18.5	20.5	22.9	26.9	30.3
	18	163	21.2	3.43	16.0	17.7	18.5	20.9	22.9	26.4	29.7
	19	106	21.9	3.54	16.8	18.0	19.3	21.2	23.7	27.1	30.4
	20	91	21.9	3.85	17.0	18.1	19.5	21.2	22.9	26.5	32.9
	21	85	22.7	3.75	17.5	18.9	20.1	21.7	24.5	26.2	32.4
	22	93	21.6	2.95	17.3	18.0	19.2	21.2	24.3	25.9	27.4
F	6	140	15.2	1.83	12.8	13.5	14.1	14.8	15.8	17.2	19.0
	7	185	16.0	2.54	12.8	13.5	14.2	15.2	17.1	20.0	22.2
	8	132	16.7	3.00	12.8	13.4	14.6	15.7	17.9	21.0	24.5
	9	142	17.1	2.81	13.1	14.1	15.0	16.4	18.6	21.0	23.9
	10	148	17.8	3.28	13.8	14.6	15.3	16.7	19.7	22.8	25.3
	11	149	18.9	3.37	14.1	15.2	16.6	18.4	21.0	23.3	27.0
	12	141	19.2	3.33	14.9	15.7	16.9	18.3	20.9	23.3	26.4
	13	124	20.4	3.59	15.1	16.6	17.8	19.5	22.3	25.9	28.7
	14	143	20.7	3.44	15.6	16.9	18.7	20.0	22.4	25.7	27.3
	15	158	21.1	3.33	16.6	17.6	18.9	20.6	22.7	25.2	30.0
	16	150	21.3	3.24	16.2	18.0	19.1	20.7	22.8	25.9	27.9
	17	162	21.1	3.76	16.6	17.8	18.9	20.1	22.1	25.4	30.6
	18	174	21.1	3.09	16.1	17.7	19.0	20.7	22.6	25.2	27.9
	19	123	21.0	3.22	16.6	17.4	18.8	20.3	22.5	26.3	29.2
	20	103	20.8	3.21	16.3	17.2	18.4	20.3	22.5	24.7	27.3
	21	90	20.8	2.92	16.9	17.8	18.9	20.0	22.0	24.0	28.3
	22	97	20.5	2.34	15.9	17.7	19.0	20.1	22.2	24.1	25.6

Table 3-2-3-6   Weight status (%)

Gender	Age group (yrs)	n	Underweight	Slightly underweight	Normal	Overweight	Obese
M	6	180	2.5	37.2	38.7	1.6	20.0
	7	238	3.9	44.2	30.2	5.3	16.4
	8	187	4.0	29.9	31.7	5.1	29.3
	9	218	3.9	28.4	37.5	7.0	23.2
	10	169	1.9	29.6	36.8	5.5	26.2
	11	170	6.1	38.7	32.5	6.0	16.7
	12	190	8.3	40.6	26.6	2.7	21.8
	13	181	18.6	41.0	20.2	6.8	13.4
	14	198	20.2	40.6	16.0	5.3	17.9
	15	181	16.7	47.1	15.0	6.3	14.9
	16	200	10.1	40.9	28.8	5.6	14.6
	17	214	7.9	46.1	26.9	3.7	15.4
	18	163	14.9	32.8	24.2	10.4	17.7
	19	106	12.7	32.8	29.3	8.3	16.9
	20	91	6.3	37.4	29.1	2.6	24.6
	21	85	8.5	12.2	38.9	13.7	26.7
	22	93	3.1	24.3	31.8	3.4	37.4
	Total	**2864**	**8.9**	**37.0**	**28.7**	**5.5**	**19.9**
F	6	140	5.0	33.8	43.0	4.3	13.9
	7	185	2.9	39.9	37.4	3.2	16.6
	8	132	2.8	31.4	32.3	11.8	21.7
	9	142	7.4	35.7	35.6	4.4	16.9
	10	148	6.7	31.2	39.6	2.0	20.5
	11	149	2.7	21.5	46.1	12.2	17.5
	12	141	6.9	39.1	30.7	8.1	15.2
	13	124	3.7	33.5	47.9	0.3	14.6
	14	143	3.2	22.0	39.8	14.7	20.3
	15	158	8.3	29.3	40.7	7.5	14.2
	16	150	6.3	33.3	36.6	10.5	13.3
	17	162	9.0	41.9	37.5	1.0	10.6
	18	174	8.7	47.0	22.5	12.6	9.2
	19	123	7.9	47.4	27.3	7.6	9.8
	20	103	8.1	49.8	27.3	3.3	11.5
	21	90	11.0	42.9	37.7	2.3	6.1
	22	97	17.1	39.4	27.8	5.8	9.9
	Total	**2361**	**6.6**	**36.1**	**36.1**	**6.7**	**14.5**

Table 3-2-3-7   Chest circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	57.8	5.12	51.6	53.0	54.6	57.0	59.6	64.0	70.0
	7	238	59.5	5.78	52.4	54.3	56.0	58.0	61.5	67.5	74.0
	8	188	63.0	7.35	53.8	56.5	58.3	61.0	65.2	73.0	81.1
	9	217	66.4	7.59	56.3	58.3	61.3	64.9	69.9	77.1	83.7
	10	170	69.8	8.82	57.9	60.6	63.2	67.6	75.9	82.3	88.4
	11	171	72.5	10.19	59.5	61.0	64.6	69.5	78.7	86.8	94.5
	12	190	76.0	9.47	60.9	64.4	69.0	74.9	82.3	88.3	95.3
	13	181	79.3	9.29	64.9	68.8	73.0	77.5	84.4	92.3	99.5
	14	199	80.8	8.30	67.5	71.0	75.1	79.5	85.2	92.6	100.5
	15	184	83.8	9.30	70.7	73.7	77.7	82.1	87.6	95.5	104.0
	16	199	85.5	8.26	73.5	76.7	79.8	83.5	89.7	97.2	104.7
	17	214	85.4	7.97	73.3	76.6	80.0	84.0	88.8	96.4	104.5
	18	163	85.0	7.24	73.0	77.0	80.0	84.0	89.0	93.2	103.3
	19	106	87.9	7.00	78.0	79.8	82.1	87.3	91.0	99.0	105.0
	20	92	87.3	8.30	76.3	78.5	81.6	85.9	90.6	96.5	109.5
	21	85	89.0	8.33	80.0	82.1	83.8	86.0	92.3	100.1	111.0
	22	93	86.9	6.33	76.0	80.0	82.1	85.8	91.2	96.4	98.1
F	6	140	55.3	4.03	49.7	50.7	53.0	55.0	57.3	60.7	63.5
	7	184	58.5	5.70	50.8	52.5	54.8	57.5	60.3	65.7	74.2
	8	132	61.1	6.63	51.3	54.0	56.4	59.0	64.7	70.8	76.5
	9	142	64.3	6.80	54.6	56.8	59.5	63.3	68.0	72.6	81.0
	10	148	68.0	8.03	57.0	59.5	62.0	65.8	72.5	79.4	85.7
	11	149	73.0	7.89	59.8	63.3	67.8	72.3	77.5	83.8	90.5
	12	141	75.1	7.53	63.7	65.5	70.0	74.2	80.0	84.8	90.6
	13	124	78.2	7.64	66.8	68.5	73.4	77.3	83.4	88.0	95.5
	14	143	79.2	7.18	67.5	71.5	74.3	77.7	83.5	89.8	92.8
	15	158	80.2	6.20	70.8	72.8	76.3	79.4	83.8	88.0	96.5
	16	149	80.4	6.28	71.5	74.5	76.5	79.4	82.8	89.0	94.5
	17	162	80.1	7.15	71.5	72.7	75.0	78.7	83.1	88.5	96.4
	18	174	80.8	6.02	70.5	74.0	76.8	80.9	84.5	88.0	91.9
	19	123	81.3	6.32	71.6	74.0	77.0	81.0	84.0	89.4	95.2
	20	104	81.8	6.14	72.1	74.5	78.1	80.9	85.3	90.0	92.6
	21	90	82.6	6.12	72.0	74.4	78.0	82.5	86.6	90.4	96.0
	22	95	81.1	5.31	73.2	74.2	77.5	80.5	84.4	88.5	91.0

Table 3-2-3-8   Waist circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	54.0	6.48	45.8	47.6	50.1	52.4	56.3	62.7	71.7
	7	238	55.8	7.60	47.0	48.8	50.6	53.5	58.7	67.0	75.0
	8	188	59.1	9.34	48.0	50.9	52.8	56.1	62.8	74.2	81.5
	9	218	62.7	9.85	50.3	52.0	55.0	60.2	68.6	77.9	85.0
	10	170	66.5	11.22	52.8	54.6	57.0	63.4	74.0	82.5	90.6
	11	170	67.9	11.94	52.1	55.4	58.0	64.5	77.0	85.3	91.9
	12	190	69.9	11.58	54.7	57.0	61.2	66.9	76.5	87.5	96.3
	13	181	71.8	11.73	57.4	59.2	63.0	68.0	79.5	88.6	97.1
	14	199	71.9	11.28	57.3	60.0	63.5	68.5	78.9	89.5	98.1
	15	184	74.4	12.08	60.3	62.4	66.1	71.1	79.5	91.5	103.5
	16	200	75.7	11.53	62.3	64.7	67.5	72.0	81.0	94.0	102.7
	17	214	74.2	10.44	60.9	64.7	67.5	72.0	77.6	89.6	102.0
	18	163	74.3	9.25	62.5	65.0	68.0	72.0	79.0	86.0	98.5
	19	106	77.3	10.20	63.7	66.4	69.5	75.8	81.9	92.0	100.5
	20	92	76.4	10.82	64.5	65.1	70.3	73.6	79.7	87.2	109.1
	21	85	78.3	9.95	66.3	69.3	71.8	75.0	80.1	94.2	102.0
	22	93	75.8	7.28	63.8	68.4	70.8	74.2	80.4	85.2	92.0
F	6	140	51.2	4.87	43.2	46.5	48.3	50.4	53.3	57.5	61.2
	7	185	54.6	7.02	45.0	47.6	49.8	52.9	57.9	64.0	72.0
	8	132	56.7	8.16	46.2	48.5	50.5	54.0	61.8	69.5	75.6
	9	142	59.2	7.71	48.0	50.7	53.7	58.3	63.0	70.5	77.2
	10	147	61.7	9.15	49.0	50.5	55.0	60.3	66.5	74.7	84.0
	11	149	64.8	9.19	52.0	55.4	58.8	63.0	69.4	77.8	84.2
	12	141	66.1	8.24	54.6	57.6	60.0	65.0	70.5	77.6	85.0
	13	124	68.4	9.06	55.1	57.5	61.3	67.1	72.7	81.8	89.3
	14	144	68.8	8.80	56.2	59.8	63.0	67.5	73.0	80.5	88.5
	15	158	69.2	7.76	58.0	61.3	63.4	68.0	72.6	80.0	87.6
	16	150	69.3	8.22	56.7	60.1	64.2	67.7	74.0	79.7	86.6
	17	162	68.4	8.91	56.6	59.7	62.6	66.8	71.1	78.7	88.5
	18	174	68.9	7.39	58.0	60.5	63.0	68.5	73.5	78.4	86.7
	19	123	69.2	8.36	56.6	59.6	63.5	68.0	73.0	81.8	89.0
	20	104	69.6	7.65	59.5	61.4	64.0	68.5	74.4	78.0	85.0
	21	90	70.5	8.05	58.3	60.7	65.4	69.2	74.5	80.1	86.4
	22	97	69.1	6.31	57.5	61.3	64.8	68.8	73.0	78.0	83.2

Table 3-2-3-9   Hip circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	61.2	6.25	53.5	55.0	57.4	59.9	63.5	70.0	75.4
	7	238	63.4	6.52	54.9	57.0	58.8	61.8	66.2	73.0	77.5
	8	188	67.2	7.67	56.3	59.0	62.0	65.5	71.0	78.9	86.2
	9	218	71.0	7.50	58.3	62.2	65.0	70.0	75.3	82.0	86.7
	10	170	74.9	8.63	62.0	65.2	68.7	73.5	80.8	85.9	91.0
	11	171	77.0	9.18	62.7	66.5	69.7	75.7	83.6	89.8	95.3
	12	190	80.9	8.57	66.2	70.2	74.5	80.2	86.6	91.6	98.0
	13	180	84.3	8.86	71.5	74.4	78.0	83.5	89.5	96.4	102.5
	14	199	86.0	8.74	71.9	76.3	80.0	84.8	91.4	98.3	107.0
	15	184	88.4	8.74	77.0	79.2	82.8	87.0	92.3	99.5	107.5
	16	200	90.1	8.37	78.2	81.9	83.9	88.2	94.3	103.3	108.4
	17	214	89.2	8.02	77.5	80.1	84.0	88.0	92.4	101.4	107.0
	18	163	88.4	6.86	77.8	80.6	83.9	87.8	92.0	99.0	102.1
	19	106	90.5	7.57	80.0	82.6	85.0	90.0	95.4	99.0	108.5
	20	92	90.8	10.01	79.9	82.3	85.3	89.0	93.5	100.8	114.9
	21	85	92.2	8.49	81.1	84.0	86.5	90.1	95.5	104.6	108.5
	22	93	91.2	6.34	82.0	84.2	85.8	90.4	96.6	99.1	102.8
F	6	140	60.8	4.98	53.0	55.7	57.5	60.1	63.4	68.0	71.0
	7	184	65.1	5.99	56.8	58.0	60.8	64.1	69.0	74.1	76.8
	8	132	67.7	6.74	57.0	59.7	62.9	66.9	71.7	77.0	83.0
	9	142	70.9	7.22	59.9	63.0	66.0	69.9	75.0	81.5	86.0
	10	148	74.9	8.34	61.9	65.0	69.8	73.9	79.7	87.0	93.2
	11	149	80.5	8.31	66.7	71.0	74.5	80.0	86.6	92.0	96.5
	12	141	83.6	7.50	71.2	74.5	78.5	83.0	87.9	92.4	99.0
	13	124	86.9	7.79	74.7	76.0	82.8	86.3	91.4	97.7	102.6
	14	144	88.6	7.77	75.8	79.3	83.6	87.9	92.9	99.6	104.9
	15	158	89.6	7.13	78.8	80.9	85.0	89.0	94.0	99.3	104.3
	16	150	90.8	7.43	78.4	82.1	85.5	89.7	94.5	100.1	106.5
	17	162	89.9	7.68	78.1	82.0	84.7	89.0	93.6	98.2	108.0
	18	174	91.4	6.24	81.0	83.4	87.0	91.2	95.6	99.5	104.0
	19	123	91.2	6.70	79.9	82.5	86.6	91.2	95.6	99.0	105.5
	20	104	91.0	6.56	80.2	83.9	86.7	90.0	95.0	98.0	106.5
	21	90	91.3	7.20	80.7	84.1	85.5	90.4	94.0	100.0	110.8
	22	97	91.1	5.32	82.6	84.0	87.2	90.2	94.5	98.1	103.0

Table 3-2-3-10 Waist to Hip Ratio (WHR)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	0.882	0.053	0.802	0.820	0.847	0.883	0.913	0.940	0.988
	7	238	0.878	0.054	0.800	0.821	0.844	0.872	0.905	0.955	0.994
	8	188	0.876	0.057	0.795	0.817	0.833	0.865	0.905	0.959	0.987
	9	218	0.880	0.063	0.786	0.806	0.835	0.868	0.911	0.978	1.024
	10	170	0.884	0.068	0.782	0.802	0.835	0.870	0.937	0.990	1.008
	11	170	0.879	0.062	0.789	0.805	0.830	0.869	0.923	0.970	1.000
	12	190	0.862	0.074	0.766	0.784	0.811	0.842	0.901	0.970	1.015
	13	180	0.848	0.068	0.756	0.771	0.795	0.834	0.886	0.940	1.000
	14	199	0.834	0.069	0.740	0.759	0.785	0.823	0.868	0.919	0.989
	15	184	0.837	0.061	0.744	0.768	0.795	0.824	0.872	0.932	0.986
	16	200	0.837	0.059	0.754	0.775	0.795	0.825	0.869	0.923	0.965
	17	214	0.830	0.057	0.753	0.768	0.793	0.820	0.857	0.905	0.970
	18	163	0.840	0.065	0.753	0.784	0.800	0.825	0.866	0.912	0.980
	19	106	0.853	0.068	0.761	0.786	0.810	0.842	0.881	0.932	1.011
	20	92	0.841	0.053	0.763	0.779	0.798	0.836	0.873	0.899	0.973
	21	85	0.848	0.049	0.778	0.797	0.820	0.840	0.866	0.904	0.971
	22	93	0.830	0.042	0.761	0.781	0.800	0.829	0.856	0.885	0.908
F	6	140	0.843	0.046	0.768	0.787	0.811	0.836	0.876	0.900	0.933
	7	184	0.838	0.053	0.750	0.776	0.799	0.834	0.867	0.917	0.949
	8	132	0.835	0.056	0.742	0.769	0.794	0.828	0.866	0.917	0.959
	9	142	0.834	0.051	0.747	0.769	0.799	0.828	0.867	0.894	0.944
	10	147	0.822	0.061	0.719	0.758	0.781	0.818	0.845	0.908	0.952
	11	149	0.804	0.053	0.713	0.744	0.771	0.796	0.833	0.869	0.920
	12	141	0.791	0.059	0.713	0.730	0.753	0.785	0.818	0.844	0.914
	13	124	0.785	0.058	0.683	0.710	0.743	0.783	0.823	0.853	0.915
	14	144	0.775	0.047	0.694	0.719	0.745	0.770	0.800	0.832	0.884
	15	158	0.771	0.050	0.692	0.713	0.741	0.766	0.798	0.833	0.863
	16	150	0.763	0.056	0.667	0.700	0.723	0.761	0.791	0.831	0.875
	17	162	0.759	0.054	0.663	0.698	0.725	0.754	0.788	0.826	0.903
	18	174	0.753	0.050	0.674	0.693	0.718	0.746	0.785	0.817	0.865
	19	123	0.758	0.055	0.671	0.699	0.715	0.751	0.787	0.830	0.875
	20	104	0.764	0.050	0.683	0.699	0.729	0.762	0.798	0.830	0.861
	21	90	0.772	0.057	0.667	0.704	0.741	0.765	0.804	0.850	0.921
	22	97	0.757	0.042	0.681	0.695	0.729	0.758	0.784	0.802	0.846

Table 3-2-3-11   Shoulder width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	179	26.3	1.63	23.5	24.4	25.2	26.1	27.2	28.5	29.7
	7	237	27.2	1.76	24.2	25.1	26.3	27.1	28.3	29.3	30.4
	8	188	28.5	2.19	25.1	26.2	27.2	28.5	29.7	31.0	33.3
	9	218	29.7	1.93	26.0	27.5	28.3	29.7	30.9	32.3	33.6
	10	170	30.7	1.89	27.5	28.6	29.5	30.5	31.9	33.2	35.0
	11	171	31.9	2.48	27.5	29.0	30.1	31.9	33.8	35.0	36.3
	12	190	33.7	2.59	28.7	30.3	32.3	34.0	35.3	36.7	38.4
	13	181	35.7	2.50	30.0	32.0	34.3	36.0	37.4	39.0	39.8
	14	199	36.8	2.29	32.6	34.0	35.3	36.9	38.5	39.6	41.0
	15	182	38.0	2.41	33.2	34.7	36.5	38.1	39.6	41.0	42.3
	16	199	38.5	2.05	34.5	35.8	37.0	38.5	40.0	41.1	42.0
	17	214	38.7	2.03	34.0	35.8	37.6	38.9	40.1	41.0	42.0
	18	163	38.6	2.09	34.1	35.9	37.0	38.9	39.8	41.2	42.5
	19	105	39.2	2.13	35.2	36.1	38.0	39.3	40.7	41.9	43.0
	20	92	39.3	1.75	35.2	37.5	38.5	39.3	40.3	41.4	42.3
	21	83	38.9	1.79	35.7	36.8	37.4	38.8	40.3	41.5	42.0
	22	93	38.4	2.27	34.5	36.0	36.8	38.1	40.0	41.2	42.2
F	6	140	24.7	1.74	22.0	23.0	23.5	25.0	25.9	26.8	27.6
	7	185	26.3	1.63	23.2	24.4	25.3	26.2	27.1	28.5	29.7
	8	132	27.3	1.70	24.5	25.4	26.1	27.4	28.5	29.6	31.5
	9	142	28.7	1.89	25.5	26.3	27.4	28.6	29.8	31.4	32.5
	10	148	29.4	2.23	25.0	26.5	28.2	29.4	30.9	32.2	33.6
	11	148	31.4	1.92	27.6	28.9	30.1	31.5	32.8	33.7	35.0
	12	141	32.6	2.18	28.3	29.8	31.2	32.6	34.1	35.4	36.4
	13	124	33.8	1.94	30.0	31.6	32.5	33.6	35.1	36.3	37.7
	14	144	34.2	1.82	31.0	32.0	33.0	34.0	35.3	36.9	38.0
	15	157	34.4	1.74	31.3	32.0	33.0	34.5	35.6	36.2	37.5
	16	150	34.6	1.79	31.5	32.3	33.3	34.5	35.7	37.1	38.5
	17	161	33.9	1.84	30.2	31.6	32.4	34.0	35.2	36.2	37.1
	18	174	34.0	1.95	30.5	31.5	32.7	34.0	35.3	36.6	37.2
	19	121	34.1	2.03	29.8	32.0	33.1	34.2	35.4	36.3	38.0
	20	104	34.3	1.64	31.5	32.1	33.1	34.1	35.4	36.4	37.7
	21	90	34.5	2.00	30.2	32.0	33.0	34.6	35.6	37.5	38.2
	22	97	34.3	1.38	31.8	32.6	33.4	34.2	35.2	36.1	37.2

Table 3-2-3-12 Pelvis width (cm)

Gender	Age group (yrs)	n	Mean	SD	P₃	P₁₀	P₂₅	P₅₀	P₇₅	P₉₀	P₉₇
M	6	180	19.0	1.54	16.8	17.3	18.0	19.0	19.8	20.8	22.2
	7	238	19.9	1.44	17.4	18.2	19.1	19.7	20.8	21.7	22.7
	8	188	20.9	2.14	18.1	18.6	19.7	20.7	22.0	23.4	26.0
	9	218	21.6	1.94	18.2	19.5	20.3	21.2	22.5	24.3	26.1
	10	170	22.4	2.21	19.2	20.2	21.0	22.0	24.0	25.5	27.3
	11	171	23.0	2.37	19.4	20.3	21.4	22.9	24.5	26.4	28.5
	12	190	24.5	2.63	20.6	21.3	22.8	24.3	25.9	27.5	29.4
	13	181	25.3	2.19	21.4	22.6	23.9	25.0	26.9	28.1	29.5
	14	199	26.2	2.18	22.2	23.4	24.6	26.4	27.5	28.7	30.5
	15	184	27.1	2.72	22.9	24.2	25.6	26.9	28.2	30.3	32.7
	16	200	27.4	2.20	23.5	24.7	26.0	27.2	28.5	30.2	32.5
	17	213	27.2	2.01	24.0	25.0	25.6	27.0	28.4	29.9	31.9
	18	163	27.1	1.79	24.0	25.0	25.8	26.9	28.3	29.5	30.7
	19	106	27.5	2.08	24.4	25.1	26.0	27.4	28.5	30.1	31.5
	20	91	27.2	2.19	24.3	24.9	25.8	27.1	28.2	29.4	32.5
	21	85	26.8	1.74	24.4	24.9	25.6	26.5	28.0	29.1	31.2
	22	93	27.3	2.10	24.4	25.1	25.6	27.1	28.3	29.4	30.4
F	6	140	18.1	1.42	15.5	16.5	17.2	18.0	18.7	19.8	20.8
	7	185	19.2	1.84	16.3	17.3	18.0	18.9	20.0	21.2	23.5
	8	132	20.2	1.90	17.0	18.0	19.0	20.0	21.0	22.5	25.0
	9	142	21.2	2.09	17.4	18.9	19.8	21.0	22.2	23.8	25.9
	10	148	22.3	2.34	18.3	19.6	20.7	22.1	23.5	25.1	27.5
	11	149	24.0	2.29	20.2	21.2	22.3	23.7	25.4	27.0	27.8
	12	141	24.5	2.30	20.4	21.9	23.0	24.3	25.7	27.5	29.0
	13	123	25.3	2.10	21.8	23.0	23.8	25.3	26.4	28.1	29.4
	14	144	26.2	1.97	22.8	23.5	24.9	26.5	27.4	28.7	30.0
	15	158	26.4	2.07	23.4	24.1	25.0	26.1	27.7	29.0	30.6
	16	150	26.3	1.75	23.2	24.0	25.2	26.2	27.5	28.6	29.8
	17	162	26.2	2.18	23.0	23.7	24.7	26.0	27.3	28.8	31.0
	18	174	26.4	1.68	23.4	24.2	25.1	26.5	27.4	28.3	29.9
	19	122	26.1	2.09	22.7	23.9	25.0	26.0	27.2	28.4	30.3
	20	103	25.9	1.91	23.1	23.6	24.5	26.0	27.0	28.4	30.3
	21	90	26.7	1.84	23.8	24.5	25.2	26.6	27.8	28.9	30.6
	22	97	26.7	1.93	23.0	24.2	25.7	26.5	27.6	28.9	29.8

Table 3-2-3-13 Upper arm skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	9.6	4.17	4.5	5.5	7.0	9.0	11.8	15.0	19.5
	7	238	10.5	4.72	5.0	6.0	7.5	9.3	12.5	17.0	22.0
	8	188	12.2	5.53	4.5	6.5	8.5	11.0	15.5	21.0	23.0
	9	218	13.4	5.95	5.0	6.5	8.5	12.0	18.0	21.0	26.0
	10	170	14.7	6.58	6.5	7.0	9.0	14.0	20.0	23.0	26.5
	11	171	14.4	6.26	5.5	7.0	9.5	14.0	19.0	23.0	26.5
	12	190	14.6	6.79	5.0	6.5	9.0	13.5	19.0	23.3	30.0
	13	180	13.3	7.14	5.0	6.0	8.0	11.5	18.3	23.0	30.5
	14	199	12.0	6.38	5.0	6.0	7.0	9.5	16.0	21.5	28.0
	15	184	12.0	6.64	3.0	5.5	7.5	10.0	15.5	22.0	30.0
	16	200	12.0	7.09	3.8	5.0	7.5	10.0	15.0	20.5	29.0
	17	214	11.5	6.13	4.0	6.0	7.5	10.0	14.0	20.0	27.0
	18	163	11.4	5.93	4.5	5.0	6.5	10.0	15.0	20.5	24.5
	19	106	11.9	5.72	5.0	6.0	8.0	10.0	15.0	20.0	24.0
	20	92	12.6	6.47	4.0	6.0	8.0	10.8	16.8	20.5	27.5
	21	85	13.1	5.66	5.0	7.0	8.5	12.0	17.0	20.0	26.0
	22	93	11.6	5.56	5.0	5.0	6.0	11.0	15.5	20.0	22.5
F	6	140	10.7	3.86	5.0	6.5	8.0	10.0	13.0	15.3	19.0
	7	185	13.1	5.57	5.0	7.0	9.0	12.0	16.5	21.5	26.0
	8	132	15.0	5.61	6.5	9.0	10.5	14.0	18.8	23.0	27.5
	9	142	15.9	6.75	6.0	8.0	10.5	15.0	19.0	24.5	32.0
	10	148	16.1	6.62	6.0	8.0	11.0	15.0	19.8	26.5	30.5
	11	149	16.9	7.55	7.0	8.0	11.5	15.5	20.5	28.0	36.0
	12	141	16.6	5.98	7.5	9.5	12.0	16.0	20.5	25.0	29.0
	13	123	18.9	7.30	6.0	10.5	13.5	18.0	24.5	28.5	34.0
	14	144	20.7	7.81	7.0	11.5	15.0	19.5	27.0	31.0	35.0
	15	157	20.6	7.36	9.0	11.5	15.5	20.0	25.0	31.0	36.1
	16	150	19.9	6.76	9.0	11.5	15.5	19.0	24.5	30.0	35.0
	17	162	19.5	6.96	6.0	11.5	15.0	18.0	25.0	29.0	35.5
	18	174	20.0	6.73	9.5	12.0	15.0	19.0	25.0	30.0	33.0
	19	123	19.6	6.67	8.5	12.0	15.0	18.0	23.0	29.0	34.0
	20	104	19.1	5.93	10.0	11.5	14.0	19.0	23.8	27.0	30.0
	21	90	19.6	6.47	8.0	11.0	15.0	19.3	24.5	27.8	33.5
	22	97	19.8	6.15	10.0	11.5	15.0	20.5	24.0	26.0	35.0

Table 3-2-3-14   Subscapular skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	6.1	4.04	2.5	3.0	4.0	5.0	7.0	11.0	17.0
	7	238	7.3	4.77	3.0	3.5	4.0	6.0	8.0	15.0	20.0
	8	188	9.0	6.55	3.0	3.5	5.0	6.5	10.0	20.0	27.0
	9	218	10.9	7.61	3.0	4.0	5.5	8.0	15.0	21.5	31.5
	10	170	12.4	8.06	4.0	5.0	6.0	9.0	18.0	25.8	31.0
	11	171	12.8	8.07	4.5	5.0	6.0	9.0	18.0	24.5	32.0
	12	190	13.0	8.40	4.0	5.3	6.5	9.5	18.5	26.8	34.0
	13	181	12.6	8.33	5.0	6.0	7.0	9.0	16.5	23.0	35.0
	14	198	12.2	7.45	5.0	6.0	7.0	9.0	16.0	23.0	31.0
	15	184	12.7	8.42	4.5	6.0	7.0	9.5	15.3	25.0	36.0
	16	200	13.1	7.94	5.0	6.3	8.0	10.0	16.0	23.5	33.8
	17	214	12.9	6.78	6.0	7.0	8.0	10.3	15.5	21.5	31.0
	18	163	13.4	7.03	5.5	7.0	8.5	11.0	17.0	23.0	31.0
	19	106	14.2	7.12	5.5	7.0	9.0	12.0	18.0	25.0	31.5
	20	92	14.9	8.21	5.5	7.5	9.5	12.0	17.8	26.0	34.0
	21	85	14.9	6.69	7.5	8.0	10.0	13.0	18.0	27.0	28.0
	22	93	14.0	6.13	6.5	7.0	9.0	12.5	19.0	22.5	28.0
F	6	140	6.1	3.21	2.5	3.0	4.5	5.0	6.5	10.5	13.0
	7	184	8.3	5.66	2.5	3.5	4.5	6.0	10.5	17.0	23.0
	8	132	9.8	6.40	3.0	4.0	5.5	7.5	12.3	20.0	25.0
	9	142	11.0	7.13	3.0	5.0	6.0	8.5	14.0	21.0	29.5
	10	148	12.7	8.13	4.0	5.0	6.0	10.0	16.5	26.0	32.0
	11	149	13.5	8.19	3.0	5.0	7.5	11.5	17.0	26.5	34.5
	12	141	13.1	6.10	5.0	6.5	9.0	12.0	16.5	22.5	25.0
	13	124	16.0	8.13	6.0	7.5	10.0	14.3	21.0	27.0	36.0
	14	144	17.5	7.51	7.0	9.0	12.8	16.0	22.0	27.5	34.5
	15	158	17.3	6.87	7.0	10.0	12.5	16.0	21.0	27.0	35.0
	16	150	16.7	5.96	7.0	10.5	13.0	15.8	20.0	24.5	30.0
	17	162	16.5	6.23	7.5	10.0	12.0	15.3	19.5	25.0	30.0
	18	174	16.9	5.96	8.0	10.0	12.0	16.5	20.0	25.0	28.5
	19	122	16.1	6.16	7.0	9.0	11.5	15.0	20.0	24.0	30.0
	20	104	15.9	5.67	7.0	9.5	12.0	15.0	19.3	24.0	27.0
	21	90	16.9	5.80	8.0	10.0	13.0	15.8	20.0	26.3	29.0
	22	97	15.7	5.60	8.0	9.5	12.0	15.0	18.5	23.0	30.0

Table 3-2-3-15   Abdominal skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	7.4	6.08	2.0	3.0	4.0	5.0	9.0	16.0	26.5
	7	238	9.3	7.00	2.5	3.0	4.5	6.5	12.0	20.0	27.0
	8	188	12.0	8.42	2.5	4.0	6.0	9.0	16.8	26.5	33.0
	9	217	15.1	9.78	3.0	4.0	6.5	13.0	22.0	31.0	34.0
	10	170	17.4	10.56	4.0	5.5	8.0	14.5	27.0	32.0	36.0
	11	171	17.2	10.42	4.5	5.5	8.0	15.0	26.0	31.5	37.0
	12	190	17.6	10.74	4.5	5.8	8.0	15.0	27.0	33.5	37.5
	13	181	17.5	12.01	5.0	6.0	8.0	13.5	26.0	31.5	42.5
	14	199	16.1	10.79	5.0	6.0	7.0	11.0	23.5	34.0	40.0
	15	184	17.0	11.35	3.5	6.0	8.0	13.5	24.3	34.5	43.5
	16	199	16.7	11.50	4.0	5.5	8.5	13.0	23.0	33.0	42.5
	17	214	15.6	10.05	5.0	6.5	8.0	12.0	20.0	30.0	40.0
	18	163	16.1	9.43	5.0	6.5	8.0	13.0	22.0	30.0	37.0
	19	106	18.6	9.99	5.0	7.0	10.0	17.3	26.5	32.5	38.0
	20	92	18.2	9.78	5.5	7.0	10.0	15.5	25.8	32.0	37.0
	21	85	19.3	9.31	6.0	9.5	13.0	16.5	25.0	33.5	40.0
	22	93	18.2	9.36	5.5	8.0	10.5	15.0	25.0	32.0	37.0
F	6	140	8.0	4.97	2.5	3.5	5.0	7.0	10.0	14.0	20.0
	7	185	11.3	7.56	2.5	3.5	6.0	8.5	16.0	22.0	29.0
	8	132	13.7	8.14	3.5	5.0	7.0	11.5	19.5	24.5	33.5
	9	142	16.0	9.35	3.0	5.0	8.5	15.0	21.0	30.0	35.0
	10	148	18.1	9.52	4.0	7.0	10.8	15.5	25.0	33.0	35.5
	11	149	19.6	10.34	5.5	7.0	12.0	17.0	27.0	35.5	41.0
	12	141	19.8	8.65	7.5	11.0	13.0	18.0	25.0	31.0	41.0
	13	124	23.7	10.16	9.0	11.5	16.3	22.0	29.0	38.0	46.0
	14	143	24.0	9.09	9.0	12.0	18.0	24.0	29.0	37.0	40.5
	15	158	24.7	8.65	12.0	14.5	19.0	23.3	28.5	36.0	45.0
	16	150	23.2	7.53	11.5	13.8	18.0	22.5	26.0	34.8	38.0
	17	162	22.8	8.30	9.0	12.5	18.0	22.0	27.0	33.0	40.0
	18	174	23.1	7.39	10.0	13.5	18.0	24.0	27.0	32.5	36.0
	19	123	23.5	8.06	11.0	14.5	17.0	23.0	28.0	33.0	40.0
	20	104	22.7	7.13	11.0	13.5	18.0	22.0	27.3	30.5	35.0
	21	90	23.4	6.82	13.0	15.0	19.0	23.0	27.0	31.8	37.0
	22	97	22.3	7.01	10.0	13.5	18.0	22.0	27.0	30.0	38.0

Table 3-2-3-16 Body fat percentage (%)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	9	218	20.7	8.40	11.2	12.4	13.9	18.4	26.0	32.9	42.7
	10	170	22.5	8.92	12.4	13.0	14.8	20.0	28.9	35.7	39.9
	11	171	22.6	8.87	11.8	13.3	15.1	19.7	28.9	35.2	40.6
	12	190	20.9	8.12	11.2	12.6	14.8	18.3	26.5	32.7	40.3
	13	180	20.0	8.35	12.0	12.5	14.0	16.7	24.5	30.4	38.8
	14	198	19.0	7.26	11.4	12.5	13.8	15.9	23.7	30.1	37.3
	15	184	16.4	8.83	6.6	8.9	10.8	13.2	19.7	28.9	41.5
	16	200	16.7	8.89	7.4	8.9	10.8	13.7	19.9	27.9	39.7
	17	214	16.2	7.54	8.3	9.5	11.5	13.8	18.8	26.4	36.9
	18	163	16.5	7.51	8.0	9.5	10.6	14.1	20.6	26.1	34.0
	19	106	16.6	5.84	9.7	10.9	12.7	14.6	20.0	26.3	30.3
	20	92	17.2	6.68	9.1	10.9	12.7	15.3	20.4	25.8	33.6
	21	85	17.5	5.70	10.7	11.4	13.2	16.0	20.3	25.6	30.6
	22	93	16.4	5.26	10.0	10.2	11.6	15.3	20.5	23.4	28.3
F	9	142	24.9	8.14	14.3	16.6	19.5	22.9	29.3	35.8	45.8
	10	148	26.0	8.75	14.8	17.1	19.5	23.8	30.5	41.2	46.5
	11	149	27.0	9.31	14.8	16.6	20.9	24.5	31.5	40.3	52.1
	12	141	24.0	7.42	13.3	15.5	18.0	22.7	28.9	34.2	39.6
	13	123	27.3	9.56	13.0	17.7	19.9	25.2	32.4	40.3	47.7
	14	144	29.6	9.66	14.6	18.0	22.4	27.8	35.9	42.8	50.2
	15	157	28.5	9.11	14.5	18.1	21.7	26.8	34.8	40.5	52.4
	16	150	27.7	8.08	15.2	19.1	22.4	25.3	32.0	39.4	46.7
	17	162	27.3	8.47	15.2	17.8	21.1	25.8	31.6	38.7	48.2
	18	174	27.8	7.99	15.2	18.4	22.4	27.1	32.2	39.8	44.5
	19	122	24.3	6.70	14.1	17.8	19.5	22.8	27.3	34.2	40.7
	20	104	24.0	6.06	14.6	16.5	19.5	23.3	28.6	31.6	36.5
	21	90	24.8	6.35	15.4	16.6	20.3	24.2	29.0	34.5	38.3
	22	97	24.3	6.16	15.4	17.3	20.0	23.9	27.3	31.9	40.1

Table 3-2-3-17   Lean body mass (kg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	9	218	26.0	3.78	20.0	21.1	23.3	26.0	28.8	30.8	33.0
	10	170	28.9	4.59	21.6	23.6	25.8	28.4	31.1	34.9	39.1
	11	171	31.7	6.33	22.4	24.4	28.0	30.9	35.4	39.2	43.9
	12	190	37.6	6.47	26.1	29.3	33.2	37.3	42.2	45.7	50.2
	13	180	42.7	6.73	29.7	34.2	37.9	42.5	47.4	50.6	55.7
	14	198	45.7	7.12	33.7	36.9	40.9	44.8	50.0	54.5	61.1
	15	184	49.8	8.15	38.6	40.9	45.0	49.4	54.8	58.2	67.2
	16	200	52.4	7.15	41.1	44.6	47.7	51.9	56.1	62.0	66.5
	17	214	52.3	7.33	40.5	43.5	47.2	51.5	56.9	61.3	67.5
	18	163	51.5	6.95	38.9	42.6	47.2	50.9	56.4	60.1	66.4
	19	106	53.9	6.48	43.6	46.2	49.2	53.2	57.8	61.9	68.8
	20	92	52.4	8.82	40.2	45.1	47.9	53.2	57.4	60.7	70.6
	21	85	54.7	7.27	44.4	46.5	48.6	54.2	60.0	64.5	69.1
	22	93	53.4	6.34	43.7	45.4	48.3	52.9	58.1	62.4	66.3
F	9	142	23.5	3.68	17.2	18.9	21.1	23.2	25.6	28.4	32.1
	10	148	26.5	3.84	20.2	22.1	23.9	26.1	29.2	31.4	33.2
	11	149	30.9	4.13	22.6	25.8	28.2	30.9	33.9	35.9	38.7
	12	141	34.2	4.91	25.7	27.9	31.1	34.1	37.5	40.0	42.8
	13	123	36.0	4.93	28.5	30.3	32.3	35.3	39.5	42.0	45.4
	14	144	36.2	5.64	28.4	30.0	32.7	36.4	39.6	42.5	45.9
	15	157	37.8	4.72	28.6	32.7	34.7	37.5	40.8	44.3	47.2
	16	150	38.9	5.23	30.2	32.8	35.1	38.3	42.0	45.6	50.1
	17	162	38.2	4.32	30.2	33.1	35.3	37.7	40.8	43.4	48.1
	18	174	38.7	4.44	31.5	33.8	35.5	38.5	41.5	44.9	47.2
	19	122	39.9	4.60	31.6	35.1	36.7	39.2	42.6	46.0	50.6
	20	104	39.8	6.19	32.5	34.5	37.0	39.4	42.9	45.6	50.1
	21	90	39.9	4.26	32.8	35.3	37.1	39.5	42.6	44.9	50.5
	22	97	39.4	3.70	32.3	34.3	37.1	39.5	41.2	43.7	47.3

4. Physiological Function

Table 3-2-4-1 Resting pulse (bpm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	90.1	9.81	74.0	77.0	83.0	90.0	97.0	103.0	109.0
	7	238	85.8	10.28	69.0	73.0	79.0	86.0	93.0	101.0	106.0
	8	188	85.1	9.98	66.0	72.0	79.0	85.0	92.0	98.0	104.0
	9	218	84.1	11.58	63.0	70.0	75.0	84.0	92.0	98.0	107.0
	10	170	86.3	9.89	70.0	75.0	80.0	84.0	94.0	98.5	106.0
	11	169	83.9	12.14	63.0	69.0	75.0	83.0	92.0	100.0	108.0
	12	190	84.3	12.69	62.0	67.0	75.0	84.0	93.0	101.0	111.0
	13	180	80.7	12.62	61.0	65.0	72.5	80.0	88.5	96.0	109.0
	14	199	80.4	11.73	59.0	65.0	72.0	80.0	87.0	96.0	104.0
	15	184	81.1	13.35	59.0	65.0	71.5	80.0	90.0	99.0	109.0
	16	200	79.6	12.59	59.0	65.5	71.0	78.0	87.0	95.0	107.5
	17	213	78.5	12.81	60.0	65.0	69.0	76.0	86.0	95.0	106.0
	18	162	79.8	14.53	57.0	62.0	69.0	79.0	88.0	97.0	114.0
	19	105	78.0	13.89	56.0	62.0	69.0	76.0	86.0	97.0	105.0
	20	91	76.9	13.24	55.0	62.0	68.0	75.0	84.0	95.0	106.0
	21	85	77.7	9.53	61.0	65.0	71.0	77.0	82.0	92.0	97.0
	22	93	79.6	9.52	62.0	68.0	72.0	78.0	85.0	92.0	99.0
F	6	139	92.3	10.35	72.0	78.0	85.0	93.0	100.0	105.0	114.0
	7	182	89.2	10.59	72.0	76.0	81.0	89.0	98.0	103.0	107.0
	8	131	87.0	10.01	70.0	75.0	81.0	87.0	91.0	98.0	114.0
	9	141	87.6	12.42	67.0	75.0	79.0	86.0	95.0	106.0	115.0
	10	147	88.8	12.29	69.0	73.0	80.0	87.0	97.0	106.0	119.0
	11	148	88.4	12.21	71.0	75.0	79.5	87.0	95.0	105.0	118.0
	12	137	85.9	12.69	63.0	68.0	78.0	85.0	93.0	102.0	111.0
	13	124	86.9	13.87	66.0	71.0	76.5	86.0	96.5	105.0	114.0
	14	144	84.2	13.22	63.0	71.0	75.0	82.0	92.0	101.0	115.0
	15	158	83.5	11.50	66.0	69.0	76.0	82.0	90.0	99.0	109.0
	16	149	85.8	12.34	63.0	69.0	78.0	86.0	93.0	101.0	111.0
	17	162	82.6	11.64	64.0	69.0	75.0	81.5	90.0	96.0	110.0
	18	173	85.1	12.86	63.0	69.0	76.0	84.0	93.0	104.0	108.0
	19	123	82.1	12.18	63.0	68.0	73.0	81.0	89.0	99.0	108.0
	20	104	83.4	10.98	65.0	70.0	74.0	84.0	90.5	97.0	106.0
	21	90	80.3	9.54	65.0	69.0	72.0	80.0	87.0	93.5	100.0
	22	97	78.4	8.10	62.0	68.0	72.0	78.0	85.0	88.0	94.0

Table 3-2-4-2 Systolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	179	97.0	10.26	79.0	83.0	90.0	97.0	103.0	112.0	117.0
	7	238	100.8	10.37	82.0	87.0	94.0	101.0	109.0	115.0	119.0
	8	186	102.7	11.70	79.0	86.0	95.0	103.0	112.0	118.0	123.0
	9	218	101.9	12.15	79.0	85.0	92.0	102.0	111.0	117.0	124.0
	10	170	103.0	12.02	80.0	88.0	94.0	103.0	111.0	118.0	126.0
	11	171	105.4	14.81	80.0	87.0	95.0	105.0	115.0	125.0	133.0
	12	190	107.4	13.76	79.0	89.5	98.0	108.0	117.0	125.5	132.0
	13	180	114.0	13.76	90.0	95.0	104.5	114.5	123.0	129.0	137.0
	14	199	117.8	12.88	92.0	101.0	108.0	119.0	127.0	133.0	141.0
	15	184	120.8	11.68	100.0	107.0	113.0	120.0	128.5	136.0	145.0
	16	200	125.3	14.15	99.0	108.0	116.0	125.0	132.0	143.0	159.5
	17	214	125.2	12.57	104.0	110.0	116.0	124.0	133.0	142.0	155.0
	18	163	125.6	11.91	102.0	110.0	116.0	127.0	133.0	140.0	147.0
	19	105	126.5	12.84	104.0	111.0	118.0	125.0	134.0	146.0	152.0
	20	92	126.5	14.38	102.0	107.0	116.5	125.0	138.5	145.0	152.0
	21	85	132.1	11.09	112.0	118.0	124.0	133.0	138.0	148.0	154.0
	22	93	127.3	11.92	102.0	110.0	120.0	128.0	135.0	141.0	152.0
F	6	139	94.4	11.26	76.0	80.0	86.0	93.0	104.0	108.0	118.0
	7	184	98.8	10.77	79.0	85.0	92.0	98.0	107.0	114.0	119.0
	8	132	101.0	11.33	80.0	87.0	92.0	101.0	109.0	114.0	121.0
	9	142	100.9	12.07	79.0	86.0	92.0	100.0	109.0	116.0	125.0
	10	148	100.6	12.56	81.0	86.0	90.5	100.0	108.0	118.0	127.0
	11	149	105.6	13.30	82.0	87.0	95.0	105.0	116.0	122.0	128.0
	12	141	104.5	10.85	84.0	92.0	96.0	104.0	112.0	118.0	127.0
	13	124	110.1	11.96	87.0	95.0	102.5	110.0	117.5	127.0	132.0
	14	144	111.3	11.88	90.0	97.0	104.0	111.5	119.0	126.0	133.0
	15	158	109.4	11.86	88.0	93.0	102.0	110.0	118.0	126.0	131.0
	16	150	110.8	11.29	86.0	97.0	103.0	111.0	117.0	127.0	133.0
	17	162	109.9	11.41	88.0	96.0	102.0	110.0	118.0	123.0	133.0
	18	174	111.7	13.19	89.0	96.0	101.0	111.0	120.0	128.0	139.0
	19	123	109.4	12.88	87.0	95.0	100.0	109.0	118.0	128.0	134.0
	20	102	109.3	11.03	90.0	94.0	101.0	109.0	117.0	124.0	130.0
	21	90	110.1	11.01	89.0	95.0	102.0	110.5	119.0	124.0	127.0
	22	97	110.1	8.79	98.0	101.0	104.0	108.0	115.0	122.0	132.0

Table 3-2-4-3 Diastolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	177	59.9	10.32	43.0	49.0	53.0	59.0	65.0	72.0	83.0
	7	237	61.6	9.15	47.0	50.0	55.0	60.0	68.0	73.0	80.0
	8	186	63.3	10.29	48.0	50.0	55.0	64.0	69.0	78.0	85.0
	9	218	63.6	9.76	47.0	50.0	55.0	63.0	70.0	75.0	81.0
	10	169	64.3	9.19	49.0	53.0	58.0	64.0	70.0	75.0	84.0
	11	171	64.2	9.70	50.0	53.0	57.0	62.0	71.0	77.0	82.0
	12	189	63.8	9.56	48.0	52.0	56.0	64.0	71.0	76.0	83.0
	13	180	65.7	9.57	49.0	53.0	59.0	66.0	71.0	77.0	84.0
	14	199	68.3	8.47	53.0	58.0	62.0	68.0	74.0	79.0	83.0
	15	184	70.6	8.38	55.0	59.0	65.0	71.0	77.0	80.0	86.0
	16	200	71.9	8.95	54.5	61.0	66.0	72.0	76.5	83.0	89.5
	17	214	71.2	9.81	53.0	60.0	65.0	71.0	77.0	83.0	92.0
	18	163	72.9	8.92	57.0	62.0	66.0	72.0	79.0	85.0	92.0
	19	106	72.6	9.76	55.0	61.0	66.0	73.0	77.0	85.0	91.0
	20	92	74.2	9.95	57.0	62.0	67.0	74.0	80.0	86.0	95.0
	21	84	74.0	7.32	60.0	65.0	68.0	75.0	78.5	84.0	87.0
	22	93	73.9	7.15	58.0	66.0	68.0	74.0	78.0	82.0	90.0
F	6	139	59.9	10.17	45.0	48.0	53.0	58.0	66.0	72.0	82.0
	7	184	62.1	10.02	46.0	50.0	55.0	62.0	67.0	74.0	87.0
	8	132	63.9	10.11	45.0	52.0	58.0	63.0	70.5	76.0	85.0
	9	142	64.7	11.26	47.0	51.0	57.0	64.0	70.0	80.0	88.0
	10	148	64.3	9.69	50.0	53.0	58.0	62.0	70.0	78.0	83.0
	11	149	67.1	9.73	50.0	54.0	60.0	66.0	74.0	81.0	84.0
	12	141	66.8	9.37	50.0	56.0	61.0	65.0	73.0	79.0	86.0
	13	124	67.4	9.42	51.0	56.0	60.0	67.0	74.5	80.0	84.0
	14	144	69.0	9.08	53.0	56.0	63.0	68.0	75.0	80.0	87.0
	15	158	68.4	8.85	53.0	57.0	62.0	69.0	74.0	81.0	86.0
	16	150	70.1	9.40	53.0	58.5	64.0	69.5	76.0	83.0	88.0
	17	162	69.3	8.65	54.0	59.0	63.0	68.5	74.0	81.0	88.0
	18	174	70.6	9.73	55.0	58.0	63.0	71.0	78.0	82.0	88.0
	19	122	69.1	9.29	53.0	59.0	63.0	68.0	75.0	80.0	91.0
	20	102	69.7	8.27	55.0	61.0	64.0	68.0	75.0	80.0	87.0
	21	90	68.5	8.29	52.0	57.0	63.0	68.0	74.0	78.0	87.0
	22	97	69.7	6.99	60.0	62.0	64.0	68.0	74.0	82.0	85.0

Table 3-2-4-4 Pressure difference (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
	6	177	37.2	9.2	20.0	26.0	32.0	37.0	42.0	49.0	56.0
	7	237	39.3	8.5	24.0	28.0	34.0	39.0	45.0	49.0	57.0
	8	186	39.4	9.0	22.0	27.0	33.0	40.0	46.0	52.0	56.0
	9	218	38.3	9.3	22.0	26.0	31.0	38.0	45.0	51.0	56.0
	10	168	38.9	9.9	24.0	29.0	33.0	38.0	44.0	50.0	58.0
	11	171	41.2	10.7	26.0	29.0	34.0	40.0	47.0	53.0	65.0
	12	189	43.5	10.3	25.0	31.0	36.0	43.0	50.0	58.0	63.0
	13	180	48.3	11.0	27.0	34.0	41.0	48.0	56.0	62.5	72.0
M	14	199	49.5	11.3	30.0	36.0	41.0	49.0	56.0	66.0	70.0
	15	184	50.2	10.3	30.0	36.0	43.0	49.5	57.0	64.0	71.0
	16	200	53.4	10.6	35.0	39.0	47.0	54.0	59.0	66.0	74.0
	17	214	54.0	11.6	31.0	40.0	47.0	54.0	61.0	69.0	77.0
	18	163	52.8	11.2	33.0	38.0	44.0	53.0	61.0	67.0	76.0
	19	105	54.2	10.9	38.0	39.0	46.0	54.0	61.0	69.0	76.0
	20	92	52.3	10.4	35.0	40.0	45.0	51.0	59.5	67.0	73.0
	21	85	57.8	10.0	38.0	45.0	50.5	56.5	65.5	70.0	78.0
	22	93	53.4	10.2	34.0	41.0	47.0	54.0	59.0	66.0	77.0
	6	138	34.9	9.5	20.0	24.0	29.0	34.0	40.0	45.0	51.0
	7	184	36.8	8.7	22.0	25.0	31.0	37.0	42.5	47.0	54.0
	8	132	37.1	8.6	22.0	27.0	31.5	36.5	43.0	47.0	59.0
	9	142	36.1	8.2	22.0	27.0	32.0	35.0	41.0	46.0	53.0
	10	148	36.3	8.5	23.0	26.0	30.0	35.5	42.0	47.0	52.0
	11	149	38.5	8.5	23.0	28.0	33.0	38.0	44.0	50.0	56.0
	12	141	37.8	7.8	24.0	30.0	32.0	36.0	42.0	48.0	56.0
	13	124	42.7	9.2	27.0	31.0	37.0	42.0	48.0	53.0	62.0
F	14	144	42.3	9.0	29.0	31.0	36.0	42.0	49.0	55.0	60.0
	15	158	41.0	9.6	27.0	29.0	34.0	40.0	48.0	55.0	62.0
	16	150	40.8	8.6	27.0	31.0	34.0	40.0	46.0	52.5	57.0
	17	162	40.6	9.0	26.0	30.0	34.0	40.0	46.0	51.0	60.0
	18	174	41.2	9.8	27.0	30.0	34.0	40.0	47.0	55.0	62.0
	19	122	40.3	8.5	25.0	30.0	35.0	39.5	46.0	51.0	58.0
	20	102	39.7	8.1	27.0	29.0	34.0	40.0	45.0	50.0	55.0
	21	90	41.6	8.1	27.0	34.0	37.0	41.0	46.0	52.0	59.0
	22	97	40.3	6.1	28.0	33.0	36.0	40.0	44.0	48.0	52.0

Table 3-2-4-5   Vital capacity (ml)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	1089.7	265.99	575	723	905	1093	1260	1428	1605
	7	238	1227.4	284.81	680	820	1040	1245	1440	1575	1755
	8	188	1528.1	358.00	900	1085	1288	1515	1805	1955	2205
	9	218	1721.7	392.82	1050	1220	1440	1690	1965	2245	2480
	10	170	1980.7	413.67	1245	1493	1720	1983	2180	2475	2795
	11	170	2166.3	511.32	1270	1558	1855	2125	2400	2900	3195
	12	190	2719.3	596.08	1615	2023	2250	2730	3115	3553	3910
	13	181	3045.6	729.39	1635	2170	2520	3045	3465	3880	4545
	14	199	3329.8	766.96	1705	2315	2910	3320	3800	4300	4955
	15	184	3714.1	777.75	2365	2775	3195	3633	4210	4615	5380
	16	200	3900.4	759.02	2310	2965	3473	3865	4423	4850	5208
	17	214	3972.5	735.85	2710	3165	3490	3930	4495	4895	5365
	18	163	4007.0	723.32	2765	3125	3470	4015	4440	4850	5420
	19	106	3968.2	653.37	2920	3215	3505	3985	4375	4855	5045
	20	92	3963.9	640.96	2850	3095	3475	3983	4398	4790	5270
	21	85	3960.6	796.21	2895	3125	3450	3865	4340	4910	5680
	22	93	3940.9	636.27	3010	3105	3455	4015	4250	4855	5210
F	6	139	974.8	256.79	525	610	780	970	1145	1325	1485
	7	185	1134.5	265.60	650	815	955	1120	1310	1490	1710
	8	132	1351.1	299.95	630	995	1178	1358	1505	1740	1925
	9	142	1525.5	357.47	920	1040	1280	1513	1790	1935	2205
	10	147	1831.8	414.32	1115	1345	1550	1760	2110	2415	2650
	11	149	2204.9	487.84	1320	1605	1910	2180	2490	2815	3160
	12	141	2331.6	552.76	1175	1745	1980	2260	2685	3040	3245
	13	124	2443.8	600.40	1250	1675	2058	2415	2853	3205	3665
	14	143	2638.3	544.40	1560	2070	2285	2630	2980	3330	3780
	15	158	2755.3	573.43	1600	2040	2370	2785	3145	3440	3870
	16	150	2797.3	543.99	1840	2130	2425	2783	3090	3480	4085
	17	162	2732.4	495.16	1900	2060	2415	2718	3025	3390	3625
	18	174	2768.9	605.03	1750	2085	2370	2738	3164	3470	3880
	19	123	2669.3	512.84	1565	2075	2275	2680	3030	3345	3650
	20	104	2766.8	481.63	1950	2110	2478	2720	3075	3365	3620
	21	90	2779.2	517.46	1780	2120	2455	2803	3065	3385	3780
	22	97	2741.1	401.60	2065	2215	2450	2710	3020	3250	3595

Table 3-2-4-6 Vital capacity/weight (ml/kg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	48.3	11.74	27.6	31.6	40.4	48.4	56.9	63.0	71.1
	7	238	49.5	11.98	25.8	32.9	40.8	50.1	57.9	65.2	70.9
	8	188	53.2	12.14	28.9	35.2	45.8	54.1	61.5	67.3	74.0
	9	218	53.0	13.17	29.7	35.8	44.4	52.6	61.1	68.7	79.8
	10	170	53.8	12.64	31.6	37.8	45.5	53.2	63.3	70.6	75.9
	11	169	53.0	12.69	32.5	37.1	42.7	52.2	61.3	70.3	78.6
	12	190	57.8	12.70	35.1	43.0	48.0	58.2	67.3	74.2	81.3
	13	181	57.5	13.60	28.0	39.7	48.3	58.9	66.0	74.3	83.6
	14	199	59.4	13.83	31.1	43.3	50.3	59.1	68.0	77.5	89.8
	15	183	62.5	13.67	37.6	44.4	54.0	62.2	71.5	80.1	89.6
	16	200	62.3	13.13	36.7	45.1	54.1	62.7	70.7	78.4	86.5
	17	214	64.1	12.29	41.7	48.0	56.2	63.5	72.2	79.0	87.8
	18	163	65.4	12.15	40.8	49.7	58.1	65.0	73.5	80.2	90.3
	19	106	62.0	11.74	36.3	48.7	55.1	61.9	69.6	73.4	86.4
	20	91	62.5	12.07	38.7	47.1	53.4	63.3	69.0	77.3	86.0
	21	85	60.1	11.08	36.3	47.0	54.8	59.9	65.5	74.5	83.3
	22	93	62.1	10.39	44.2	49.5	55.2	60.4	68.0	75.8	89.0
F	6	140	47.0	13.34	24.8	28.5	37.2	46.8	56.0	63.8	70.2
	7	185	47.1	11.68	23.3	33.8	39.1	46.9	54.2	62.0	68.4
	8	132	49.2	11.79	23.2	32.8	42.5	49.9	56.5	63.5	66.7
	9	142	49.1	11.80	27.0	34.3	40.6	49.3	58.0	63.7	69.9
	10	148	51.5	12.57	30.6	35.4	41.5	50.7	59.9	68.9	75.7
	11	149	52.1	11.56	28.4	38.1	44.1	51.9	59.6	66.9	73.0
	12	141	52.0	12.64	31.0	37.5	43.8	51.1	58.2	65.4	77.5
	13	124	49.1	11.10	28.4	33.5	41.5	51.2	56.5	62.2	69.5
	14	142	51.1	11.27	31.5	37.9	43.2	49.4	58.7	66.4	72.6
	15	158	52.0	10.98	30.3	38.1	44.8	52.6	58.4	66.7	74.1
	16	150	52.2	10.51	34.4	40.6	45.1	51.4	59.2	65.1	73.8
	17	162	52.3	10.62	30.6	39.3	46.1	52.0	58.6	66.5	72.8
	18	174	51.6	11.24	32.0	38.7	45.7	51.7	58.5	63.8	68.3
	19	123	51.0	10.78	28.8	36.1	43.2	51.8	58.3	63.7	70.2
	20	103	52.6	9.38	35.8	40.1	46.0	52.3	59.6	64.8	69.2
	21	90	52.7	11.09	33.8	38.4	44.7	52.1	59.9	66.6	73.3
	22	97	52.8	7.89	37.0	42.5	47.9	52.2	58.6	63.9	68.4

5. Physical Fitness

Table 3-2-5-1 50m run (sec)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	172	12.2	1.64	8.9	9.9	11.3	12.4	13.2	14.2	15.3
	7	229	11.6	1.46	8.9	9.9	10.7	11.5	12.5	13.5	14.7
	8	169	10.8	1.29	8.6	9.5	10.2	10.7	11.4	12.3	13.5
	9	205	10.6	1.14	8.9	9.4	9.9	10.5	11.2	12.2	12.9
	10	165	10.3	1.19	8.5	9.1	9.5	10.1	10.9	11.6	12.7
	11	166	9.8	1.11	8.1	8.5	9.1	9.7	10.5	11.3	12.3
	12	184	9.4	1.14	7.8	8.2	8.7	9.3	9.9	10.8	12.5
	13	177	8.8	1.10	7.3	7.7	8.0	8.6	9.5	10.2	11.5
	14	194	8.5	0.94	7.1	7.5	7.8	8.3	9.0	9.7	10.3
	15	183	8.1	0.93	6.9	7.2	7.5	8.0	8.6	9.3	10.0
	16	197	8.0	0.77	6.9	7.2	7.5	7.9	8.4	8.9	9.7
	17	213	7.8	0.85	6.8	7.0	7.3	7.7	8.2	8.9	9.6
	18	160	7.8	0.77	6.8	7.1	7.3	7.8	8.1	8.6	9.5
	19	101	8.3	1.63	6.8	7.2	7.5	7.9	8.5	9.4	13.1
	20	88	8.4	1.74	6.8	7.0	7.5	7.9	8.7	11.4	12.8
	21	80	8.4	1.52	7.0	7.2	7.6	8.1	8.8	9.4	12.3
	22	90	8.6	1.40	7.2	7.4	7.7	8.4	8.9	10.2	13.1
F	6	134	12.7	1.74	9.6	10.4	11.8	12.9	13.6	14.5	16.0
	7	174	11.9	1.35	9.5	10.5	11.1	11.9	12.8	13.5	14.6
	8	118	11.5	1.35	9.0	10.0	10.7	11.4	12.2	13.0	14.5
	9	136	10.9	1.16	9.1	9.6	10.3	10.8	11.5	12.4	13.8
	10	143	10.6	1.01	9.0	9.6	10.0	10.5	11.0	11.6	12.3
	11	145	10.1	0.94	8.4	8.9	9.5	10.1	10.8	11.3	11.8
	12	138	10.0	0.90	8.4	8.8	9.4	10.0	10.5	11.0	11.8
	13	122	9.8	1.08	8.1	8.7	9.0	9.8	10.4	11.3	12.3
	14	137	9.9	1.10	8.3	8.5	9.1	9.8	10.6	11.1	11.8
	15	149	9.7	1.01	7.9	8.5	9.0	9.6	10.3	11.1	11.5
	16	148	9.8	1.08	8.1	8.7	9.1	9.7	10.4	10.8	12.6
	17	156	9.8	1.21	7.7	8.4	9.0	9.7	10.3	11.1	12.6
	18	164	9.7	0.89	8.3	8.6	9.0	9.7	10.2	10.6	11.8
	19	115	10.1	1.30	8.1	8.6	9.3	10.0	10.8	11.6	13.2
	20	97	10.3	1.31	8.0	8.8	9.6	10.2	10.9	11.7	14.1
	21	86	10.5	1.66	8.3	8.9	9.5	10.1	11.2	12.3	15.8
	22	94	10.1	1.51	8.5	8.8	9.1	9.9	10.5	11.1	15.3

Table 3-2-5-2   Standing long jump (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	100.6	16.34	69.0	80.0	91.0	100.0	111.0	120.0	129.0
	7	238	109.5	17.77	76.0	85.0	97.0	110.0	120.0	131.0	143.0
	8	185	123.1	17.95	91.0	97.0	110.0	123.0	135.0	143.0	158.0
	9	218	134.1	19.49	100.0	109.0	121.0	133.5	149.0	160.0	167.0
	10	170	138.1	20.99	101.0	112.0	124.0	138.0	151.0	165.0	175.0
	11	171	151.6	23.83	112.0	120.0	135.0	150.0	169.0	183.0	196.0
	12	189	156.8	25.13	110.0	124.0	139.0	157.0	175.0	189.0	202.0
	13	180	169.6	31.58	117.0	130.0	145.0	170.0	192.5	207.5	223.0
	14	199	180.1	27.71	124.0	144.0	159.0	183.0	201.0	215.0	226.0
	15	183	188.7	30.90	135.0	147.0	165.0	192.0	210.0	230.0	246.0
	16	198	191.7	29.75	134.0	152.0	171.0	193.0	214.0	228.0	245.0
	17	214	198.5	28.59	145.0	163.0	180.0	199.0	219.0	236.0	251.0
	18	162	198.1	26.86	143.0	164.0	180.0	199.0	215.0	231.0	246.0
	19	105	197.7	30.11	144.0	160.0	175.0	203.0	221.0	234.0	241.0
	20	92	198.9	29.77	147.0	158.0	180.0	202.0	218.0	234.0	255.0
	21	84	194.0	32.20	120.0	152.0	170.0	199.0	219.0	233.0	249.0
	22	93	197.6	31.73	132.0	156.0	174.0	201.0	225.0	235.0	246.0
F	6	140	93.3	16.02	58.0	71.5	84.0	92.5	103.0	112.0	125.0
	7	185	104.1	15.05	76.0	85.0	95.0	105.0	113.0	124.0	132.0
	8	132	115.5	17.41	88.0	95.0	102.5	114.5	125.0	141.0	153.0
	9	141	126.3	18.47	97.0	103.0	112.0	125.0	138.0	150.0	164.0
	10	147	132.0	18.07	94.0	109.0	120.0	131.0	144.0	156.0	163.0
	11	149	137.8	21.89	102.0	110.0	122.0	137.0	150.0	166.0	186.0
	12	140	135.6	20.49	103.0	109.0	121.5	134.0	149.0	163.5	176.0
	13	124	140.3	24.21	95.0	110.0	123.0	139.5	158.0	175.0	181.0
	14	144	137.8	22.74	99.0	111.0	120.5	136.0	154.0	168.0	182.0
	15	156	142.4	24.94	93.0	111.0	125.0	141.5	158.0	173.0	194.0
	16	150	141.5	22.97	99.0	111.5	125.0	142.0	154.0	168.5	192.0
	17	162	142.4	24.32	102.0	115.0	123.0	140.0	159.0	175.0	195.0
	18	174	144.9	22.22	110.0	118.0	128.0	141.0	160.0	178.0	185.0
	19	121	135.0	23.14	98.0	107.0	118.0	133.0	148.0	167.0	188.0
	20	104	140.1	20.70	109.0	118.0	126.0	136.5	151.0	172.0	183.0
	21	90	141.2	20.50	106.0	116.5	126.0	141.0	153.0	170.0	189.0
	22	97	141.8	21.61	102.0	113.0	129.0	140.0	153.0	171.0	192.0

Table 3-2-5-3 Vertical jump (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
	6	180	19.7	4.01	13.4	15.1	17.1	19.5	21.8	24.7	28.6
	7	237	21.5	4.20	13.8	16.5	18.5	21.4	24.3	26.5	30.3
	8	187	23.1	4.31	15.6	18.1	20.2	23.4	25.5	28.6	31.2
	9	218	25.0	5.01	17.0	18.5	21.7	24.4	27.8	31.0	36.4
	10	170	25.9	5.62	16.1	19.1	21.9	25.3	29.3	33.1	37.6
	11	171	28.4	6.33	16.8	20.1	24.1	28.1	32.8	37.6	39.4
	12	188	30.9	6.61	18.1	22.8	26.3	30.7	35.4	39.8	43.5
	13	181	33.7	7.57	19.8	24.0	27.8	34.3	38.5	44.2	46.7
M	14	199	36.5	7.54	22.0	26.5	30.9	36.7	41.2	45.9	50.7
	15	184	38.3	8.22	24.4	27.9	32.9	38.7	42.9	49.6	53.8
	16	198	40.5	7.98	27.2	29.9	34.2	40.2	46.3	50.8	57.1
	17	214	41.7	8.08	27.8	32.8	36.5	40.8	46.0	52.6	59.1
	18	163	41.7	7.77	29.2	33.0	35.8	41.0	46.6	51.5	58.6
	19	105	41.2	8.03	26.6	32.8	36.5	40.9	45.2	50.8	61.0
	20	92	41.2	8.38	25.1	29.9	35.5	40.9	47.2	51.5	57.1
	21	84	40.7	7.84	29.0	30.4	35.3	40.1	45.8	50.4	55.2
	22	93	40.4	5.70	30.5	33.4	36.3	39.9	43.2	49.4	51.9
	6	140	19.2	3.64	12.0	14.5	17.2	19.2	21.6	23.4	25.9
	7	184	21.3	3.71	14.6	16.7	18.7	21.4	23.6	25.5	28.9
	8	132	22.1	4.00	13.9	17.3	19.4	21.7	24.9	27.3	29.8
	9	142	23.4	4.71	14.8	17.7	20.3	23.1	26.6	29.6	33.6
	10	147	24.5	4.96	13.7	19.1	21.2	23.8	27.7	32.0	33.8
	11	149	25.8	4.59	18.1	20.4	22.3	25.8	28.5	31.2	36.6
	12	141	26.4	5.35	18.1	20.2	22.6	25.9	29.8	32.7	37.0
	13	124	26.3	5.91	17.0	19.4	22.1	25.5	30.0	35.0	39.6
F	14	144	26.6	5.61	17.1	20.1	23.3	26.0	30.1	34.1	37.9
	15	157	27.9	6.10	18.7	20.7	23.3	27.2	31.3	35.3	42.9
	16	149	26.9	5.26	18.9	20.7	23.1	26.4	29.7	34.5	38.0
	17	162	27.1	5.47	17.5	20.3	23.5	26.2	30.4	33.9	41.5
	18	174	27.5	5.85	19.1	21.1	23.6	26.6	30.0	34.6	42.4
	19	121	25.7	5.43	15.9	19.3	22.5	24.8	29.0	33.6	37.8
	20	104	25.0	5.30	17.2	20.0	21.7	24.6	28.0	31.0	36.3
	21	90	25.3	5.16	16.3	19.3	21.2	25.4	28.1	31.1	38.2
	22	97	25.7	4.29	18.0	19.7	22.8	25.6	28.8	31.0	35.7

Table 3-2-5-4 Inclined pull-ups/Pull-ups/One-minute sit-ups (times)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	179	13.0	10.94	0.0	3.0	6.0	10.0	18.0	26.0	41.0
	7	236	12.9	10.75	0.0	3.0	5.5	10.0	17.0	26.0	39.0
	8	186	13.9	10.94	1.0	4.0	7.0	10.0	19.0	25.0	46.0
	9	216	15.5	11.56	1.0	4.0	7.0	13.0	21.0	31.0	45.0
	10	169	18.1	13.66	0.0	4.0	7.0	15.0	26.0	35.0	49.0
	11	169	18.9	13.49	3.0	5.0	10.0	16.0	25.0	35.0	51.0
	12	188	17.9	12.95	0.0	3.0	10.0	15.0	23.5	35.0	46.0
	13	179	0.6	1.48	0.0	0.0	0.0	0.0	0.0	3.0	5.0
	14	196	0.7	1.58	0.0	0.0	0.0	0.0	1.0	2.0	4.0
	15	183	1.1	1.87	0.0	0.0	0.0	0.0	2.0	3.0	6.0
	16	199	1.3	2.11	0.0	0.0	0.0	0.0	2.0	5.0	7.0
	17	214	1.8	2.62	0.0	0.0	0.0	0.0	3.0	5.0	9.0
	18	163	1.7	2.72	0.0	0.0	0.0	0.0	2.0	6.0	10.0
	19	105	2.7	4.02	0.0	0.0	0.0	1.0	4.0	7.0	12.0
	20	88	3.8	6.18	0.0	0.0	0.0	2.0	5.0	10.0	15.0
	21	84	2.7	3.34	0.0	0.0	0.0	1.0	4.0	8.0	12.0
	22	93	2.6	3.70	0.0	0.0	0.0	1.0	3.0	7.0	12.0
F	6	137	10.5	8.83	0.0	0.0	1.0	10.0	18.0	22.0	25.0
	7	183	14.3	9.56	0.0	1.0	7.0	15.0	20.0	26.0	32.0
	8	132	19.1	9.37	0.0	5.0	14.0	20.0	24.0	30.0	37.0
	9	141	20.5	8.89	2.0	10.0	14.0	21.0	27.0	32.0	34.0
	10	147	24.5	8.92	4.0	13.0	20.0	25.0	31.0	35.0	40.0
	11	149	26.8	7.73	12.0	17.0	22.0	27.0	32.0	36.0	41.0
	12	141	26.3	8.27	7.0	17.0	23.0	26.0	32.0	35.0	41.0
	13	124	27.7	9.48	10.0	18.0	22.0	26.0	32.0	40.0	44.0
	14	143	28.4	7.78	13.0	19.0	23.0	28.0	33.0	38.0	44.0
	15	154	28.4	8.98	11.0	18.0	22.0	27.5	34.0	40.0	47.0
	16	150	27.6	9.11	11.0	17.0	21.0	27.0	33.0	40.0	43.0
	17	162	27.2	8.90	9.0	16.0	22.0	27.5	32.0	38.0	44.0
	18	174	27.3	8.47	11.0	16.0	22.0	26.5	33.0	38.0	43.0
	19	121	24.3	8.16	9.0	14.0	19.0	24.0	30.0	34.0	41.0
	20	103	25.0	9.57	6.0	14.0	19.0	25.0	30.0	37.0	44.0
	21	90	25.8	8.67	5.0	15.0	21.0	26.0	32.0	37.0	40.0
	22	97	24.2	9.55	7.0	12.0	16.0	24.0	32.0	35.0	41.0

Note: Inclined pull-ups are for males aged 6~12; pull-ups are for males aged 13~22; sit-ups are for females aged 6~22.

Table 3-2-5-5 Grip strength (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	8.3	2.04	4.1	5.8	6.8	8.3	9.7	10.9	11.8
	7	237	10.4	4.49	5.7	7.1	8.3	10.0	11.8	13.7	16.2
	8	188	12.3	3.50	6.8	8.4	10.0	12.0	14.2	16.7	20.1
	9	218	13.8	3.24	8.9	9.9	11.5	13.4	15.5	17.8	21.0
	10	170	16.2	4.02	10.2	11.3	13.2	15.8	18.7	21.2	23.6
	11	171	18.4	4.41	11.2	13.3	15.4	17.7	20.9	24.6	26.8
	12	189	23.1	5.77	13.5	16.2	19.0	22.8	26.6	30.6	34.1
	13	180	27.6	7.02	15.8	18.6	22.7	27.5	32.3	35.7	42.1
	14	198	30.2	7.01	17.0	21.9	25.0	29.9	34.3	39.0	45.4
	15	184	34.2	7.17	21.8	24.6	29.1	34.2	38.9	44.8	47.7
	16	200	35.7	6.67	23.8	27.5	31.1	35.3	40.0	44.6	47.9
	17	214	36.9	6.84	23.9	27.6	32.3	37.2	41.2	46.2	48.4
	18	163	37.5	6.59	26.7	28.9	32.6	37.5	41.3	46.1	50.3
	19	106	38.5	8.94	24.4	27.5	31.7	38.3	44.0	49.1	57.8
	20	92	40.9	7.39	25.9	31.4	36.8	41.9	45.1	49.4	55.9
	21	85	41.4	7.92	29.5	31.2	35.9	39.7	46.2	52.2	58.5
	22	93	41.7	6.36	31.4	34.6	37.8	40.5	45.5	50.1	54.3
F	6	139	7.5	2.07	4.2	5.0	6.2	7.6	8.5	10.0	11.9
	7	185	9.5	2.43	5.6	7.0	7.8	9.1	10.9	12.5	13.7
	8	132	10.8	2.46	6.6	8.2	9.3	10.5	12.0	13.9	16.5
	9	142	12.5	3.29	7.5	8.5	10.2	12.1	14.2	16.5	20.0
	10	147	15.5	3.88	9.3	11.1	12.7	15.3	17.8	19.7	24.0
	11	149	18.4	3.95	11.1	13.4	16.1	17.8	21.2	24.2	25.7
	12	141	20.2	4.65	12.1	14.4	17.3	19.8	23.3	26.7	29.3
	13	124	20.8	4.61	12.4	15.1	17.8	20.2	24.1	27.2	30.0
	14	144	22.4	4.70	15.2	17.0	19.1	22.0	25.1	28.6	33.4
	15	158	23.2	5.42	15.0	16.3	19.2	22.3	26.3	31.0	34.2
	16	150	23.4	5.10	15.1	17.8	20.1	23.0	26.8	30.2	32.2
	17	162	22.6	4.46	15.1	17.8	19.8	22.3	25.6	28.4	31.4
	18	174	24.5	4.76	17.4	19.4	21.1	24.0	27.6	29.8	35.8
	19	122	22.7	5.26	14.3	16.7	18.7	21.8	26.5	29.7	33.6
	20	104	25.3	5.91	15.3	19.0	20.8	24.9	29.3	32.9	37.3
	21	89	24.9	4.79	17.4	18.8	21.5	24.3	27.8	32.0	36.6
	22	97	24.7	3.76	18.5	20.9	23.2	24.5	26.1	28.3	32.9

Table 3-2-5-6 Back strength (kg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	26.0	7.88	12.0	15.0	20.0	26.0	31.0	35.0	43.0
	7	238	31.2	8.54	18.0	21.0	25.0	30.0	36.0	44.0	49.0
	8	187	36.9	11.41	20.0	23.0	30.0	36.0	43.0	50.0	62.0
	9	218	43.2	11.54	24.0	27.0	35.0	43.0	50.0	60.0	66.0
	10	170	46.6	12.17	27.0	32.0	37.0	46.0	53.0	61.0	71.0
	11	170	49.5	13.42	30.0	34.5	40.0	47.0	58.0	67.5	80.0
	12	189	61.3	15.98	30.0	42.0	50.0	60.0	72.0	82.0	93.0
	13	180	74.6	20.18	40.0	48.5	58.0	73.5	88.5	104.0	113.0
	14	199	81.9	21.45	45.0	55.0	65.0	81.0	97.0	111.0	123.0
	15	184	91.7	24.32	54.0	60.0	74.0	92.0	108.0	125.0	137.0
	16	200	99.1	25.59	51.5	69.5	82.0	98.5	114.0	129.5	152.0
	17	214	102.1	24.88	58.0	73.0	88.0	100.5	117.0	134.0	158.0
	18	162	100.6	25.33	57.0	70.0	82.0	100.0	117.0	131.0	152.0
	19	106	100.7	25.01	55.0	72.0	83.0	101.0	120.0	133.0	142.0
	20	92	109.4	24.50	58.0	80.0	97.0	108.5	122.0	137.0	162.0
	21	85	110.7	18.56	80.0	87.0	98.0	108.0	125.0	134.0	146.0
	22	92	107.9	18.46	75.0	89.0	98.5	105.0	118.5	129.0	158.0
F	6	140	21.3	6.53	11.0	13.0	17.0	21.0	25.0	30.0	34.0
	7	183	27.8	8.35	15.0	18.0	20.0	28.0	33.0	39.0	43.0
	8	132	31.1	8.93	16.0	20.0	25.0	30.0	37.0	44.0	49.0
	9	142	35.9	9.74	20.0	24.0	29.0	35.0	42.0	51.0	54.0
	10	146	41.8	11.73	25.0	27.0	34.0	41.0	49.0	59.0	67.0
	11	149	45.8	12.36	23.0	30.0	38.0	45.0	55.0	60.0	71.0
	12	141	49.1	13.17	28.0	31.0	40.0	49.0	57.0	67.0	77.0
	13	124	53.0	13.16	26.0	38.0	46.5	51.0	61.0	71.0	80.0
	14	144	53.9	14.23	26.0	35.0	44.0	54.0	62.0	72.0	79.0
	15	158	59.7	17.98	31.0	38.0	45.0	59.0	71.0	85.0	94.0
	16	150	60.2	16.98	28.0	36.5	51.0	61.0	70.0	79.0	92.0
	17	162	55.4	14.39	29.0	37.0	45.0	55.5	65.0	74.0	83.0
	18	174	58.7	16.06	32.0	37.0	48.0	58.5	68.0	78.0	87.0
	19	122	51.3	16.13	28.0	32.0	40.0	49.5	64.0	74.0	87.0
	20	103	55.2	16.14	26.0	35.0	43.0	54.0	68.0	75.0	81.0
	21	90	60.7	19.51	29.0	37.0	48.0	59.5	72.0	84.5	98.0
	22	96	60.7	14.35	30.0	46.0	51.0	60.0	71.0	79.0	92.0

Table 3-2-5-7 Endurance run (sec)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	164	155.1	19.3	128.0	133.5	142.2	151.9	164.1	180.6	202.8
	7	227	146.7	18.7	119.3	126.0	132.6	143.5	158.0	171.9	190.3
	8	164	138.2	20.7	113.0	118.2	125.4	135.4	146.3	157.7	173.8
	9	203	135.2	18.6	109.0	113.7	122.4	132.1	144.5	160.3	174.0
	10	164	134.0	21.8	107.0	112.6	117.7	131.2	145.1	165.1	179.1
	11	164	126.2	20.1	100.5	105.6	111.5	121.6	134.2	155.7	173.9
	12	180	117.9	19.0	94.2	97.9	103.6	113.4	128.2	141.6	168.9
	13	173	325.0	59.6	233.2	255.1	283.0	322.0	362.4	395.7	426.5
	14	194	316.9	57.3	228.9	251.9	279.8	312.9	339.7	385.9	442.5
	15	182	305.9	55.5	227.6	247.0	265.6	296.6	336.3	374.9	433.4
	16	196	295.7	50.5	215.2	234.5	264.2	292.4	322.0	355.5	384.2
	17	211	281.9	45.7	215.3	229.6	248.8	274.4	310.4	347.6	380.3
	18	160	279.9	43.1	210.3	225.6	249.5	275.7	307.0	333.2	384.4
	19	100	292.8	53.2	220.2	230.3	254.2	284.2	331.3	369.5	396.5
	20	88	302.5	59.8	211.0	230.2	262.0	290.6	336.1	400.8	417.4
	21	77	305.9	46.3	238.0	254.8	266.2	300.1	335.0	358.4	426.0
	22	87	322.2	54.7	246.2	262.1	288.1	309.5	352.4	398.3	434.8
F	6	128	159.3	17.9	133.4	137.7	145.8	155.6	172.8	182.1	204.3
	7	168	149.7	16.5	121.3	131.9	136.3	147.4	161.3	170.0	186.6
	8	114	143.6	17.6	120.5	124.1	130.4	141.2	153.0	166.6	189.4
	9	135	140.3	19.0	111.9	119.1	126.9	138.2	150.1	165.7	175.0
	10	142	133.3	17.1	109.7	115.7	122.1	130.2	141.6	155.3	176.7
	11	145	127.7	18.1	102.9	111.1	118.0	124.9	134.9	144.7	167.1
	12	137	130.0	29.2	103.4	109.8	116.0	123.3	134.0	151.8	197.0
	13	120	282.5	37.7	216.4	240.3	260.3	283.4	302.0	325.0	348.6
	14	134	291.4	43.3	214.8	238.9	262.6	289.9	316.2	351.2	379.5
	15	150	282.9	38.9	214.2	234.6	260.4	279.6	301.2	331.0	371.6
	16	148	285.3	31.3	234.3	246.8	264.7	282.8	305.8	324.8	345.7
	17	158	282.9	39.3	216.1	238.4	259.3	278.4	301.2	329.6	375.8
	18	167	288.3	37.6	227.4	246.3	262.0	281.7	315.3	332.7	371.0
	19	112	303.5	51.9	228.9	249.6	270.6	298.3	323.8	369.1	434.6
	20	96	310.3	48.9	230.6	259.0	278.4	305.7	329.8	366.5	452.9
	21	85	296.0	38.6	226.8	247.1	272.3	289.9	319.6	356.5	376.8
	22	92	292.8	36.2	233.8	255.5	267.3	286.4	312.0	336.1	379.1

Note: 50m x 8 shuttle run is for subjects aged 6~12; 800m run is for females aged 13~22; 1000m run is for males aged 13~22.

Table 3-2-5-8 Slt and reach (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	6	180	3.6	5.33	-6.3	-3.8	0.3	4.2	7.0	10.3	13.8
	7	238	4.0	5.57	-6.8	-3.6	0.6	4.5	8.3	10.5	12.5
	8	188	3.7	5.87	-8.0	-4.0	0.1	4.0	7.6	10.9	15.2
	9	218	3.8	6.36	-9.4	-5.1	0.3	4.2	8.1	11.3	14.8
	10	170	1.4	6.39	-10.3	-7.6	-3.9	2.1	6.5	9.1	12.1
	11	171	1.7	7.12	-12.8	-6.7	-3.1	1.7	6.1	10.6	16.0
	12	189	1.3	7.17	-13.2	-9.5	-3.5	2.1	6.4	9.8	14.9
	13	181	2.1	7.05	-11.2	-6.4	-3.2	2.2	7.0	10.8	14.6
	14	199	2.0	8.34	-13.4	-9.4	-4.3	2.5	8.1	12.9	16.7
	15	184	2.6	8.47	-13.8	-8.8	-2.7	2.7	8.5	14.1	17.9
	16	200	4.2	8.30	-11.3	-6.6	-2.2	4.8	9.9	14.6	19.9
	17	214	2.9	9.25	-14.7	-10.0	-4.3	3.9	9.7	14.5	18.1
	18	161	3.6	10.44	-16.3	-10.7	-3.6	4.0	11.4	17.6	21.7
	19	106	2.7	9.39	-15.1	-9.6	-3.1	3.1	9.4	16.5	18.0
	20	92	3.9	8.39	-12.3	-7.1	-2.1	4.8	9.2	14.4	21.7
	21	84	4.6	8.61	-12.5	-8.2	-0.5	6.2	10.5	15.7	17.9
	22	92	3.2	8.97	-14.1	-10.0	-2.3	3.7	9.0	14.1	19.3
F	6	139	7.2	5.37	-3.9	0.4	3.3	7.6	11.7	14.1	15.6
	7	185	8.6	5.32	-4.3	2.1	5.6	9.0	12.7	14.8	17.7
	8	132	7.5	5.38	-3.2	0.8	4.1	7.5	11.3	14.4	16.8
	9	142	7.1	6.52	-5.0	-1.3	3.2	6.9	11.6	15.2	18.4
	10	147	7.0	5.94	-5.8	-0.9	3.2	7.3	11.3	14.4	16.9
	11	149	8.2	6.98	-4.9	-0.7	3.2	8.6	13.0	17.4	20.8
	12	141	6.9	7.63	-10.0	-3.1	3.4	7.0	11.9	15.3	20.0
	13	124	7.9	7.57	-5.6	-1.8	2.5	7.4	14.0	17.3	22.5
	14	144	8.4	8.21	-6.5	-2.0	2.5	8.8	14.4	18.0	24.2
	15	158	9.7	8.53	-8.7	-2.0	4.4	10.0	16.4	20.6	23.3
	16	149	8.0	8.46	-12.8	-3.5	3.0	8.8	13.5	18.7	20.8
	17	161	8.1	8.72	-12.1	-3.5	4.0	8.4	13.7	19.4	24.2
	18	174	7.7	8.20	-8.6	-2.0	2.1	7.3	14.0	18.1	22.0
	19	123	7.1	8.43	-8.3	-4.3	1.6	6.8	14.1	18.1	20.5
	20	104	6.6	9.10	-12.2	-6.4	0.8	6.7	13.1	18.2	22.0
	21	90	7.4	9.76	-11.4	-8.2	1.2	8.7	14.9	19.8	23.5
	22	97	5.1	9.04	-13.3	-7.4	-0.8	5.3	11.6	17.1	20.1

Table 3-2-5-9　Choice reaction time (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	0.61	0.119	0.46	0.51	0.56	0.60	0.67	0.76	0.83
	7	238	0.55	0.092	0.42	0.46	0.50	0.54	0.60	0.66	0.71
	8	188	0.51	0.089	0.39	0.43	0.47	0.51	0.55	0.62	0.67
	9	218	0.47	0.063	0.37	0.40	0.43	0.47	0.51	0.55	0.61
	10	170	0.45	0.050	0.37	0.39	0.41	0.45	0.48	0.52	0.54
	11	171	0.43	0.052	0.33	0.37	0.39	0.43	0.46	0.49	0.53
	12	190	0.41	0.054	0.33	0.35	0.37	0.41	0.45	0.48	0.55
	13	181	0.42	0.054	0.34	0.36	0.38	0.41	0.44	0.49	0.54
	14	199	0.41	0.054	0.32	0.35	0.38	0.40	0.45	0.48	0.54
	15	184	0.40	0.060	0.32	0.34	0.37	0.39	0.43	0.48	0.52
	16	200	0.39	0.055	0.31	0.34	0.36	0.39	0.43	0.46	0.50
	17	214	0.39	0.048	0.31	0.33	0.36	0.39	0.43	0.45	0.49
	18	163	0.40	0.056	0.31	0.34	0.37	0.39	0.42	0.46	0.48
	19	106	0.40	0.055	0.32	0.34	0.36	0.39	0.44	0.49	0.52
	20	92	0.39	0.072	0.30	0.33	0.35	0.38	0.42	0.45	0.55
	21	85	0.39	0.061	0.31	0.33	0.35	0.38	0.41	0.45	0.52
	22	93	0.39	0.035	0.34	0.35	0.37	0.39	0.40	0.44	0.47
F	6	140	0.64	0.118	0.50	0.52	0.56	0.63	0.70	0.79	0.89
	7	185	0.57	0.094	0.46	0.49	0.52	0.57	0.61	0.66	0.74
	8	132	0.54	0.094	0.42	0.46	0.49	0.53	0.58	0.62	0.78
	9	142	0.50	0.070	0.38	0.43	0.47	0.50	0.54	0.57	0.60
	10	148	0.47	0.067	0.38	0.40	0.43	0.47	0.52	0.55	0.57
	11	149	0.46	0.053	0.37	0.39	0.42	0.45	0.49	0.53	0.57
	12	141	0.46	0.063	0.35	0.37	0.42	0.45	0.49	0.53	0.57
	13	124	0.45	0.067	0.34	0.37	0.41	0.44	0.48	0.52	0.62
	14	144	0.43	0.054	0.34	0.37	0.40	0.43	0.46	0.50	0.55
	15	158	0.43	0.052	0.35	0.36	0.39	0.43	0.45	0.50	0.54
	16	150	0.42	0.067	0.32	0.36	0.38	0.43	0.46	0.50	0.53
	17	162	0.43	0.053	0.34	0.36	0.39	0.42	0.46	0.50	0.54
	18	174	0.43	0.058	0.34	0.37	0.39	0.42	0.48	0.51	0.55
	19	123	0.45	0.065	0.34	0.38	0.42	0.44	0.48	0.52	0.58
	20	104	0.44	0.046	0.36	0.38	0.41	0.43	0.46	0.50	0.52
	21	90	0.43	0.045	0.34	0.36	0.40	0.43	0.45	0.49	0.51
	22	97	0.42	0.038	0.36	0.37	0.39	0.42	0.43	0.48	0.50

Table 3-2-5-10 One foot stands with eyes closed (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	6	180	13.1	10.71	3.0	4.0	6.0	10.0	16.0	26.0	36.0
	7	238	14.9	11.03	3.0	5.0	7.0	11.5	20.0	30.0	41.0
	8	187	17.5	12.90	4.0	6.0	9.0	14.0	23.0	34.0	44.0
	9	216	22.3	26.79	3.0	5.0	9.0	16.0	26.0	41.0	76.0
	10	170	22.7	24.63	3.0	5.0	8.0	14.0	26.0	56.0	89.0
	11	171	28.8	31.67	4.0	5.0	11.0	18.0	34.0	64.0	109.0
	12	189	34.8	43.09	3.0	8.0	13.0	21.0	40.0	70.0	142.0
	13	181	35.6	41.77	3.0	6.0	11.0	21.0	45.0	84.0	137.0
	14	199	30.9	33.62	3.0	5.0	9.0	21.0	40.0	73.0	131.0
	15	183	33.7	36.38	3.0	6.0	10.0	21.0	44.0	75.0	120.0
	16	198	54.5	70.18	3.0	9.0	16.0	31.0	63.0	127.0	227.0
	17	213	48.4	50.00	4.0	7.0	16.0	28.0	64.0	126.0	183.0
	18	163	53.0	64.42	4.0	7.0	15.0	30.0	62.0	110.0	274.0
	19	106	39.4	43.16	4.0	7.0	11.0	23.0	50.0	104.0	144.0
	20	91	46.4	48.92	4.0	5.0	13.0	30.0	62.0	101.0	160.0
	21	85	45.4	52.59	4.0	7.0	10.0	26.0	54.0	150.0	175.0
	22	93	45.6	44.17	5.0	8.0	16.0	31.0	56.0	98.0	200.0
F	6	140	15.4	11.12	3.0	4.5	7.0	13.0	20.0	31.0	40.0
	7	185	18.9	17.63	4.0	5.0	7.0	13.0	24.0	38.0	65.0
	8	132	27.2	29.72	3.0	7.0	10.5	17.0	31.0	57.0	119.0
	9	142	26.0	24.83	6.0	7.0	12.0	19.0	30.0	46.0	98.0
	10	146	30.9	38.24	3.0	6.0	11.0	20.0	39.0	66.0	101.0
	11	148	32.6	37.61	4.0	6.0	11.0	19.5	38.5	71.0	134.0
	12	141	33.0	37.31	3.0	6.0	12.0	20.0	38.0	69.0	141.0
	13	124	43.3	46.86	3.0	6.0	11.0	25.0	57.0	104.0	150.0
	14	143	39.5	38.17	4.0	8.0	15.0	23.0	53.0	94.0	131.0
	15	158	48.4	54.17	3.0	7.0	14.0	30.0	66.0	116.0	175.0
	16	149	70.9	86.05	5.0	9.0	19.0	44.0	84.0	181.0	281.0
	17	161	57.3	63.34	5.0	7.0	17.0	39.0	80.0	118.0	209.0
	18	173	50.8	71.95	4.0	7.0	14.0	30.0	65.0	104.0	192.0
	19	122	42.6	57.41	3.0	6.0	14.0	23.0	48.0	98.0	171.0
	20	103	44.1	44.81	5.0	8.0	16.0	31.0	57.0	95.0	150.0
	21	90	45.0	46.66	6.0	10.0	17.0	28.0	49.0	106.0	165.0
	22	96	49.5	45.43	8.0	12.0	19.5	35.0	61.5	116.0	203.0

6. Health

Table 3-2-6-1 Prevalence of decayed primary teeth (%)

Gender	Age group (yrs)	Subjects (n)	Decayed primary teeth (d)	Filled primary teeth (f)	Missing primary teeth (m)	Decayed-missing-filled primary teeth (dmf)
M	6	180	70.6	23.3	1.1	74.4
	7	238	73.5	25.2	4.2	78.6
	8	188	71.3	41.0	3.7	81.9
	9	218	67.0	29.4	1.4	74.3
	10	170	49.4	23.5	1.8	57.1
	11	171	32.7	11.1	0.0	35.7
	12	190	13.7	3.2	0.0	15.3
	13	181	6.1	1.1	0.0	7.2
	14	199	3.0	0.0	0.0	3.0
	15	184	0.5	0.5	0.0	1.1
	16	200	4.0	0.5	0.0	4.5
	17	214	1.9	0.0	0.0	1.9
	18	163	0.0	0.0	0.0	0.0
F	6	140	71.4	30.7	0.0	76.4
	7	185	69.7	33.0	1.1	75.7
	8	132	72.7	25.0	1.5	76.5
	9	142	54.9	24.6	0.0	61.3
	10	148	43.2	19.6	0.0	49.3
	11	149	18.8	6.0	0.0	22.8
	12	141	9.9	3.5	0.0	12.8
	13	124	7.3	0.0	0.0	7.3
	14	144	4.9	2.8	0.0	6.9
	15	158	1.9	0.6	0.0	2.5
	16	150	2.0	0.0	0.0	2.0
	17	162	0.6	0.0	0.0	0.6
	18	174	0.6	0.0	0.0	0.6

Table 3-2-6-2   Prevalence of decayed permanent teeth (%)

Gender	Age group (yrs)	Subjects (n)	Decayed Permanent teeth (D)	Filled Permanent teeth (F)	Missing Permanent teeth (M)	Decayed-missing-filled Permanent teeth (DMF)
	6	180	7.8	0.0	0.0	7.8
	7	238	16.0	3.4	0.0	18.5
	8	188	14.4	8.5	0.0	21.8
	9	218	16.5	12.8	0.0	26.1
	10	170	22.4	15.3	0.0	35.9
	11	171	28.7	12.3	0.0	35.7
M	12	190	27.9	21.1	0.0	42.6
	13	181	39.2	25.4	0.0	53.6
	14	199	39.7	21.1	0.5	49.7
	15	184	42.9	31.5	0.5	59.2
	16	200	49.0	29.5	0.5	61.5
	17	214	44.4	30.8	1.4	59.8
	18	163	39.9	31.3	1.2	59.5
	6	140	10.7	2.1	0.0	11.4
	7	185	12.4	3.8	0.0	15.7
	8	132	19.7	10.6	0.0	26.5
	9	142	16.9	18.3	0.0	31.0
	10	148	32.4	21.6	0.0	44.6
	11	149	26.2	18.8	0.0	38.9
F	12	141	42.6	31.2	1.4	62.4
	13	124	37.9	27.4	0.0	57.3
	14	144	47.2	29.2	0.0	58.3
	15	158	45.6	34.8	0.0	65.8
	16	150	49.3	40.7	2.0	72.7
	17	162	53.1	42.6	1.2	71.0
	18	174	44.8	39.1	1.1	59.8

Table 3-2-6-3   Poor eyesight & nearsightedness (%)

Gender	Age group (yrs)	Subjects (n)	Poor eyesight	Mild-poor	Moderate-poor	Severe-poor	Near-sightedness
M	6	180	56.1	21.7	22.8	11.7	48.9
	7	238	48.7	16.4	16.0	16.4	44.1
	8	188	56.4	9.6	21.3	25.5	53.2
	9	217	63.1	10.6	19.4	33.2	61.0
	10	170	65.3	7.1	17.6	40.6	65.3
	11	170	69.4	4.7	22.9	41.8	66.7
	12	190	70.5	2.6	20.0	47.9	67.9
	13	180	78.3	7.8	17.8	52.8	76.8
	14	198	71.2	4.0	14.6	52.5	69.8
	15	184	81.0	6.5	16.3	58.2	78.8
	16	200	81.5	5.5	12.5	63.5	78.5
	17	214	75.7	6.1	14.5	55.1	74.8
	18	163	79.1	5.5	14.1	59.5	77.9
	19	105	80.0	6.7	12.4	61.0	77.4
	20	91	82.4	6.6	15.4	60.4	81.5
	21	85	82.4	4.7	18.8	58.8	69.4
	22	93	76.3	4.3	8.6	63.4	68.8
F	6	140	60.0	27.1	27.1	5.7	57.1
	7	182	53.3	17.0	19.8	16.5	47.6
	8	131	50.4	10.7	18. 3	21.4	47.0
	9	142	60.6	12.0	21.1	27.5	58.5
	10	147	70.7	4.8	15.6	50.3	68.2
	11	149	69.8	7.4	12.8	49.7	69.1
	12	141	80.9	4.3	22.0	54.6	79.4
	13	124	81.5	4.0	19.4	58.1	80.6
	14	144	82.6	5.6	17.4	59.7	81.3
	15	158	77.8	6.3	13.3	58.2	74.7
	16	150	80.0	4.7	11.3	64.0	75.3
	17	162	82.1	3.7	12.3	66.0	79.0
	18	174	83.3	4.6	12.1	66.7	81.6
	19	123	82.9	4.1	12.2	66.7	81.3
	20	103	84.5	1.9	13.6	68.9	82.7
	21	90	81.1	10.0	8.9	62.2	78.9
	22	96	84.4	6.3	14.6	63.5	79.4

Table 3-2-6-4   Color vision (%)

Gender	Age group (yrs)	Subjects (n)	Color vision deficiency
M	6	158	12.2
	7	214	10.1
	8	180	4.3
	9	209	4.1
	10	166	2.4
	11	161	5.8
	12	180	5.3
	13	173	4.4
	14	189	5.0
	15	177	3.8
	16	191	4.5
	17	204	4.2
	18	149	8.6
	19	100	5.7
	20	88	4.3
	21	79	7.1
	22	90	3.2
F	6	129	7.9
	7	174	5.9
	8	129	2.3
	9	140	1.4
	10	147	0.7
	11	148	0.0
	12	136	3.5
	13	122	1.6
	14	144	0.0
	15	155	1.9
	16	150	0.0
	17	162	0.0
	18	172	0.6
	19	120	1.6
	20	104	0.0
	21	90	0.0
	22	96	1.0

III. Adults

1. Basic Information of the Subjects

Table 3-3-1-1 Distribution of sampling sites (organizations)

Sampling site	Name	M		F		Total	
		Subjects (n)	Percentage (%)	Subjects (n)	Percentage (%)	Subjects (n)	Percentage (%)
Government agency	Health Bureau	78	5.0	91	5.2	169	5.1
	Education and Youth Affairs Bureau	47	3.0	133	7.6	180	5.5
	Macao Government Tourism Office	23	1.5	21	1.2	44	1.3
	Statistics and Census Bureau	35	2.3	18	1.0	53	1.6
	Macao Sport Development Board	120	7.7	67	3.9	187	5.7
	Civic and Municipal Affairs Bureau	68	4.4	65	3.7	133	4.0
	Marine and Water Bureau	56	3.6	15	0.9	71	2.2
	Social Welfare Bureau	45	2.9	131	7.5	176	5.3
	Land, Public Works and Transport Bureau	49	3.2	67	3.9	116	3.5
	Labour Affairs Bureau	27	1.7	34	2.0	61	1.9
	Total	**548**	**35.3**	**642**	**36.9**	**1190**	**36.2**
Private agency/ group	Tai Fung Bank Limited	7	0.5	14	0.8	21	0.6
	Future Bright Group	7	0.5	8	0.5	15	0.5
	Caltex Oil (Macau) Ltd.	11	0.7	1	0.1	12	0.4
	CEM- Companhia de Electricidade de Macau	21	1.4	10	0.6	31	0.9
	Macao Polytechnic Institute	32	2.1	20	1.2	52	1.6
	The Women's Association of Macau	19	1.2	44	2.5	63	1.9
	Macao New Chinese Youth Association	33	2.1	29	1.7	62	1.9
	Galaxy Entertainment Group.	54	3.5	34	2.0	88	2.7
	Kiang Wu Nursing College of Macau	9	0.6	1	0.1	10	0.3
	Others	263	17.0	288	16.6	551	16.7
	Venetian Macau, S.A.	63	4.1	22	1.3	85	2.6
	Sociedade de Beneficência Sun Tou Tong de Macau	29	1.9	1	0.1	30	0.9
	União Geral das Associasões dos Moradores de Macau	38	2.5	78	4.5	116	3.5
	Macao Federation of Trade Unions	47	3.0	138	7.9	185	5.6
	Sheraton Grand Macao Hotel, Cotai Central	112	7.2	76	4.4	188	5.7
	SJM Holdings Limited	46	3.0	69	4.0	115	3.5
	Macau Gaming Industry Labourers Association	13	0.8	76	4.4	89	2.7
	Institute for Tourism Studies	6	0.4	4	0.2	10	0.3
	Macau University of Science and Technology	19	1.2	3	0.2	22	0.7
	Sacred Heart Canossian College	8	0.5	13	0.7	21	0.6
	Macao Clerical Staff Association	8	0.5	9	0.5	17	0.5
	Macau Sports Press Association	9	0.6	3	0.2	12	0.4
	Melco PBL Gaming (Macau)	37	2.4	16	0.9	53	1.6
	Bank of China Macau Branch	47	3.0	57	3.3	104	3.2
	Macau Red Cross	9	0.6	8	0.5	17	0.5
	University of Macau	56	3.6	75	4.3	131	4.0
	Total	**1003**	**64.7**	**1097**	**63.1**	**2100**	**63.8**

Table 3-3-1-2 Distribution of occupations

Occupation	M				F			
	Subjects (n)	Percentage (%)	Non-labor intensive	Labor intensive	Subjects (n)	Percentage (%)	Non-labor intensive	Labor intensive
Legislative officers, public administration officers, community leaders or managers	57	3.7	35	22	52	3.0	38	14
Professionals	288	18.6	223	65	250	14.4	167	83
Technicians or professional assistants	388	25.0	192	196	268	15.4	157	111
Office clerks	280	18.1	234	46	616	35.4	467	149
Total	**1013**	**65.3**	**684**	**329**	**1186**	**68.2**	**829**	**357**
Customer service or sales representatives	229	14.8	38	191	203	11.7	38	165
Skilled agricultural and fishery workers	7	0.5	0	7	0	0.0	0	0
Craftsmen or artisans	47	3.0	0	47	11	0.6	0	11
Machine operators, drivers or assemblers	79	5.1	1	78	2	0.1	0	2
Non-technicians	36	2.3	0	36	52	3.0	0	52
Others	113	7.3	42	71	69	4.0	35	34
Unemployed	24	1.5	19	5	56	3.2	19	37
House chores	3	0.2	0	3	160	9.2	0	160
Total	**538**	**34.7**	**100**	**438**	**553**	**31.8**	**92**	**461**

Table 3-3-1-3 Residential distribution of workers (%)

Gender	Parish	Labor intensive	Non-labor intensive	Total
M	São Francisco Xavier	4.7	1.9	**3.3**
	Nossa Senhora do Carmo	13.3	25.8	**19.6**
	São Lourenço	8.9	6.5	**7.7**
	Sé	8.1	8.6	**8.3**
	Santo António	16.8	19.9	**18.4**
	São Lázaro	5.9	9.2	**7.6**
	Nossa Senhora de Fátima	42.3	28.1	**35.1**
F	São Francisco Xavier	1.6	1.5	**1.6**
	Nossa Senhora do Carmo	14.8	23.8	**19.6**
	São Lourenço	7.4	7.2	**7.3**
	Sé	4.5	10.3	**7.6**
	Santo António	18.8	18.0	**18.4**
	São Lázaro	5.4	7.7	**6.6**
	Nossa Senhora de Fátima	47.5	31.5	**39.0**

Table 3-3-1-4 Birthplace (%)

Gender	Birthplace	Ages 20~24	Ages 25~29	Ages 30~34	Ages 35~39	Ages 40~44	Ages 45~49	Ages 50~54	Ages 55~59	Total
M	Mainland	18.4	19.7	15.9	34.5	48.1	38.8	39.4	43.6	**31.9**
	Macao	76.8	75.1	76.8	55.3	47.6	49.2	52.8	45.2	**60.3**
	Hong Kong	1.1	3.3	5.8	7.1	3.2	4.9	2.6	2.1	**3.8**
	Portugal	0.0	0.5	0.0	0.0	0.0	0.5	1.0	1.1	**0.4**
	Others	3.8	1.4	1.4	3.0	1.1	6.6	4.1	8.0	**3.6**
F	Mainland	17.9	17.4	19.1	46.6	56.2	50.7	43.1	48.8	**36.7**
	Macao	81.0	79.3	74.7	46.1	37.8	39.7	49.4	42.5	**57.2**
	Hong Kong	1.0	3.3	5.3	5.7	3.0	3.3	2.9	2.4	**3.4**
	Portugal	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	**0.1**
	Others	0.0	0.0	0.9	1.0	2.5	6.2	4.6	6.3	**2.6**

Table 3-3-1-5 Education level (%)

Gender	Education level	Ages 20~24	Ages 25~29	Ages 30~34	Ages 35~39	Ages 40~44	Ages 45~49	Ages 50~54	Ages 55~59	Total
M	Below primary school	0.0	0.0	0.0	0.0	1.6	2.7	0.5	3.2	**1.0**
	Primary school	0.5	0.9	0.5	4.1	9.2	14.2	10.9	15.4	**6.8**
	Secondary school	29.2	17.4	19.3	21.4	29.2	35.0	45.6	56.9	**31.4**
	College or university	69.2	71.4	66.2	54.6	46.5	32.8	29.0	14.4	**48.6**
	Master	1.1	10.3	13.5	15.8	13.5	11.5	13.0	6.9	**10.8**
	Doctor	0.0	0.0	0.5	4.1	0.0	3.8	1.0	3.2	**1.5**
F	Below primary school	0.0	0.0	0.0	0.0	1.5	2.4	3.8	9.7	**2.1**
	Primary school	0.0	0.4	0.0	1.6	3.0	7.2	20.1	27.1	**7.4**
	Secondary school	11.3	3.3	9.3	18.7	25.9	44.0	51.5	44.9	**25.8**
	College or university	83.6	82.2	72.0	57.5	48.8	32.5	18.0	14.5	**51.6**
	Master	5.1	13.7	18.7	21.2	19.9	13.9	6.3	3.9	**12.8**
	Doctor	0.0	0.4	0.0	1.0	1.0	0.0	0.4	0.0	**0.3**

Table 3-3-1-6 Working environment (%)

Gender	Working environment	Ages 20~24	Ages 25~29	Ages 30~34	Ages 35~39	Ages 40~44	Ages 45~49	Ages 50~54	Ages 55~59	Total
M	Outdoors	11.4	14.6	17.9	13.7	17.8	12.0	20.7	21.3	**16.2**
	Indoors (naturally ventilated)	15.1	5.2	5.8	11.2	13.0	21.3	18.1	22.9	**13.8**
	Indoors (air conditioned)	73.5	80.3	76.3	75.1	69.2	66.7	61.1	55.9	**70.0**
F	Outdoors	2.1	3.3	1.3	4.2	3.0	3.8	4.6	2.9	**3.2**
	Indoors (naturally ventilated)	8.2	5.9	9.8	15.1	19.0	23.9	31.4	35.7	**18.4**
	Indoors (air conditioned)	89.7	90.7	88.9	80.7	78.0	72.2	64.0	61.4	**78.4**

Table 3-3-1-7　Average working hours per week (%)

Gender	Working hours (hrs)	Ages 20~24	Ages 25~29	Ages 30~34	Ages 35~39	Ages 40~44	Ages 45~49	Ages 50~54	Ages 55~59	Total
M	Unemployed	10.3	0.5	0.5	0.0	0.0	2.2	1.6	6.9	**2.6**
	Below 20	10.8	1.4	1.0	1.0	1.6	1.1	0.0	3.7	**2.5**
	20~35	6.5	3.3	1.4	3.6	1.1	5.5	4.7	4.8	**3.8**
	35~40	24.9	44.1	56.0	51.3	58.9	44.8	52.3	39.9	**46.7**
	40~50	41.6	42.7	32.9	36.0	32.4	43.7	32.6	37.8	**37.5**
	At least 50	5.9	8.0	8.2	8.1	5.9	2.7	8.8	6.9	**6.9**
F	Unemployed	4.6	1.5	3.6	6.2	10.9	12.9	16.3	27.1	**10.2**
	Below 20	9.2	1.9	0.9	3.6	2.0	3.3	2.9	13.0	**4.4**
	20~35	8.2	1.9	4.9	5.7	4.5	4.8	7.1	4.8	**5.1**
	35~40	23.1	46.3	53.8	52.8	45.8	37.3	39.7	20.8	**40.3**
	40~50	45.6	40.0	32.0	29.0	33.8	35.9	30.1	32.4	**34.9**
	At least 50	9.2	8.5	4.9	2.6	3.0	5.7	3.8	1.9	**5.1**

2. Lifestyle

Table 3-3-2-1　Average sleeping hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Less than 6 hrs	6~9 hrs	9 hrs or more
M	20 ~ 24	185	9.2	89.2	1.6
	25 ~ 29	213	11.3	87.8	0.9
	30 ~ 34	207	8.7	88.9	2.4
	35 ~ 39	197	21.3	78.2	0.5
	40 ~ 44	184	14.1	82.1	3.8
	45 ~ 49	183	12.6	83.1	4.4
	50 ~ 54	193	13.5	84.5	2.1
	55 ~ 59	188	14.4	84.6	1.1
F	20 ~ 24	195	10.8	87.7	1.5
	25 ~ 29	270	11.1	88.5	0.4
	30 ~ 34	225	10.7	88.9	0.4
	35 ~ 39	192	16.1	80.7	3.1
	40 ~ 44	201	20.4	77.6	2.0
	45 ~ 49	208	17.8	79.8	2.4
	50 ~ 54	237	18.1	79.7	2.1
	55 ~ 59	207	28.0	67.1	4.8
Total		3285	14.9	83.1	2.0

Table 3-3-2-2 Quality of sleep (%)

Gender	Age group (yrs)	Subjects (n)	Poor	Average	Good
M	20~24	185	3.2	76.2	20.5
	25~29	213	7.5	69.5	23.0
	30~34	207	9.7	73.9	16.4
	35~39	197	11.7	70.1	18.3
	40~44	185	7.6	70.8	21.6
	45~49	183	9.3	61.7	29.0
	50~54	193	7.3	68.9	23.8
	55~59	188	8.5	56.4	35.1
F	20~24	195	7.7	76.9	15.4
	25~29	270	11.9	70.4	17.8
	30~34	225	8.4	72.0	19.6
	35~39	193	18.7	64.2	17.1
	40~44	201	17.4	57.7	24.9
	45~49	209	15.3	67.5	17.2
	50~54	239	16.7	64.0	19.2
	55~59	207	17.4	57.5	25.1
Total		**3290**	**11.3**	**67.4**	**21.3**

Table 3-3-2-3 Average walking hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Less than 30 mins	30~60 mins	1~2 hrs	2 hrs or more
M	20~24	185	23.2	45.4	11.9	19.5
	25~29	213	41.8	33.3	16.4	8.5
	30~34	207	37.2	43.5	12.6	6.8
	35~39	197	42.1	36.5	19.3	2.0
	40~44	185	38.4	33.0	16.8	11.9
	45~49	183	34.4	40.4	14.8	10.4
	50~54	193	35.2	37.8	15.5	11.4
	55~59	188	27.7	46.8	12.8	12.8
F	20~24	195	39.5	46.2	4.6	9.7
	25~29	270	55.2	34.4	6.3	4.1
	30~34	225	48.4	38.7	11.6	1.3
	35~39	193	46.1	40.9	8.8	4.1
	40~44	201	40.3	38.8	10.4	10.4
	45~49	209	34.4	37.3	12.9	15.3
	50~54	239	29.3	36.8	20.1	13.8
	55~59	207	23.2	33.8	20.3	22.7
Total		**3290**	**37.7**	**38.8**	**13.4**	**10.1**

Table 3-3-2-4 Average sitting hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Less than 3 hrs	3~6 hrs	6~9 hrs	9~12 hrs	12 hrs or more
M	20~24	185	12.4	39.5	32.4	12.4	3.2
	25~29	213	9.9	33.3	30.5	20.2	6.1
	30~34	207	5.3	32.9	39.1	18.4	4.3
	35~39	197	17.8	31.5	35.0	14.2	1.5
	40~44	185	16.2	39.5	31.9	8.6	3.8
	45~49	183	12.6	47.5	29.5	9.8	0.5
	50~54	193	19.7	46.1	18.1	15.0	1.0
	55~59	188	20.7	43.1	23.9	9.0	3.2
F	20~24	195	6.2	41.5	26.2	19.5	6.7
	25~29	270	2.2	38.1	20.0	29.6	10.0
	30~34	225	2.2	30.7	34.2	24.9	8.0
	35~39	193	7.8	31.1	38.9	17.6	4.7
	40~44	201	10.0	33.3	37.8	15.4	3.5
	45~49	209	16.3	28.2	37.3	14.8	3.3
	50~54	239	20.1	36.8	30.5	10.5	2.1
	55~59	207	22.7	46.4	23.2	5.8	1.9
Total		**3290**	**12.4**	**37.3**	**30.4**	**15.8**	**4.2**

Table 3-3-2-5 Activities during leisure time (%)

Gender	Age group (yrs)	Subjects (n)	Physical exercise	Chess	Traveling	Social gathering	Audio-visual Entertainment	House chores	Sleeping	Others
M	20~24	185	56.8	5.9	51.9	50.3	56.8	7.0	49.2	8.1
	25~29	213	53.1	6.6	55.9	40.4	60.6	16.4	50.2	9.9
	30~34	207	50.7	3.4	46.4	30.4	60.9	33.8	43.0	16.4
	35~39	197	55.8	3.0	28.9	35.0	57.9	28.9	29.4	20.8
	40~44	185	55.7	4.3	22.7	36.2	63.2	28.1	22.7	15.1
	45~49	183	58.5	7.1	16.9	31.7	48.6	31.7	24.0	14.2
	50~54	193	62.2	5.7	16.1	36.8	53.4	34.7	18.1	14.0
	55~59	188	54.8	8.0	10.6	20.7	53.7	37.2	17.0	15.4
F	20~24	195	26.2	4.1	32.8	65.1	71.8	8.7	64.6	9.7
	25~29	270	25.6	1.1	33.7	66.7	67.0	25.2	55.2	11.5
	30~34	225	28.4	1.8	28.0	50.7	59.6	38.2	51.6	21.8
	35~39	193	33.7	2.6	26.4	52.8	51.3	49.7	38.9	18.1
	40~44	201	38.3	4.5	17.4	41.3	40.3	62.2	40.3	21.4
	45~49	209	55.0	3.8	11.5	28.7	39.7	73.2	29.2	12.9
	50~54	239	51.0	2.5	10.5	29.7	45.2	73.6	20.1	11.3
	55~59	207	65.7	3.4	10.1	20.3	44.0	67.6	13.5	10.6
Total		**3290**	**47.6**	**4.1**	**26.3**	**40.3**	**54.7**	**39.0**	**35.9**	**14.4**

Table 3-3-2-6 Cigarette consumption per day (%)

Gender	Age group (yrs)	Current smokers (n)	Less than 10 cigarettes per day	10~20 cigarettes per day	More than 20 cigarettes per day
M	20~24	23	43.5	47.8	8.7
	25~29	17	47.1	41.2	11.8
	30~34	29	65.5	34.5	0.0
	35~39	55	58.2	40.0	1.8
	40~44	53	39.6	50.9	9.4
	45~49	46	47.8	39.1	13.0
	50~54	23	60.9	34.8	4.3
	55~59	47	40.4	44.7	14.9
F	20~24	5	100.0	0.0	0.0
	25~29	4	100.0	0.0	0.0
	30~34	5	100.0	0.0	0.0
	35~39	5	100.0	0.0	0.0
	40~44	9	88.9	11.1	0.0
	45~49	2	100.0	0.0	0.0
	50~54	3	66.7	0.0	33.3
	55~59	0	0.0	0.0	0.0
Total		326	54.0	38.3	7.7

Table 3-3-2-7 Duration of smoking (%)

Gender	Age group (yrs)	Smokers (n)	Less than 5 years	5~10 years	10~15 years	15 years or more
M	20~24	23	34.8	65.2	0.0	0.0
	25~29	28	39.3	35.7	17.9	7.1
	30~34	41	17.1	34.1	34.1	14.6
	35~39	60	13.3	21.7	25.0	40.0
	40~44	68	13.2	22.1	14.7	50.0
	45~49	73	15.1	4.1	20.5	60.3
	50~54	44	25.0	22.7	2.3	50.0
	55~59	62	11.3	6.5	16.1	66.1
F	20~24	7	57.1	42.9	0.0	0.0
	25~29	6	50.0	33.3	0.0	16.7
	30~34	13	7.7	69.2	23.1	0.0
	35~39	12	41.7	8.3	25.0	25.0
	40~44	11	18.2	36.4	18.2	27.3
	45~49	4	0.0	50.0	0.0	50.0
	50~54	5	0.0	40.0	20.0	40.0
	55~59	0	0.0	0.0	0.0	0.0
Total		457	19.0	23.4	17.3	40.3

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Table 3-3-2-8 Quitting smoking (%)

Gender	Period of quitting	Age group (yrs)							
		20~24	25~29	30~34	35~39	40~44	45~49	50~54	55~59
	Subjects quitting smoking (n)	0	11	12	5	15	27	21	15
M	Quit smoking for less than 2 years	0.0	45.5	41.7	0.0	0.0	14.8	9.5	26.7
	Quit smoking for at least 2 years	0.0	54.5	58.3	100.0	100.0	85.2	90.5	73.3
	Subjects quitting smoking (n)	2	2	8	7	2	2	2	0
F	Quit smoking for less than 2 years	100.0	0.0	50.0	14.3	0.0	0.0	0.0	0.0
	Quit smoking for at least 2 years	0.0	100.0	50.0	85.7	100.0	100.0	100.0	0.0

Table 3-3-2-9 Alcohol consumption (%)

Gender	Drinkers (n)	Age group (yrs)							
		20~24	25~29	30~34	35~39	40~44	45~49	50~54	55~59
M	Subjects (n)	184	213	206	197	185	182	192	188
	Percentage of drinkers	53.3	60.1	61.2	52.3	53.5	51.1	40.1	50.5
F	Subjects (n)	195	270	225	193	201	207	239	207
	Percentage of drinkers	39.0	33.0	34.2	31.6	26.9	26.6	19.2	10.6

Table 3-3-2-10 Frequency of drinking (%)

Gender	Age group (yrs)	Drinkers (n)	Once a month	1~2 times/week	3~4 times/week	5~7 times/week
	20~24	98	71.4	27.6	1.0	0.0
	25~29	128	70.3	19.5	6.3	3.9
	30~34	126	76.2	19.9	1.6	2.4
	35~39	103	56.3	30.1	11.7	1.9
M	40~44	99	49.5	39.4	9.1	2.0
	45~49	93	40.8	38.7	11.8	8.6
	50~54	77	28.6	45.5	20.8	5.2
	55~59	95	37.9	38.9	9.5	13.7
	20~24	76	80.3	18.4	0.0	1.3
	25~29	89	88.8	10.1	1.1	0.0
	30~34	77	74.0	19.5	2.6	3.9
	35~39	61	75.4	18.0	3.3	3.3
F	40~44	54	75.9	18.5	3.7	1.9
	45~49	55	54.5	30.9	9.1	5.5
	50~54	46	63.0	21.7	0.0	15.2
	55~59	22	63.6	27.3	4.5	4.5
Total		1299	62.8	26.7	6.2	4.2

Table 3-3-2-11   Types of alcohol consumed (%)

Gender	Age group (yrs)	Drinkers (n)	Liquor	Beer	Yellow wine	Rice wine	Wine or fruit wine	Mixed wine
M	20~24	97	8.3	72.1	1.0	0.0	9.3	9.3
	25~29	128	13.3	57.0	0.0	0.0	21.9	7.8
	30~34	126	5.5	56.4	0.8	3.1	31.8	2.4
	35~39	103	7.8	55.3	0.0	0.0	35.9	1.0
	40~44	99	6.1	59.6	0.0	0.0	32.3	2.0
	45~49	93	4.3	53.8	0.0	1.1	40.8	0.0
	50~54	77	9.0	52.0	0.0	1.3	33.8	3.8
	55~59	93	8.6	50.5	0.0	6.5	34.4	0.0
F	20~24	74	9.5	33.8	0.0	0.0	35.1	21.6
	25~29	88	9.1	37.5	0.0	0.0	47.7	5.7
	30~34	77	3.9	23.4	0.0	3.9	61.0	7.8
	35~39	61	1.6	18.0	1.6	3.3	72.1	3.3
	40~44	54	3.7	13.0	3.7	3.7	75.9	0.0
	45~49	55	3.6	3.6	1.8	1.8	89.1	0.0
	50~54	46	0.0	19.6	6.5	0.0	73.9	0.0
	55~59	22	0.0	13.6	0.0	4.5	81.8	0.0
Total		**1293**	**6.8**	**44.5**	**0.7**	**1.6**	**42.0**	**4.4**

Table 3-3-2-12   Frequency of having breakfast per week (%)

Gender	Age group (yrs)	Subjects (n)	0 day	1~2 days	3~5 days	6 days or more
M	20~24	185	6.5	21.1	39.5	33.0
	25~29	213	1.4	8.5	39.9	50.2
	30~34	207	4.3	2.9	25.1	67.6
	35~39	197	5.1	6.6	19.8	68.5
	40~44	185	1.1	4.9	16.8	77.3
	45~49	183	1.6	4.4	11.5	82.5
	50~54	192	2.6	2.1	12.5	82.8
	55~59	188	5.3	2.1	4.3	88.3
F	20~24	195	1.5	7.7	40.5	50.3
	25~29	269	3.0	4.8	32.7	59.5
	30~34	224	0.9	2.2	23.7	73.2
	35~39	193	0.5	2.1	14.0	83.4
	40~44	201	1.0	4.0	12.9	82.1
	45~49	209	0.5	3.8	12.9	82.8
	50~54	238	1.7	1.7	16.0	80.6
	55~59	207	1.0	1.4	6.8	90.8
Total		**3286**	**2.3**	**4.9**	**20.9**	**71.9**

Table 3-3-2-13 Frequency of eating out per week (%)

Gender	Age group (yrs)	Subjects (n)	0 meal	1~3 meals	4~6 meals	7~9 meals	10 meals or more
M	20~24	185	1.6	51.4	17.3	13.0	16.8
	25~29	213	3.3	45.5	22.1	13.1	16.0
	30~34	207	2.4	40.1	25.1	15.5	16.9
	35~39	197	4.1	39.6	32.0	9.1	15.2
	40~44	185	5.4	34.1	29.7	10.8	20.0
	45~49	183	8.2	38.8	25.7	7.7	19.7
	50~54	192	7.3	38.0	27.6	16.7	10.4
	55~59	188	12.8	39.9	13.8	17.0	16.5
F	20~24	195	4.1	50.3	26.2	9.7	9.7
	25~29	270	3.0	46.7	26.3	11.5	12.6
	30~34	225	2.7	44.0	25.3	12.4	15.6
	35~39	193	3.1	51.3	18.7	13.0	14.0
	40~44	201	10.9	39.8	26.4	10.4	12.4
	45~49	209	15.8	45.5	20.6	6.7	11.5
	50~54	238	15.2	45.8	19.8	7.9	11.3
	55~59	205	26.3	39.5	18.6	6.9	8.8
Total		3286	7.9	43.3	23.5	11.3	14.1

Table 3-3-2-14 Frequency of consuming high-fat and high-sugary snacks per week (%)

Gender	Age group (yrs)	Subjects (n)	0 time	1~2 times	3~5 times	6 or more times
M	20~24	185	2.7	34.1	41.6	21.6
	25~29	213	2.3	42.7	34.3	20.7
	30~34	207	3.4	33.3	37.7	25.6
	35~39	197	5.6	40.6	38.6	15.2
	40~44	184	7.6	47.8	30.4	14.2
	45~49	183	13.1	57.4	23.0	6.6
	50~54	191	15.2	46.6	32.5	5.8
	55~59	188	32.4	44.7	16.5	6.4
F	20~24	195	0.0	23.1	39.5	37.4
	25~29	270	1.9	34.8	39.3	24.1
	30~34	225	1.8	38.7	37.8	21.8
	35~39	193	6.2	44.0	32.1	17.6
	40~44	201	12.4	48.8	26.9	11.9
	45~49	209	16.7	58.9	19.1	5.3
	50~54	238	16.8	56.7	17.7	8.8
	55~59	206	30.6	53.4	11.7	4.3
Total		3285	10.3	44.0	30.0	15.7

Table 3-3-2-15   Frequency of physical exercise per week (%)

Gender	Age group (yrs)	Subjects (n)	Participants (n)	Less than 1 time	1~2 times	3~4 times	5 times or more
M	20~24	185	160	26.3	47.5	18.1	8.1
	25~29	213	184	33.7	50.5	12.5	3.3
	30~34	207	166	33.1	46.4	16.9	3.6
	35~39	197	157	33.8	39.5	19.1	7.6
	40~44	185	153	23.5	47.1	22.9	6.5
	45~49	183	154	29.2	43.5	18.8	8.4
	50~54	193	152	15.1	36.8	33.6	14.5
	55~59	188	137	17.5	24.8	32.1	25.5
F	20~24	195	132	50.0	31.8	11.4	6.8
	25~29	270	185	54.6	33.0	10.8	1.6
	30~34	225	153	45.1	35.9	15.7	3.3
	35~39	193	134	32.8	52.2	11.9	3.0
	40~44	201	143	30.8	44.1	16.1	9.1
	45~49	209	163	19.6	40.5	26.4	13.5
	50~54	239	182	18.1	38.5	24.7	18.7
	55~59	207	163	10.4	31.3	19.6	38.7
Total		**3290**	**2518**	**29.6**	**40.3**	**19.3**	**10.7**

Table 3-3-2-16   Duration of each physical exercise (%)

Gender	Age group (yrs)	Participants(n)	Less than 30 mins	30~60 mins	60 mins or more
M	20~24	160	18.8	50.6	30.6
	25~29	184	23.9	46.7	29.3
	30~34	166	30.1	42.8	27.1
	35~39	157	35.7	36.3	28.0
	40~44	153	32.0	43.1	24.8
	45~49	154	26.6	47.4	26.0
	50~54	152	30.9	47.4	21.7
	55~59	137	25.5	54.7	19.7
F	20~24	132	42.4	41.7	15.9
	25~29	185	37.3	48.6	14.1
	30~34	153	44.4	46.4	9.2
	35~39	134	35.8	50.7	13.4
	40~44	143	30.8	58.0	11.2
	45~49	163	33.1	47.9	19.0
	50~54	182	34.1	46.7	19.2
	55~59	163	23.9	45.4	30.7
Total		**2518**	**31.5**	**47.1**	**21.5**

Table 3-3-2-17 Self-perception during physical exercise (%)

Gender	Age group (yrs)	Participants(n)	Not much change in breathing and heart rate	Slight increase in breathing and heart rate with little perspiration	Rapid breathing, apparent increase in heart rate and perspiring greatly
M	20~24	160	8.1	48.1	43.8
	25~29	184	4.9	47.3	47.8
	30~34	166	5.4	38.6	56.0
	35~39	157	16.6	39.5	43.9
	40~44	153	7.2	41.4	51.3
	45~49	154	13.6	60.4	26.0
	50~54	152	19.7	42.8	37.5
	55~59	137	22.6	59.1	18.2
F	20~24	132	1.5	62.1	36.4
	25~29	185	5.9	71.9	22.2
	30~34	153	8.5	62.7	28.8
	35~39	134	11.2	66.4	22.4
	40~44	143	14.7	58.7	26.6
	45~49	163	17.8	63.8	18.4
	50~54	182	23.1	60.4	16.5
	55~59	163	35.6	51.5	12.9
Total		**2518**	**13.5**	**54.6**	**31.9**

Table 3-3-2-18 Duration of persistent physical exercising (%)

Gender	Age group (yrs)	Participants(n)	Less than 6 months	6~12 months	1~3 years	3~5 years	5 years or more
M	20~24	160	43.8	15.6	11.9	8.8	20.0
	25~29	184	39.7	18.5	17.4	6.0	18.5
	30~34	166	36.7	18.1	9.6	5.4	30.1
	35~39	157	35.0	13.4	10.2	5.1	36.3
	40~44	152	34.9	17.8	13.8	5.3	28.3
	45~49	153	23.5	20.3	19.6	5.9	30.7
	50~54	152	25.0	9.9	11.2	13.2	40.8
	55~59	137	21.2	10.2	11.7	9.5	47.4
F	20~24	131	71.8	12.2	8.4	3.1	4.6
	25~29	185	67.6	12.4	11.4	1.1	7.6
	30~34	151	64.2	9.9	11.3	3.3	11.3
	35~39	134	52.2	17.9	16.4	3.0	10.4
	40~44	142	42.3	14.8	14.1	7.7	21.1
	45~49	163	35.6	11.7	19.6	12.3	20.9
	50~54	182	27.5	10.4	24.7	11.0	26.4
	55~59	163	15.3	12.3	17.8	7.4	47.2
Total		**2512**	**39.6**	**14.1**	**14.5**	**6.8**	**25.1**

Table 3-3-2-19 Purposes of physical exercise (%)

Gender	Age group (yrs)	Participants(n)	Prevent and cure diseases	Improve exercise ability	Lose weight and keep fit	Relieve pressure and regulate mood	Socialize	Others
M	20~24	160	43.1	70.6	48.1	58.1	23.1	14.4
	25~29	184	37.5	78.3	53.3	65.8	29.3	3.3
	30~34	166	48.8	72.3	48.8	71.7	18.1	6.6
	35~39	157	51.0	72.0	40.8	55.4	16.6	7.6
	40~44	152	61.8	59.2	41.4	47.4	18.4	11.8
	45~49	154	66.9	63.0	25.3	59.1	10.4	7.1
	50~54	152	59.9	53.9	29.6	58.6	14.5	19.7
	55~59	137	71.5	49.6	27.0	49.6	15.3	5.1
F	20~24	132	38.6	50.8	73.5	70.5	11.4	8.3
	25~29	185	55.1	51.4	66.5	75.1	11.4	6.5
	30~34	153	54.9	43.8	70.6	67.3	10.5	3.3
	35~39	134	59.7	46.3	66.4	60.4	9.7	9.7
	40~44	143	72.0	37.8	60.8	55.9	5.6	7.7
	45~49	163	70.6	35.0	54.0	65.6	9.2	9.2
	50~54	182	64.3	36.3	41.8	41.8	8.8	9.9
	55~59	163	67.5	44.2	23.3	32.5	12.9	5.5
Total		**2517**	**57.5**	**54.3**	**48.1**	**58.5**	**14.3**	**8.4**

Table 3-3-2-20 Major locations of physical exercise (%)

Gender	Age group (yrs)	Participants (n)	Stadium or gym	Park	Office or Home	Open area	Road or street	Club	Others
M	20~24	160	71.9	37.5	10.0	22.5	25.0	10.0	27.5
	25~29	184	65.8	46.7	14.1	23.9	31.5	11.4	14.1
	30~34	166	63.3	46.4	22.3	15.7	24.7	16.9	14.5
	35~39	157	59.9	52.9	13.4	15.9	23.6	14.0	13.4
	40~44	152	56.6	47.4	9.9	13.8	25.0	8.6	17.1
	45~49	153	48.4	52.9	11.1	13.7	29.4	5.9	15.7
	50~54	152	45.4	53.9	9.9	14.5	36.8	8.6	13.2
	55~59	137	43.8	56.2	10.9	14.6	28.5	8.0	10.2
F	20~24	132	59.1	41.7	26.5	20.5	24.2	10.6	11.4
	25~29	185	54.6	44.9	20.0	18.9	22.2	11.4	8.6
	30~34	153	51.6	52.3	28.8	13.7	20.9	9.8	13.1
	35~39	134	44.8	50.7	26.9	17.2	21.6	12.7	11.9
	40~44	143	38.5	59.4	25.9	17.5	19.6	7.0	12.6
	45~49	163	34.4	53.4	17.8	16.0	15.3	10.4	19.6
	50~54	182	27.5	53.8	18.7	12.6	11.0	7.7	19.2
	55~59	163	28.8	57.1	18.4	6.1	11.0	6.1	13.5
Total		**2516**	**49.7**	**50.4**	**17.6**	**16.1**	**23.0**	**10.0**	**14.8**

Table 3-3-2-21   Types of physical exercise (%)

Gender	Age group (yrs)	Participants (n)	Jogging	Swimming	Walking	Ball games	Hiking	Bicycling	Equipment work out and strength training	Aerobics and yangko dance	Martial arts and qigong	Boxing	Fencing	Yoga	Judo	Taekwondo	Karate	Others
M	20~24	160	76.3	21.3	22.5	61.3	6.9	17.5	25.0	1.3	1.3	5.6	1.3	0.6	0.0	2.5	0.0	8.1
	25~29	184	70.7	27.7	37.0	55.4	10.9	15.2	21.2	2.2	1.6	0.5	0.0	0.5	0.5	1.1	0.5	6.5
	30~34	166	68.1	27.1	28.3	53.0	13.9	10.8	19.9	4.8	4.8	1.2	1.2	3.6	0.6	1.8	1.8	9.0
	35~39	157	70.7	15.9	36.3	42.0	10.2	18.5	17.8	1.9	1.3	1.3	0.0	2.5	0.0	0.6	3.2	12.1
	40~44	152	59.9	20.4	44.7	39.5	15.8	23.7	15.8	0.7	4.6	0.7	0.0	0.7	0.0	0.0	2.6	9.2
	45~49	154	53.2	26.0	50.0	26.6	17.5	18.2	12.3	1.3	4.5	0.0	0.0	2.6	0.0	0.0	1.3	9.7
	50~54	152	50.0	28.9	55.3	33.6	12.5	16.4	6.6	2.0	4.6	0.7	0.0	0.0	0.0	0.0	0.0	7.2
	55~59	137	40.9	21.2	55.5	21.2	15.3	8.8	10.9	2.9	13.9	0.0	0.0	2.2	0.0	0.0	0.0	8.8
F	20~24	132	64.4	25.8	59.1	36.4	11.4	14.4	3.0	12.1	0.0	3.0	0.0	15.2	0.0	0.0	0.0	9.8
	25~29	185	58.4	28.6	56.2	29.2	10.3	13.5	9.2	16.8	1.1	1.1	0.0	22.2	0.0	0.0	0.5	6.5
	30~34	153	49.0	23.5	61.4	23.5	8.5	8.5	9.8	20.9	0.7	1.3	1.3	21.6	0.0	0.0	0.0	12.4
	35~39	134	44.0	20.9	70.1	18.7	14.9	10.4	2.2	14.2	2.2	0.7	0.0	26.1	0.0	0.0	0.0	10.4
	40~44	143	39.2	23.1	67.8	17.5	11.9	13.3	4.2	16.8	7.7	0.7	0.0	18.2	0.0	0.0	0.0	7.0
	45~49	163	30.1	22.7	67.5	17.2	10.4	14.7	4.3	13.5	9.2	0.0	0.0	17.2	0.0	0.0	0.0	16.6
	50~54	182	15.9	18.1	61.0	4.4	11.5	8.2	4.4	28.6	11.5	0.0	0.0	17.6	0.0	0.0	0.0	11.0
	55~59	163	6.7	19.6	50.3	6.1	7.4	4.3	4.3	35.0	12.3	0.0	0.0	12.9	0.0	0.0	0.0	14.7
Total		**2517**	**49.8**	**23.2**	**51.0**	**30.6**	**11.7**	**13.5**	**10.9**	**11.1**	**5.1**	**1.0**	**0.2**	**10.2**	**0.1**	**0.4**	**0.6**	**9.9**

Table 3-3-2-22 Ball games frequently participated (%)

Gender	Age group (yrs)	Participants (n)	Basketball	Volleyball	Football	Table tennis	Badminton	Tennis	Golf	Billiards	Others
M	20~24	108	32.4	4.6	35.2	3.7	14.8	0.9	0.0	1.9	6.5
	25~29	114	34.2	0.9	31.6	8.8	20.2	0.0	0.0	0.9	3.5
	30~34	98	42.9	0.0	31.6	1.0	16.3	1.0	1.0	0.0	6.1
	35~39	76	19.7	2.6	36.8	3.9	15.8	3.9	1.3	0.0	15.8
	40~44	70	2.9	4.3	28.6	14.3	20.0	11.4	0.0	2.9	15.7
	45~49	48	16.7	2.1	27.1	10.4	16.7	18.8	2.1	2.1	4.2
	50~54	57	12.3	3.5	17.5	22.8	15.8	12.3	0.0	0.0	15.8
	55~59	34	14.7	0.0	14.7	20.6	26.5	2.9	0.0	2.9	17.6
F	20~24	62	11.3	0.0	0.0	3.2	66.1	3.2	0.0	1.6	14.5
	25~29	75	6.7	1.3	0.0	4.0	68.0	5.3	0.0	0.0	14.7
	30~34	47	8.5	0.0	0.0	14.9	51.1	6.4	0.0	0.0	19.1
	35~39	42	4.8	0.0	0.0	21.4	45.2	7.1	0.0	0.0	21.4
	40~44	40	7.5	0.0	0.0	22.5	45.0	5.0	0.0	0.0	20.0
	45~49	41	9.8	0.0	0.0	29.3	34.1	2.4	2.4	0.0	22.0
	50~54	22	4.5	0.0	0.0	22.7	18.2	9.1	0.0	0.0	45.5
	55~59	17	0.0	0.0	0.0	17.6	11.8	5.9	5.9	0.0	58.8
Total		**951**	**18.8**	**1.6**	**19.0**	**10.8**	**29.4**	**5.0**	**0.5**	**0.9**	**13.9**

Table 3-3-2-23 Major obstacles for participating in physical exercise (%)

Gender	Age group (yrs)	Subjects (n)	Lack of interest	Laziness	Healthy, not necessary to exercise	Physically unsuitable	Too much labor intensive work, not necessary to exercise	Lack of time	Lack of locations and facilities	Lack of coaching	Lack of organization	Financial Restraint	Embarrassment	Others
M	20~24	185	12.4	68.6	2.7	3.2	4.3	64.9	38.9	18.4	11.9	3.2	1.1	6.5
	25~29	213	10.8	70.4	0.9	2.3	7.5	65.3	35.7	15.0	16.0	6.1	0.5	7.5
	30~34	207	10.6	66.2	1.0	2.4	7.7	67.6	39.6	15.0	18.8	2.4	0.0	6.3
	35~39	196	12.8	52.6	2.0	4.1	4.6	62.8	34.2	10.7	16.8	2.6	1.5	11.7
	40~44	185	13.0	55.1	2.2	1.6	8.1	56.8	31.9	9.7	11.9	3.2	0.5	9.2
	45~49	183	10.4	48.1	4.9	1.1	14.8	55.2	24.6	6.6	9.8	1.6	0.0	10.9
	50~54	187	11.2	43.3	2.7	3.2	8.0	54.5	15.5	8.6	11.2	2.1	0.0	16.6
	55~59	187	10.7	35.8	2.1	4.8	5.9	46.0	13.9	9.1	7.0	2.1	0.0	17.6
F	20~24	195	14.9	79.0	1.0	7.7	1.5	60.0	34.4	14.9	11.8	4.1	1.0	2.1
	25~29	270	10.0	82.6	1.1	4.4	3.7	62.2	35.2	15.2	12.6	1.1	0.4	5.6
	30~34	225	10.7	79.6	1.3	3.1	2.7	68.0	30.2	12.9	9.3	0.4	0.4	8.0
	35~39	193	15.5	68.4	0.0	3.6	2.6	61.7	30.6	11.9	9.8	2.1	0.5	7.3
	40~44	201	11.4	59.7	1.0	6.0	4.5	61.2	27.4	14.4	13.9	1.0	1.5	10.0
	45~49	209	8.6	46.4	1.0	4.8	5.3	53.6	20.1	8.1	6.7	1.9	0.5	17.2
	50~54	236	8.5	42.8	0.4	9.7	5.5	47.9	9.7	8.5	3.8	2.5	0.8	19.9
	55~59	205	8.8	31.7	2.0	8.8	3.9	44.9	10.7	3.9	2.9	0.0	0.5	22.9
Total		**3277**	**11.2**	**58.8**	**1.6**	**4.5**	**5.6**	**58.4**	**27.1**	**11.5**	**10.9**	**2.3**	**0.6**	**11.2**

Table 3-3-2-24　Sports events frequently watched (%)

Gender	Age group (yrs)	Subjects (n)	Basketball	Volleyball	Football	Gymnastics	Swimming	Martial arts	Boxing	Table tennis	Billiards	Golf	Badminton	Water polo	Baseball	Softball	Weight lifting	Fencing	Wrestling & Judo	Others
M	20~24	185	60.5	11.9	50.8	1.6	11.4	5.4	8.6	5.4	4.9	0.0	24.3	0.0	3.8	0.0	0.0	3.2	3.8	26.5
	25~29	212	44.3	7.5	61.3	5.7	12.7	3.3	7.1	9.9	5.7	0.0	26.4	0.0	2.8	0.5	2.4	0.5	1.4	29.7
	30~34	206	54.4	10.7	67.5	6.3	8.7	4.9	7.8	2.4	6.3	2.4	16.5	0.0	3.9	0.0	1.9	1.0	4.4	30.1
	35~39	195	36.4	10.3	56.9	6.7	8.2	5.6	12.8	8.7	5.6	1.0	13.8	0.0	2.1	0.0	1.0	0.5	2.6	29.2
	40~44	183	25.7	8.7	60.7	8.2	12.6	8.2	9.8	19.7	6.6	2.7	16.9	0.0	1.1	0.0	0.5	0.0	1.1	27.9
	45~49	182	24.7	4.4	47.8	15.9	14.3	9.9	6.6	8.8	4.4	1.6	11.0	0.0	0.0	0.0	0.5	0.5	0.0	39.0
	50~54	192	22.4	12.0	50.0	7.8	20.3	5.7	6.3	13.0	6.8	0.5	15.6	0.5	0.0	0.0	0.0	1.0	1.0	32.8
	55~59	186	20.4	8.6	45.7	8.6	16.1	12.4	11.8	12.9	6.5	0.0	16.7	0.0	0.0	0.0	1.1	0.0	0.0	25.3
F	20~24	194	20.6	18.6	27.3	21.1	23.7	0.0	3.6	9.8	1.5	0.0	26.3	0.0	0.5	0.0	1.0	1.5	1.5	36.6
	25~29	268	19.8	20.5	22.4	23.9	33.6	2.2	3.4	7.5	0.7	1.1	25.7	0.0	0.4	0.0	0.0	1.1	0.0	31.7
	30~34	222	23.0	22.1	18.0	32.0	27.9	2.7	0.5	9.0	2.3	0.5	19.8	0.0	0.5	0.5	1.4	0.9	1.4	32.4
	35~39	190	20.0	14.2	15.3	20.5	35.8	2.6	0.5	13.7	0.0	1.1	27.9	0.0	0.5	0.0	1.1	0.5	1.1	34.7
	40~44	201	14.9	14.4	14.9	25.4	31.3	4.5	1.0	11.4	0.5	0.0	18.9	0.0	0.0	0.0	0.0	0.5	1.0	41.3
	45~49	206	14.1	19.4	11.7	18.9	23.8	7.3	1.0	12.6	0.0	1.0	14.6	0.0	0.5	0.0	0.5	0.0	0.0	47.1
	50~54	233	13.7	15.0	13.3	21.5	24.0	5.2	0.0	9.9	0.0	0.9	8.6	0.0	0.4	0.0	0.4	0.4	1.3	46.4
	55~59	205	9.3	14.1	5.4	22.0	18.5	5.4	0.0	10.2	0.0	1.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	53.7
Total		**3260**	**26.2**	**13.6**	**34.7**	**15.8**	**20.6**	**5.2**	**4.9**	**10.2**	**3.1**	**0.9**	**18.3**	**0.0**	**1.0**	**0.1**	**0.7**	**0.7**	**1.3**	**35.4**

Table 3-3-2-25 Occurrence of diseases in the past five years (%)

Gender	Subjects diagnosed with diseases	Age group (yrs)							
		20~24	25~29	30~34	35~39	40~44	45~49	50~54	55~59
M	Subjects (n)	185	213	207	197	185	183	193	188
	Disease-stricken (%)	8.6	14.1	21.3	24.9	34.6	24.6	31.6	36.7
F	Subjects (n)	195	270	225	193	201	209	239	207
	Disease-stricken (%)	15.4	16.7	19.1	18.8	26.9	26.8	38.1	39.8

Table 3-3-2-26 Diseases diagnosed in the past five years (%)

Gender	Age groups (yrs)	Subjects diagnosed with diseases (n)	Cancer	Cardiovascular disease	Respiratory disease	Accidental injury	Gastrointestinal disease	Hypertension	Endocrine disease	Urinary or reproductive disease	Diabetes	Others
M	20~24	16	0.0	0.0	37.5	56.3	18.8	0.0	0.0	0.0	0.0	18.8
	25~29	30	0.0	0.0	56.7	23.3	16.7	6.7	3.3	6.7	0.0	13.3
	30~34	44	2.3	4.5	29.5	29.5	15.9	20.5	4.5	6.8	0.0	29.5
	35~39	49	2.0	12.2	30.6	16.3	14.3	26.5	0.0	4.1	0.0	16.3
	40~44	64	3.1	4.7	28.1	9.4	23.4	28.1	6.3	4.7	4.7	10.9
	45~49	45	4.4	11.1	6.7	2.2	20.0	42.2	6.7	6.7	13.3	13.3
	50~54	60	0.0	1.7	11.7	6.7	18.3	41.7	0.0	6.7	5.0	21.7
	55~59	69	7.2	11.6	13.0	0.0	13.0	53.6	0.0	10.1	11.6	7.2
F	20~24	29	3.4	3.4	37.9	10.3	51.7	0.0	6.9	10.3	3.4	17.2
	25~29	45	13.3	2.2	22.2	8.9	28.9	0.0	26.7	20.0	0.0	13.3
	30~34	42	4.8	4.8	33.3	4.8	33.3	2.4	11.9	7.1	2.4	33.3
	35~39	36	16.7	0.0	25.0	2.8	13.9	11.1	13.9	13.9	5.6	22.2
	40~44	54	25.9	1.9	37.0	7.4	13.0	3.7	16.7	13.0	1.9	27.8
	45~49	56	19.6	12.5	12.5	5.4	21.4	19.6	7.1	10.7	5.4	19.6
	50~54	91	13.2	12.1	9.9	4.4	18.7	37.4	5.5	5.5	8.8	27.5
	55~59	82	4.9	8.5	9.8	4.9	17.1	36.6	3.7	1.2	17.1	18.3
Total		812	8.3	6.8	21.7	9.0	20.1	25.2	6.8	7.8	6.2	19.5

Table 3-3-2-27   Previously heard of or participated in the "Physical Fitness Study" (%)

Gender	Previously heard of or participated in the Study	Age group (yrs)							
		20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
M	Subjects (n)	185	213	207	197	185	183	193	188
	Heard of the Study	63.2	62.0	65.7	74.1	65.9	68.9	71.0	61.2
	Previously participated in the Study	16.8	20.2	26.6	42.6	37.8	37.7	47.4	51.1
F	Subjects (n)	195	270	225	193	201	209	239	207
	Heard of the Study	63.1	67.4	74.2	77.7	73.1	67.9	74.5	71.5
	Previously participated in the Study	25.1	19.3	30.7	33.7	35.8	36.4	41.4	46.4

Table 3-3-2-28 Perception of the "Physical Fitness Study" (%)

Gender	Age groups (yrs)	Subjects (n)	Meaningless	Understand physical fitness status of oneself	Recognize the importance of physical exercise	Increase scientific knowledge of physical fitness
M	20~24	185	9.7	91.4	49.7	47.6
	25~29	213	3.8	95.3	66.7	58.7
	30~34	206	2.9	98.1	58.3	46.1
	35~39	197	7.6	89.8	55.8	44.7
	40~44	185	7.0	90.8	59.5	44.9
	45~49	183	3.8	91.8	53.6	39.9
	50~54	193	4.7	92.2	52.8	46.1
	55~59	188	6.9	87.8	47.3	37.8
F	20~24	195	1.5	98.5	55.9	49.7
	25~29	270	2.2	98.9	61.9	45.9
	30~34	225	1.3	99.1	62.2	44.0
	35~39	193	5.2	92.2	60.6	45.1
	40~44	201	4.0	96.5	56.7	43.8
	45~49	208	1.9	97.1	48.6	37.5
	50~54	239	4.2	92.5	41.0	39.7
	55~59	205	4.4	91.2	37.1	26.8
Total		3286	4.3	94.2	54.3	43.7

3. Anthropometric Measurements

Table 3-3-3-1 Height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	172.4	5.78	162.0	164.2	169.0	172.5	175.3	179.4	185.0
	25~29	213	172.3	5.69	161.3	164.8	168.8	172.0	175.8	179.4	184.7
	30~34	207	172.2	5.67	162.6	165.1	168.4	171.7	176.0	180.4	183.5
	35~39	197	170.2	5.72	160.4	163.0	166.5	170.2	173.6	178.0	182.2
	40~44	185	170.4	6.11	158.8	163.1	166.3	170.6	174.5	178.1	182.6
	45~49	183	168.2	6.77	152.3	159.5	164.5	168.3	173.4	176.8	179.1
	50~54	193	168.4	5.78	157.8	161.0	164.5	168.4	172.1	176.1	179.6
	55~59	188	167.1	6.19	156.3	159.4	162.4	167.1	171.0	175.4	180.1
F	20~24	195	159.5	5.48	149.1	152.8	156.2	159.3	162.7	166.0	171.8
	25~29	270	159.3	5.42	148.7	152.5	155.8	159.5	163.1	165.8	169.1
	30~34	225	158.7	4.85	150.0	152.6	155.0	158.6	162.4	164.7	167.8
	35~39	193	158.1	5.20	148.4	150.9	154.6	157.7	161.8	165.2	167.4
	40~44	201	158.1	5.31	148.2	151.7	154.7	158.0	161.5	164.5	168.5
	45~49	209	156.9	5.18	146.4	149.8	153.3	156.8	160.3	163.5	167.5
	50~54	239	156.2	5.06	147.6	149.6	153.0	156.0	159.6	162.9	165.7
	55~59	206	155.5	5.59	144.9	148.7	151.6	155.5	159.3	162.5	165.2

Table 3-3-3-2 Sitting height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	91.4	3.01	85.4	87.5	89.5	91.3	93.1	95.9	97.0
	25~29	213	92.2	3.27	85.6	88.4	90.2	92.2	94.1	96.5	98.8
	30~34	207	92.6	2.84	87.8	89.1	90.7	92.6	94.4	96.2	98.1
	35~39	197	91.6	3.07	85.9	87.3	89.5	91.7	93.6	95.4	97.4
	40~44	184	91.9	3.20	86.0	87.9	89.5	91.8	94.4	96.1	98.1
	45~49	183	90.9	3.34	84.2	86.2	88.7	90.8	93.3	94.9	97.0
	50~54	193	90.8	2.85	85.6	87.3	89.0	90.7	92.6	94.6	97.0
	55~59	188	89.8	3.06	83.6	86.2	87.8	90.0	91.9	93.7	96.0
F	20~24	195	86.5	2.78	81.2	83.3	84.6	86.4	88.0	90.2	92.2
	25~29	270	86.1	2.84	80.6	82.5	84.2	86.0	88.0	89.8	91.0
	30~34	225	86.0	2.71	80.8	82.4	84.1	86.0	88.0	89.5	91.3
	35~39	193	86.0	2.80	80.8	82.3	84.4	86.0	88.1	89.6	91.1
	40~44	201	86.1	2.85	80.6	83.0	84.0	85.9	88.0	89.8	91.2
	45~49	209	85.6	2.87	80.5	81.8	83.6	85.6	87.7	89.5	90.5
	50~54	239	85.0	2.86	79.9	81.2	83.0	85.0	87.1	88.5	90.0
	55~59	207	84.1	2.82	78.7	80.5	82.3	84.1	86.0	87.7	89.6

Table 3-3-3-3   Foot Length (cm)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	20~24	185	25.3	1.17	23.1	24.0	24.4	25.3	26.1	26.5	27.6
	25~29	213	25.3	1.14	23.1	23.7	24.6	25.2	26.0	26.6	27.6
	30~34	207	25.3	1.27	23.0	23.9	24.4	25.2	26.0	27.0	27.4
	35~39	197	24.9	1.01	22.8	23.6	24.3	25.0	25.6	26.1	26.8
	40~44	185	25.0	1.11	22.9	23.5	24.2	25.0	25.6	26.4	27.1
	45~49	183	24.7	1.23	22.0	23.1	24.0	24.7	25.6	26.3	26.7
	50~54	193	24.8	1.06	22.8	23.3	24.0	25.0	25.5	26.2	26.7
	55~59	188	24.6	1.12	22.4	23.1	23.8	24.5	25.4	26.2	26.7
F	20~24	194	23.0	1.02	20.9	21.8	22.5	23.0	23.6	24.0	25.2
	25~29	270	22.9	1.30	20.6	21.5	22.2	22.9	23.6	24.3	25.1
	30~34	225	22.8	0.90	21.0	21.7	22.3	22.9	23.4	24.0	24.5
	35~39	193	22.8	1.02	21.0	21.5	22.1	22.8	23.5	24.1	24.6
	40~44	201	22.9	1.03	21.0	21.6	22.2	23.0	23.5	24.2	25.1
	45~49	209	22.9	0.95	21.2	21.5	22.2	23.0	23.5	24.0	24.5
	50~54	239	22.9	0.91	21.1	21.6	22.3	22.8	23.5	24.0	24.6
	55~59	207	22.8	1.03	21.0	21.6	22.0	22.8	23.6	24.0	24.7

Table 3-3-3-4   Weight (kg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	20~24	185	65.7	9.21	51.3	54.0	59.6	65.3	69.8	79.7	85.4
	25~29	213	70.0	11.88	53.4	57.0	61.5	68.2	76.8	86.6	95.4
	30~34	207	70.1	12.18	53.9	57.3	61.3	67.1	77.7	87.6	96.0
	35~39	197	68.8	10.86	50.5	55.9	62.0	68.2	73.5	83.6	93.1
	40~44	185	69.4	8.43	55.4	59.7	63.7	68.5	74.5	79.8	85.9
	45~49	183	68.8	10.03	53.6	56.2	60.9	68.0	76.5	81.5	92.0
	50~54	193	68.6	9.36	50.9	56.6	62.2	68.7	75.2	80.6	86.0
	55~59	187	66.0	8.65	52.2	55.4	59.8	65.2	71.7	78.6	83.4
F	20~24	195	53.3	8.19	41.7	45.2	48.0	51.3	56.6	64.2	76.5
	25~29	269	52.7	8.64	41.0	43.6	47.1	50.8	56.4	64.2	73.8
	30~34	225	53.9	9.30	40.6	43.4	47.9	51.9	58.2	65.4	75.9
	35~39	193	55.4	9.07	40.9	45.3	49.4	54.5	60.6	66.0	76.2
	40~44	201	56.8	8.62	43.8	47.1	51.1	56.0	61.4	68.5	77.0
	45~49	209	58.1	8.61	45.1	47.4	52.4	57.2	63.5	69.3	77.4
	50~54	238	57.8	9.93	43.9	46.7	50.9	56.2	61.9	71.5	80.9
	55~59	207	55.7	7.95	41.6	46.0	50.5	55.4	60.2	66.1	72.1

Table 3-3-3-5 BMI

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	22.1	2.86	17.8	18.7	20.2	21.9	23.4	26.1	29.1
	25~29	213	23.6	3.80	18.1	19.4	20.9	22.8	25.8	28.6	32.2
	30~34	207	23.7	3.88	18.4	20.0	20.9	22.7	25.9	28.8	31.9
	35~39	197	23.7	3.60	18.0	19.8	21.4	23.4	25.2	28.1	31.9
	40~44	185	23.9	2.61	19.9	20.7	22.3	23.6	25.3	27.3	29.2
	45~49	183	24.3	2.99	19.4	20.7	22.2	24.1	25.7	27.8	32.6
	50~54	193	24.2	3.00	18.5	20.2	22.0	24.1	26.6	27.8	29.6
	55~59	187	23.6	2.84	18.5	20.1	21.9	23.3	25.3	27.5	29.7
F	20~24	195	20.9	3.09	16.5	18.0	19.0	20.1	22.2	25.4	28.6
	25~29	269	20.7	3.09	16.8	17.6	18.8	20.1	21.9	24.3	28.9
	30~34	225	21.4	3.53	17.1	17.8	19.0	20.8	22.9	25.6	29.7
	35~39	193	22.1	3.40	17.5	18.4	19.7	21.8	23.9	25.9	29.7
	40~44	201	22.7	3.13	18.0	19.1	20.3	22.1	24.5	27.2	29.7
	45~49	209	23.6	3.20	18.3	19.9	21.6	23.3	25.2	27.6	29.8
	50~54	238	23.7	3.71	18.3	19.5	21.2	23.1	25.5	29.2	31.6
	55~59	206	23.1	3.00	17.4	19.3	21.1	23.0	24.8	27.1	29.1

Table 3-3-3-6 Weight Status according to height-for-weight standards (%)

Gender	Age group (yrs)	n	Underweight	Normal	Overweight	Obese
M	20~24	185	8.6	73.5	13.0	4.9
	25~29	212	5.2	55.2	26.4	13.2
	30~34	207	3.9	59.4	23.2	13.5
	35~39	197	5.6	51.3	33.0	10.2
	40~44	185	0.5	58.4	35.7	5.4
	45~49	183	0.5	48.6	41.5	9.3
	50~54	193	2.6	46.6	42.0	8.8
	55~59	187	3.2	57.8	31.0	8.0
	Total	**1549**	**3.8**	**56.3**	**30.6**	**9.3**
F	20~24	195	19.0	66.7	10.8	3.6
	25~29	269	21.2	66.5	8.2	4.1
	30~34	225	20.4	59.1	16.0	4.4
	35~39	193	11.4	64.8	18.7	5.2
	40~44	201	4.5	63.7	25.4	6.5
	45~49	209	4.3	54.1	32.1	9.6
	50~54	238	4.2	58.0	25.2	12.6
	55~59	206	5.8	60.2	28.2	5.8
	Total	**1736**	**11.6**	**61.6**	**20.2**	**6.5**

Table 3-3-3-7 Chest circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	89.1	6.65	77.8	80.5	85.3	88.6	92.7	98.8	103.2
	25~29	213	91.8	7.94	79.5	82.3	86.0	90.9	96.6	102.6	108.8
	30~34	206	92.3	8.41	79.7	83.0	87.0	90.6	96.4	104.8	109.3
	35~39	197	92.1	7.71	79.6	83.8	87.3	91.5	95.4	101.5	111.1
	40~44	184	92.7	5.48	83.5	86.5	88.8	92.5	96.2	99.7	104.5
	45~49	183	92.7	6.40	82.6	84.6	88.1	92.6	97.0	100.3	106.0
	50~54	193	93.2	6.71	80.2	83.5	89.2	93.4	97.4	102.2	105.0
	55~59	188	91.9	6.12	81.5	85.0	87.2	91.6	95.7	100.5	104.9
F	20~24	195	82.0	5.92	73.8	75.9	78.0	80.7	85.0	90.0	96.7
	25~29	270	81.6	6.69	72.0	74.0	77.2	80.6	85.0	90.0	95.8
	30~34	225	82.7	6.46	73.5	76.0	78.2	81.4	86.0	91.5	97.4
	35~39	193	84.6	7.35	72.6	76.0	79.3	84.3	89.3	93.5	101.0
	40~44	200	85.6	6.84	74.3	77.5	81.1	84.7	89.7	94.8	100.0
	45~49	209	87.2	6.62	76.5	78.9	82.5	87.0	91.1	95.0	101.0
	50~54	239	87.2	7.83	74.5	79.1	82.0	86.0	91.5	97.5	105.0
	55~59	207	87.3	6.62	75.6	78.9	83.0	87.0	92.0	95.0	100.3

Table 3-3-3-8 Waist circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	184	78.1	8.45	66.2	69.4	71.8	76.9	81.3	89.8	99.8
	25~29	213	82.9	10.59	66.8	70.0	75.0	81.4	89.0	97.0	106.9
	30~34	207	83.5	10.43	68.3	71.0	75.9	81.7	89.8	98.2	104.5
	35~39	197	83.3	8.84	67.6	72.2	76.5	83.0	88.6	93.5	101.6
	40~44	184	85.0	7.12	73.0	75.5	80.1	84.6	89.5	94.6	98.8
	45~49	183	85.3	8.48	72.7	75.4	78.6	84.6	90.8	96.1	102.0
	50~54	193	86.2	8.48	71.0	75.4	79.6	86.0	92.5	97.5	101.0
	55~59	188	85.2	7.65	70.1	75.1	79.9	85.5	90.5	94.7	100.3
F	20~24	195	70.7	7.78	59.5	63.0	65.5	69.4	73.7	80.4	92.5
	25~29	269	71.2	8.17	59.9	63.0	65.5	70.0	75.0	81.0	91.5
	30~34	225	72.8	8.42	60.5	63.4	67.4	71.0	77.0	84.0	90.0
	35~39	193	75.4	9.17	62.0	64.2	69.4	74.7	80.2	86.5	95.0
	40~44	200	76.7	8.49	62.5	66.4	70.5	75.3	83.0	88.2	92.5
	45~49	209	79.4	8.46	65.8	68.7	73.6	79.3	84.3	89.6	97.5
	50~54	239	80.2	9.96	63.6	68.9	73.5	78.9	86.0	94.0	100.3
	55~59	207	79.6	8.63	63.7	67.4	74.5	79.6	84.6	91.1	96.8

Table 3-3-3-9   Hip circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	91.6	5.43	81.3	84.9	87.4	91.4	95.0	99.6	102.1
	25~29	212	93.4	6.57	83.0	85.5	88.1	93.1	97.3	102.0	107.3
	30~34	207	93.5	6.41	83.5	86.0	89.0	93.0	96.8	103.2	106.5
	35~39	197	92.9	6.00	83.5	86.0	89.0	92.5	96.3	99.7	107.9
	40~44	184	92.6	4.99	83.9	86.4	89.5	92.0	95.8	99.0	101.3
	45~49	183	92.4	5.60	83.4	85.1	87.9	92.0	96.3	100.1	103.7
	50~54	193	93.0	5.75	82.3	85.6	89.5	93.1	96.8	99.5	104.6
	55~59	188	91.5	5.04	82.1	84.7	88.3	91.3	94.5	97.8	102.1
F	20~24	195	90.9	6.14	81.3	84.7	86.7	90.0	94.2	99.0	107.0
	25~29	270	90.6	6.75	80.8	83.4	86.0	89.9	94.0	99.0	105.2
	30~34	225	91.1	6.95	80.5	83.5	87.0	90.7	94.5	100.0	107.3
	35~39	193	92.3	6.90	81.0	84.0	87.7	91.8	96.2	100.6	106.6
	40~44	200	93.3	6.56	82.9	85.3	88.6	92.5	97.0	101.9	106.9
	45~49	209	94.0	6.60	82.8	85.8	89.2	93.5	97.9	101.8	109.0
	50~54	239	93.9	7.00	83.7	86.2	89.0	92.5	97.3	103.3	108.5
	55~59	207	92.9	6.12	82.4	85.5	89.0	92.1	96.0	100.7	104.4

Table 3-3-3-10   Waist-Hip Ratio (WHR)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	184	0.851	0.054	0.780	0.791	0.816	0.841	0.873	0.935	0.987
	25~29	212	0.883	0.061	0.781	0.804	0.843	0.877	0.925	0.966	1.006
	30~34	207	0.891	0.062	0.792	0.818	0.842	0.889	0.933	0.976	1.015
	35~39	197	0.895	0.053	0.797	0.823	0.861	0.894	0.927	0.968	0.988
	40~44	184	0.917	0.049	0.823	0.859	0.882	0.915	0.955	0.986	1.001
	45~49	183	0.922	0.053	0.835	0.858	0.883	0.917	0.960	0.988	1.022
	50~54	193	0.926	0.055	0.821	0.847	0.887	0.928	0.965	1.001	1.028
	55~59	188	0.930	0.054	0.825	0.854	0.893	0.934	0.967	0.999	1.031
F	20~24	195	0.778	0.055	0.691	0.717	0.737	0.775	0.812	0.849	0.906
	25~29	269	0.785	0.054	0.696	0.722	0.749	0.778	0.811	0.859	0.919
	30~34	225	0.799	0.061	0.705	0.728	0.761	0.791	0.829	0.869	0.918
	35~39	193	0.816	0.059	0.715	0.742	0.772	0.809	0.855	0.893	0.948
	40~44	200	0.821	0.059	0.718	0.742	0.779	0.822	0.858	0.903	0.930
	45~49	209	0.844	0.058	0.742	0.770	0.804	0.842	0.880	0.915	0.948
	50~54	239	0.853	0.065	0.724	0.769	0.811	0.851	0.898	0.932	0.983
	55~59	207	0.856	0.062	0.739	0.770	0.812	0.861	0.901	0.941	0.968

Table 3-3-3-11 Shoulder width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	39.6	1.94	35.7	36.9	38.3	39.8	40.9	41.8	43.0
	25~29	213	39.6	2.09	34.8	37.4	38.5	39.7	40.9	41.9	43.3
	30~34	206	40.1	2.09	37.0	38.0	38.8	40.0	41.3	43.0	43.9
	35~39	197	39.7	1.79	35.5	37.7	38.6	39.7	40.7	42.0	43.0
	40~44	185	39.5	2.07	35.5	36.7	38.5	39.6	40.8	41.9	43.5
	45~49	183	39.2	2.12	36.0	36.8	37.8	39.2	40.6	41.7	42.6
	50~54	193	39.0	1.80	35.4	36.4	37.8	39.2	40.1	41.5	42.1
	55~59	188	38.6	2.08	35.0	36.1	37.5	38.7	39.6	41.0	42.5
F	20~24	195	33.6	2.37	27.1	30.3	32.6	34.0	35.2	36.1	37.1
	25~29	270	33.9	1.95	30.2	31.4	32.7	34.2	35.2	36.2	37.3
	30~34	225	34.1	1.85	30.3	31.7	33.0	34.1	35.3	36.5	37.4
	35~39	193	34.2	1.71	30.8	32.3	33.1	34.2	35.3	36.4	37.4
	40~44	201	34.4	1.75	31.1	32.1	33.2	34.5	35.5	36.7	37.7
	45~49	209	34.3	1.83	30.9	31.9	33.1	34.4	35.5	36.5	37.5
	50~54	239	34.3	1.82	30.9	31.9	33.1	34.1	35.5	36.4	38.0
	55~59	207	34.0	1.99	30.7	31.5	32.9	34.0	35.3	36.2	37.7

Table 3-3-3-12 Pelvis width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	27.2	1.73	24.4	25.1	26.0	27.0	28.2	29.3	30.1
	25~29	211	28.0	2.08	25.1	25.9	26.6	27.8	29.0	30.3	31.7
	30~34	207	28.0	2.08	24.8	25.6	26.5	27.8	29.1	30.5	31.8
	35~39	197	27.7	1.86	25.0	25.9	26.7	27.5	28.6	29.7	32.2
	40~44	184	27.8	1.56	25.0	26.0	27.0	27.8	28.6	30.0	30.5
	45~49	182	27.8	1.72	24.5	25.6	26.7	27.9	29.1	30.0	30.7
	50~54	193	27.9	1.80	24.6	26.0	26.9	27.8	28.8	30.0	32.0
	55~59	188	28.0	1.45	25.6	26.2	27.0	28.0	28.9	29.9	31.0
F	20~24	195	26.6	1.96	23.5	24.6	25.4	26.4	27.8	29.0	31.5
	25~29	270	26.9	2.10	23.5	24.5	25.7	26.8	27.8	29.0	31.3
	30~34	225	27.0	1.81	24.3	25.0	25.8	26.8	28.0	29.0	31.5
	35~39	193	27.3	1.81	24.5	25.2	26.0	27.4	28.2	29.5	31.4
	40~44	201	27.5	1.71	24.2	25.4	26.4	27.5	28.5	29.7	30.7
	45~49	209	27.7	1.90	24.5	25.6	26.4	27.5	28.7	29.8	32.0
	50~54	239	27.8	1.90	25.0	25.6	26.4	27.7	29.0	30.2	31.9
	55~59	207	28.0	2.09	24.6	25.6	26.5	27.8	29.1	30.1	32.5

Table 3-3-3-13 Upper arm skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	11.9	5.54	4.5	6.0	8.0	11.0	14.5	20.0	25.0
	25~29	213	13.6	6.52	4.0	6.5	9.0	12.5	17.0	21.0	29.0
	30~34	207	13.0	6.17	5.0	6.0	8.5	12.0	17.0	20.0	25.5
	35~39	197	12.7	5.53	4.5	6.0	8.5	12.0	16.0	20.0	25.0
	40~44	185	12.5	5.06	5.0	7.0	9.0	12.0	15.5	19.0	22.0
	45~49	183	11.8	5.19	5.0	6.0	8.0	11.0	15.0	18.5	25.0
	50~54	193	11.8	5.06	4.0	6.0	8.0	11.0	15.0	18.0	24.5
	55~59	188	9.8	4.23	4.0	5.0	7.0	9.0	11.5	15.0	20.0
F	20~24	195	19.2	5.66	11.0	13.0	15.0	18.0	22.0	28.0	33.0
	25~29	270	19.6	6.02	10.0	12.0	15.5	19.0	23.5	28.0	34.0
	30~34	225	20.4	7.07	8.5	11.0	15.0	20.0	25.0	30.0	35.0
	35~39	193	22.1	6.94	10.0	14.0	17.0	21.5	27.0	31.0	34.0
	40~44	201	24.1	7.41	11.0	15.0	19.0	23.0	29.0	34.0	38.0
	45~49	209	24.0	6.90	12.0	15.0	19.0	23.5	29.0	33.0	37.0
	50~54	239	24.0	7.11	11.0	14.5	19.5	23.5	29.0	34.0	37.5
	55~59	207	22.3	6.16	11.5	14.5	18.0	22.0	27.0	31.0	33.5

Table 3-3-3-14 Subscapular skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	14.4	5.70	7.0	8.0	10.0	13.0	17.0	22.0	27.0
	25~29	213	18.8	9.25	6.5	9.0	11.0	17.5	24.0	32.0	38.0
	30~34	207	19.5	9.10	8.0	10.0	12.5	18.0	24.0	32.0	42.0
	35~39	197	18.6	7.63	6.5	10.0	13.0	18.0	23.0	28.0	36.5
	40~44	185	20.4	7.24	8.5	11.0	15.0	20.0	25.0	30.0	33.5
	45~49	183	20.8	7.62	8.5	11.5	15.5	20.0	25.5	32.0	38.0
	50~54	193	20.9	7.66	8.0	10.5	15.0	20.0	26.0	31.0	35.5
	55~59	188	18.4	6.82	7.0	10.0	14.0	18.0	22.5	27.0	33.0
F	20~24	195	16.4	5.57	7.0	10.0	13.0	15.5	19.0	23.0	31.0
	25~29	270	17.7	6.48	8.0	10.5	13.5	16.5	21.5	25.5	33.0
	30~34	225	18.2	7.15	8.0	10.0	13.0	17.0	22.0	28.0	36.0
	35~39	193	20.2	7.07	8.5	11.0	15.0	20.0	25.5	30.0	34.0
	40~44	201	21.7	7.97	9.0	12.0	16.0	20.5	27.0	33.0	37.0
	45~49	209	23.0	8.23	9.0	12.5	17.0	22.5	27.0	34.0	40.0
	50~54	239	22.9	7.64	10.0	14.0	17.0	21.5	28.5	34.0	37.0
	55~59	207	20.3	6.61	9.0	12.0	16.0	20.0	25.0	28.0	34.0

Table 3-3-3-15 Abdominal skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	18.3	7.88	6.0	8.5	12.5	17.0	24.5	30.0	32.5
	25~29	213	23.1	9.92	8.0	11.0	15.0	22.5	30.0	34.5	44.0
	30~34	207	24.2	9.82	8.5	12.0	17.5	24.0	29.0	35.0	45.0
	35~39	197	23.2	8.92	6.5	11.5	17.0	22.0	29.0	35.0	40.0
	40~44	185	25.1	7.15	11.0	16.0	20.0	25.0	30.0	35.0	38.0
	45~49	183	25.3	7.02	12.0	15.5	20.5	25.5	29.5	35.5	39.5
	50~54	193	25.1	8.29	9.0	14.5	20.0	25.5	30.5	35.5	40.5
	55~59	188	23.2	7.78	8.5	13.5	18.0	22.5	28.0	33.0	39.0
F	20~24	195	22.3	6.48	10.5	14.5	18.5	21.0	26.5	30.5	36.5
	25~29	270	23.4	7.03	11.0	14.3	18.5	23.0	28.5	33.0	36.0
	30~34	225	22.6	7.77	10.0	12.0	17.0	22.0	29.0	32.5	35.5
	35~39	193	25.4	7.04	11.0	16.0	21.0	25.5	30.0	34.5	37.0
	40~44	201	26.1	8.14	11.5	16.0	21.0	26.0	31.0	37.5	40.0
	45~49	209	27.1	8.54	11.5	17.0	21.5	26.5	32.0	36.5	45.5
	50~54	239	27.3	8.31	13.5	17.5	21.0	26.0	33.0	38.5	44.0
	55~59	207	26.8	7.64	13.0	18.0	22.0	26.0	32.0	35.0	44.5

Table 3-3-3-16 Body fat percentage (%)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	16.7	5.11	10.2	11.4	12.7	15.5	19.1	23.6	28.6
	25~29	213	19.6	7.15	10.0	12.0	14.6	18.8	23.2	28.6	33.1
	30~34	207	19.7	6.95	10.7	11.8	14.4	18.8	23.2	28.1	34.6
	35~39	197	19.0	5.70	9.5	12.7	14.8	18.1	22.9	26.6	31.1
	40~44	185	19.8	5.33	11.1	13.2	16.0	19.3	23.2	26.8	31.3
	45~49	183	19.7	5.60	11.4	13.2	15.5	18.8	22.9	28.1	32.3
	50~54	193	19.7	5.59	10.2	12.3	15.5	19.3	23.4	26.6	32.8
	55~59	188	17.5	4.79	10.0	11.6	14.6	16.9	20.3	23.6	28.6
F	20~24	195	24.3	5.69	15.9	17.8	20.8	23.3	27.3	31.9	37.7
	25~29	270	25.2	6.58	15.4	17.5	20.6	24.5	28.7	33.0	41.9
	30~34	225	26.1	7.39	14.1	17.0	20.3	25.9	30.4	36.2	41.6
	35~39	193	28.1	7.32	15.9	19.5	22.8	27.6	33.6	37.1	42.5
	40~44	201	30.1	8.17	16.2	20.3	23.9	29.0	35.4	40.7	45.6
	45~49	209	30.8	8.00	18.1	20.6	24.7	30.4	35.9	41.0	48.4
	50~54	239	30.8	7.72	17.3	22.2	25.6	29.8	35.4	40.4	47.4
	55~59	207	28.3	6.39	17.3	20.3	23.9	27.8	32.7	37.1	41.3

Table 3-3-3-17 Lean body mass (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	54.4	5.86	44.2	46.8	50.1	54.3	58.5	60.9	66.3
	25~29	213	55.7	6.74	45.2	47.2	51.0	55.1	60.5	64.3	69.0
	30~34	207	55.7	6.76	45.3	47.8	50.9	54.9	59.7	64.7	71.7
	35~39	197	55.2	6.51	43.8	47.1	51.0	54.6	59.4	63.3	69.0
	40~44	185	55.4	5.60	44.2	48.3	52.0	55.2	58.8	62.3	66.8
	45~49	183	54.9	6.14	43.8	47.5	50.5	54.9	59.3	62.6	65.9
	50~54	193	54.7	5.89	44.1	47.0	50.5	54.7	58.8	62.1	66.2
	55~59	188	53.9	7.14	44.1	47.0	49.8	53.7	58	62.8	66.0
F	20~24	195	40.1	5.15	31.5	34.8	36.8	39.5	42.6	46.9	53.7
	25~29	270	38.9	5.23	31.8	33.7	35.8	38.9	41.2	44.75	49.6
	30~34	225	39.4	5.04	31.7	33.9	36.1	38.9	41.8	45.2	49.9
	35~39	193	39.4	4.69	31.7	33.5	36.5	38.4	42.9	45.8	49.1
	40~44	201	39.2	4.50	31.8	34.0	36.2	38.7	42.0	45.2	47.9
	45~49	209	39.7	4.35	31.5	34.5	37.0	39.4	42.7	45.8	48.7
	50~54	239	39.4	5.65	30.5	32.8	36.5	39.5	42.0	46.6	49.7
	55~59	207	39.7	4.93	31.1	33.8	36.2	39.5	43.2	46.0	48.8

4. Physiological Function

Table 3-3-4-1 Resting pulse (bpm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	74.5	10.98	57.0	60.0	67.0	75.0	82.0	89.0	95.0
	25~29	212	75.8	11.53	58.0	61.0	67.0	75.0	84.5	92.0	98.0
	30~34	206	76.7	11.12	58.0	62.0	69.0	76.5	84.0	92.0	98.0
	35~39	195	73.7	9.95	57.0	62.0	66.0	72.0	81.0	88.0	92.0
	40~44	185	75.0	8.48	59.0	65.0	69.0	74.0	81.0	86.0	92.0
	45~49	183	73.1	8.65	56.0	61.0	68.0	73.0	80.0	84.0	88.0
	50~54	192	74.5	9.22	60.0	64.0	67.0	73.5	80.5	87.0	93.0
	55~59	187	73.7	9.53	57.0	61.0	66.0	73.0	80.0	87.0	91.0
F	20~24	195	77.5	9.45	61.0	65.0	71.0	77.0	84.0	90.0	98.0
	25~29	267	77.7	10.15	60.0	65.0	71.0	77.0	85.0	91.0	98.0
	30~34	225	78.8	10.18	61.0	68.0	71.0	78.0	86.0	94.0	99.0
	35~39	191	78.1	10.71	58.0	65.0	71.0	78.0	85.0	91.0	100.0
	40~44	201	77.5	9.82	63.0	66.0	71.0	76.0	84.0	90.0	99.0
	45~49	209	76.2	10.03	60.0	64.0	70.0	75.0	83.0	90.0	97.0
	50~54	238	75.3	9.02	59.0	65.0	69.0	74.5	81.0	87.0	94.0
	55~59	205	72.3	8.66	58.0	61.0	66.0	73.0	78.0	83.0	88.0

Table 3-3-4-2 Systolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	126.5	11.55	102.0	112.0	120.0	126.0	134.0	142.0	148.0
	25~29	213	127.5	12.39	108.0	113.0	119.0	127.0	135.0	144.0	154.0
	30~34	207	128.7	12.87	110.0	114.0	120.0	128.0	136.0	147.0	157.0
	35~39	197	126.3	12.70	101.0	113.0	119.0	125.0	132.0	141.0	158.0
	40~44	185	128.2	12.81	107.0	113.0	121.0	127.0	134.0	146.0	155.0
	45~49	183	128.3	11.65	110.0	114.0	119.0	127.0	137.0	144.0	151.0
	50~54	193	130.5	13.94	109.0	115.0	121.0	129.0	138.0	150.0	162.0
	55~59	188	131.7	14.81	106.0	112.0	121.0	130.5	140.5	150.0	163.0
F	20~24	195	110.6	11.13	91.0	97.0	103.0	111.0	118.0	124.0	135.0
	25~29	270	107.4	12.14	88.0	93.0	99.0	107.0	114.0	122.0	135.0
	30~34	225	108.8	12.20	86.0	92.0	100.0	109.0	118.0	123.0	131.0
	35~39	192	111.7	14.09	89.0	95.0	103.0	111.0	119.5	131.0	143.0
	40~44	201	114.8	14.34	93.0	98.0	104.0	114.0	124.0	132.0	147.0
	45~49	209	118.4	14.91	91.0	100.0	107.0	119.0	129.0	136.0	146.0
	50~54	238	123.9	17.21	94.0	102.0	112.0	124.0	134.0	147.0	155.0
	55~59	207	125.2	15.34	98.0	106.0	114.0	125.0	134.0	144.0	155.0

Table 3-3-4-3 Diastolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	73.1	9.62	56.0	61.0	66.0	72.0	79.0	88.0	92.0
	25~29	213	74.9	9.91	58.0	63.0	68.0	74.0	81.0	87.0	94.0
	30~34	207	76.9	9.32	62.0	66.0	71.0	76.0	82.0	90.0	97.0
	35~39	197	75.8	9.72	60.0	64.0	69.0	75.0	82.0	87.0	96.0
	40~44	185	76.6	9.03	59.0	65.0	71.0	76.0	84.0	88.0	93.0
	45~49	183	77.3	8.62	62.0	66.0	71.0	78.0	83.0	88.0	94.0
	50~54	193	78.7	10.19	58.0	67.0	72.0	78.0	87.0	90.0	97.0
	55~59	188	78.8	8.40	62.0	68.0	73.5	78.5	86.0	89.0	94.0
F	20~24	195	68.8	9.33	53.0	59.0	62.0	67.0	75.0	80.0	84.0
	25~29	270	67.3	8.74	52.0	57.0	61.0	67.0	72.0	78.0	85.0
	30~34	225	67.9	9.04	53.0	56.0	62.0	67.0	74.0	80.0	85.0
	35~39	192	69.5	10.92	52.0	57.0	61.0	69.0	75.0	83.0	94.0
	40~44	201	70.4	9.79	54.0	59.0	63.0	69.0	76.0	84.0	90.0
	45~49	209	70.4	11.00	50.0	57.0	63.0	69.0	77.0	85.0	93.0
	50~54	238	73.2	10.93	54.0	59.0	66.0	73.0	79.0	88.0	95.0
	55~59	207	71.3	10.01	53.0	59.0	65.0	70.0	77.0	86.0	91.0

Table 3-3-4-4 Pressure difference (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	53.4	10.40	35.0	40.0	47.0	53.0	60.0	67.0	73.0
	25~29	213	52.6	9.45	36.0	41.0	46.0	51.0	58.0	65.0	71.0
	30~34	206	51.9	9.78	33.0	41.0	46.0	52.0	58.0	63.0	69.0
	35~39	197	50.4	8.40	34.0	41.0	45.0	50.0	56.0	62.0	64.0
	40~44	185	51.6	9.37	36.0	41.0	45.0	51.0	58.0	63.0	72.0
	45~49	181	51.0	7.94	36.0	41.0	45.0	51.0	57.0	61.0	65.0
	50~54	193	51.8	9.68	35.0	40.0	44.0	52.0	58.0	65.0	72.0
	55~59	188	52.9	10.67	35.0	41.0	45.0	52.0	59.0	68.0	79.0
F	20~24	195	41.9	7.99	27.0	31.0	38.0	42.0	46.0	51.0	58.0
	25~29	270	40.1	8.00	27.0	30.0	35.0	40.0	45.0	51.5	57.0
	30~34	225	40.9	8.33	26.0	30.0	34.0	41.0	46.0	52.0	59.0
	35~39	192	42.3	8.40	27.0	32.0	37.0	42.0	47.0	53.0	59.0
	40~44	201	44.3	9.45	30.0	33.0	38.0	44.0	50.0	55.0	61.0
	45~49	209	48.0	10.44	32.0	37.0	41.0	47.0	53.0	61.0	71.0
	50~54	238	50.8	11.54	31.0	36.0	44.0	50.0	58.0	63.0	79.0
	55~59	207	54.0	11.32	34.0	40.0	47.0	53.0	61.0	69.0	79.0

Table 3-3-4-5 Vital capacity (ml)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	4033.6	774.95	2550	2970	3480	4125	4480	5035	5460
	25~29	213	4038.9	755.84	2490	3060	3580	4070	4475	5030	5495
	30~34	207	4064.0	702.53	2755	3125	3610	4035	4520	5005	5460
	35~39	196	3867.7	737.15	2610	2925	3345	3883	4348	4835	5205
	40~44	185	3795.5	654.99	2655	2995	3390	3820	4155	4565	5070
	45~49	183	3475.7	675.84	2255	2750	3095	3410	3885	4230	5055
	50~54	193	3485.5	635.03	2320	2785	3070	3510	3855	4325	4765
	55~59	188	3144.7	682.62	1925	2300	2658	3080	3528	4120	4535
F	20~24	195	2789.7	517.80	1835	2180	2480	2785	3105	3365	3985
	25~29	269	2737.0	518.55	1855	2160	2420	2695	3055	3460	3720
	30~34	225	2749.1	527.84	1855	2080	2410	2740	3030	3480	3790
	35~39	192	2686.9	523.06	1725	2100	2368	2648	3000	3310	3665
	40~44	201	2562.6	568.29	1515	1875	2170	2575	2955	3255	3450
	45~49	209	2408.1	532.80	1510	1815	2040	2365	2745	3080	3460
	50~54	239	2322.6	533.45	1355	1705	1985	2255	2670	3025	3325
	55~59	207	2213.6	556.26	1255	1675	1880	2165	2485	2870	3500

Table 3-3-4-6 Vital capacity/weight (ml/kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	61.9	11.69	41.4	46.8	54.2	61.9	68.2	77.4	82.1
	25~29	213	58.9	12.57	35.8	42.5	51.2	59.0	67.9	73.4	82.8
	30~34	207	59.1	11.92	37.8	43.1	50.7	59.2	67.1	73.1	81.8
	35~39	196	57.1	12.27	35.8	42.8	48.6	57.0	65.4	71.3	80.4
	40~44	185	55.3	10.67	37.1	41.8	49.1	54.0	61.3	69.1	77.1
	45~49	183	51.2	10.59	34.4	37.9	45.4	49.7	55.9	64.0	77.8
	50~54	193	51.6	10.70	31.1	39.5	44.2	50.5	60.8	66.6	69.7
	55~59	187	48.2	10.45	26.3	36.1	40.9	48.1	55.0	62.8	67.1
F	20~24	195	53.0	10.04	33.0	41.6	47.3	52.0	59.1	66.3	73.7
	25~29	269	52.5	9.72	34.5	40.9	46.8	52.2	58.0	65.0	71.6
	30~34	225	51.9	11.18	32.7	39.7	44.3	50.4	57.8	67.0	77.1
	35~39	192	49.3	10.70	30.2	35.4	41.7	49.0	56.6	64.0	69.3
	40~44	201	45.9	11.55	26.4	31.1	38.4	45.5	53.4	60.2	70.0
	45~49	209	42.0	10.04	25.1	30.1	34.8	41.5	47.3	56.3	62.9
	50~54	238	41.3	11.65	21.6	27.3	33.3	39.1	49.3	57.5	64.7
	55~59	207	40.3	10.34	22.6	28.2	33.8	39.5	46.7	53.2	60.8

Table 3-3-4-7 Step test index

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	180	56.2	8.95	43.7	45.6	50.3	54.7	60.8	68.5	78.3
	25~29	206	53.3	7.88	43.3	44.6	47.9	52.3	57.3	62.9	70.9
	30~34	199	53.2	7.64	41.5	45.7	48.4	52.0	56.3	61.6	72.6
	35~39	183	56.2	9.19	42.9	45.5	48.6	55.2	61.6	69.8	76.9
	40~44	176	55.8	7.68	42.5	46.9	50.2	55.2	60.4	67.2	70.9
	45~49	182	55.8	8.49	41.9	47.1	51.1	54.9	59.2	66.7	72.0
	50~54	186	56.2	9.06	37.6	46.2	50.3	55.9	61.6	67.2	73.8
	55~59	175	56.4	10.40	34.2	45.3	50.3	55.9	62.9	68.7	73.8
F	20~24	193	54.4	7.31	43.1	45.9	49.2	54.2	58.8	63.8	67.2
	25~29	267	55.1	7.88	43.4	46.6	49.7	53.9	59.6	65.2	72.0
	30~34	223	55.7	8.69	43.5	45.9	49.7	54.2	60.8	66.2	75.6
	35~39	190	56.5	8.74	44.6	47.5	50.0	54.5	61.6	70.1	76.3
	40~44	198	57.1	8.58	42.1	46.6	51.4	57.0	62.5	69.2	73.2
	45~49	199	58.7	9.40	42.1	48.1	52.9	57.3	64.7	69.8	80.4
	50~54	219	57.6	10.95	36.6	43.9	51.1	57.3	64.3	71.4	79.6
	55~59	194	60.2	12.38	32.7	43.5	53.6	60.8	67.2	75.0	83.3

5. Physical Fitness

Table 3-3-5-1 Vertical jump (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	37.7	6.93	23.2	29.5	32.8	37.5	42.2	46.7	51.0
	25~29	211	36.8	7.50	24.6	27.7	32.0	36.3	41.1	46.5	52.7
	30~34	207	37.3	6.33	26.1	28.8	33.0	37.3	41.4	44.9	49.4
	35~39	195	35.5	5.92	24.4	28.3	31.6	35.5	39.0	41.9	46.0
F	20~24	195	25.0	4.66	17.2	19.4	21.5	25.2	28.2	30.9	34.2
	25~29	270	24.0	4.35	16.7	18.5	20.9	23.5	26.6	29.9	32.8
	30~34	224	23.7	4.26	15.8	18.3	20.8	23.3	26.5	29.7	32.2
	35~39	191	22.9	4.40	15.2	17.6	20.1	22.4	25.6	28.9	32.3

Table 3-3-5-2 Push-ups (M) / One-minute sit-ups (F) (times)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	178	30.2	14.51	5.0	10.0	20.0	30.0	39.0	50.0	62.0
	25~29	213	26.6	13.50	4.0	11.0	17.0	25.0	34.0	43.0	57.0
	30~34	203	27.2	14.64	7.0	11.0	20.0	24.0	32.0	50.0	60.0
	35~39	187	26.1	13.71	7.0	10.0	17.0	22.0	33.0	48.0	56.0
F	20~24	193	24.8	8.75	10.0	15.0	19.0	25.0	30.0	35.0	44.0
	25~29	270	22.6	7.86	7.0	13.0	18.0	23.0	27.0	32.0	38.0
	30~34	221	21.2	8.20	5.0	12.0	16.0	21.0	26.0	32.0	37.0
	35~39	183	19.2	8.00	3.0	9.0	15.0	20.0	24.0	28.0	35.0

Table 3-3-5-3 Grip strength (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	42.9	7.64	28.8	32.7	38.6	42.7	48.2	52.5	57.9
	25~29	213	43.9	8.72	29.8	32.6	37.7	43.2	50.1	54.9	60.5
	30~34	207	45.0	8.55	30.1	34.4	38.9	44.8	50.5	55.8	60.7
	35~39	197	44.7	8.18	29.9	34.5	39.8	44.3	49.5	55.2	61.8
	40~44	185	46.0	8.59	31.4	35.3	40.2	45.1	50.6	58.7	65.3
	45~49	183	45.1	7.69	31.8	35.1	39.4	44.8	50.4	55.6	58.9
	50~54	193	45.1	7.78	30.5	35.4	40.5	44.0	49.6	55.5	59.7
	55~59	188	41.2	7.53	29.8	31.8	35.4	41.1	45.3	52.3	57.6
F	20~24	195	25.7	5.08	15.4	19.4	22.5	25.4	29.5	32.8	34.5
	25~29	270	24.1	4.83	15.4	18.1	21.0	23.8	27.7	30.2	33.0
	30~34	225	24.9	5.43	15.2	18.3	21.3	24.6	28.6	31.7	36.1
	35~39	193	25.6	5.79	15.2	18.5	21.6	24.9	29.8	33.5	37.4
	40~44	201	26.4	5.93	15.8	18.7	22.5	26.4	30.3	33.7	38.1
	45~49	209	25.7	5.75	15.7	19.0	21.7	25.2	29.5	33.8	36.5
	50~54	238	24.4	5.61	15.1	17.3	20.5	24.4	28.0	31.3	35.7
	55~59	207	23.4	5.22	15.5	16.7	19.8	22.9	26.6	30.5	34.4

Table 3-3-5-4 Back strength (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	110.4	27.78	61.0	75.0	90.0	111.0	128.0	148.0	166.0
	25~29	206	108.6	26.18	64.0	76.0	91.0	108.0	125.0	145.0	159.0
	30~34	203	108.4	26.44	65.0	72.0	90.0	108.0	125.0	143.0	157.0
	35~39	194	108.1	26.93	53.0	74.0	92.0	107.0	124.0	142.0	161.0
F	20~24	194	61.4	18.47	31.0	39.0	48.0	61.5	72.0	86.0	100.0
	25~29	266	55.3	16.17	30.0	36.0	43.0	52.5	66.0	78.0	89.0
	30~34	220	58.2	17.57	28.0	37.0	45.0	57.0	70.0	82.0	93.0
	35~39	190	57.6	18.68	26.0	34.0	43.0	56.0	70.0	84.5	94.0

Table 3-3-5-5 Sit and reach (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	2.1	9.69	-15.9	-11.3	-5.0	2.1	9.6	14.7	18.1
	25~29	213	2.4	9.01	-14.3	-8.8	-3.5	2.4	8.2	12.8	19.2
	30~34	203	2.4	9.82	-14.3	-11.2	-5.4	3.9	9.6	14.5	18.8
	35~39	197	2.7	8.62	-13.6	-9.9	-3.0	3.8	8.1	13.3	18.1
	40~44	185	2.6	8.63	-12.7	-8.8	-3.2	2.1	8.0	13.8	17.7
	45~49	183	1.7	8.91	-13.4	-10.8	-5.5	2.4	8.0	12.8	18.4
	50~54	192	2.1	8.56	-11.9	-9.7	-4.4	1.7	8.0	13.4	18.0
	55~59	188	-0.6	8.59	-15.5	-11.0	-7.6	-1.7	5.7	10.7	16.3
F	20~24	195	7.0	8.75	-10.0	-5.5	0.8	7.8	13.2	18.1	21.4
	25~29	270	5.2	8.96	-11.6	-7.7	-1.1	6.0	11.7	16.9	20.3
	30~34	225	6.2	9.84	-12.1	-8.4	0.4	7.1	13.7	17.7	23.2
	35~39	192	5.5	9.20	-12.0	-8.6	-0.7	5.6	11.4	17.8	22.8
	40~44	201	7.3	9.40	-10.3	-5.1	0.7	6.6	14.1	19.3	25.5
	45~49	208	5.9	8.71	-10.5	-6.2	-0.4	6.4	12.2	17.7	20.4
	50~54	234	6.1	9.54	-11.7	-6.6	-1.9	6.4	13.0	17.7	22.5
	55~59	206	6.7	9.49	-11.0	-7.0	0.9	7.2	13.3	18.6	24.5

Table 3-3-5-6 Choice reaction time (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	0.40	0.058	0.32	0.34	0.36	0.39	0.44	0.49	0.52
	25~29	213	0.41	0.056	0.32	0.34	0.38	0.40	0.44	0.47	0.52
	30~34	207	0.41	0.055	0.32	0.35	0.37	0.41	0.45	0.49	0.53
	35~39	197	0.43	0.066	0.31	0.36	0.39	0.42	0.45	0.51	0.60
	40~44	185	0.43	0.060	0.34	0.36	0.39	0.42	0.46	0.51	0.55
	45~49	183	0.44	0.053	0.36	0.38	0.40	0.43	0.47	0.51	0.56
	50~54	193	0.44	0.057	0.35	0.37	0.40	0.44	0.47	0.51	0.56
	55~59	188	0.45	0.074	0.35	0.38	0.41	0.45	0.48	0.53	0.60
F	20~24	195	0.43	0.054	0.34	0.37	0.40	0.43	0.46	0.50	0.56
	25~29	270	0.45	0.065	0.36	0.38	0.41	0.45	0.49	0.54	0.60
	30~34	225	0.45	0.070	0.36	0.38	0.41	0.44	0.49	0.52	0.58
	35~39	193	0.46	0.075	0.37	0.39	0.41	0.45	0.49	0.55	0.65
	40~44	201	0.48	0.075	0.36	0.39	0.43	0.47	0.52	0.57	0.65
	45~49	209	0.50	0.082	0.39	0.41	0.44	0.48	0.53	0.61	0.68
	50~54	239	0.51	0.102	0.38	0.41	0.44	0.49	0.55	0.61	0.77
	55~59	207	0.52	0.120	0.38	0.42	0.45	0.50	0.55	0.63	0.74

Table 3-3-5-7 One foot stands with eyes closed (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	20~24	185	47.9	46.14	4.0	8.0	15.0	28.0	64.0	133.0	158.0
	25~29	213	39.4	43.65	3.0	5.0	12.0	23.0	47.0	91.0	150.0
	30~34	207	36.6	38.52	3.0	5.0	11.0	25.0	48.0	84.0	143.0
	35~39	196	40.4	46.14	4.0	6.0	11.0	24.0	58.0	90.0	131.0
	40~44	185	30.6	39.93	3.0	5.0	9.0	18.0	40.0	68.0	101.0
	45~49	183	26.5	42.08	3.0	4.0	6.0	15.0	28.0	59.0	121.0
	50~54	193	22.6	23.38	3.0	5.0	7.0	15.0	30.0	50.0	72.0
	55~59	188	22.7	30.54	3.0	3.0	5.0	12.0	24.5	54.0	120.0
F	20~24	195	45.2	46.18	3.0	8.0	15.0	31.0	60.0	100.0	150.0
	25~29	270	46.3	55.00	5.0	9.0	17.0	30.0	57.0	106.0	154.0
	30~34	225	39.6	35.77	3.0	6.0	14.0	28.0	55.0	82.0	137.0
	35~39	193	33.5	37.12	3.0	5.0	9.0	18.0	49.0	77.0	136.0
	40~44	201	30.7	30.22	3.0	5.0	11.0	23.0	40.0	62.0	96.0
	45~49	209	25.9	30.74	3.0	4.0	9.0	17.0	30.0	58.0	116.0
	50~54	237	18.4	21.49	3.0	4.0	6.0	10.0	21.0	48.0	70.0
	55~59	207	14.1	20.12	3.0	3.0	5.0	9.0	17.0	27.0	54.0

IV. Seniors

1. Basic Information of the Subjects

Table 3-4-1-1 Distribution of sampling sites (senior centers)

Parish/Area	Sampling site (senior center)	M Subjects (n)	M Percentage (%)	F Subjects (n)	F Percentage (%)	Total Subjects (n)	Total Percentage (%)
Nossa Senhora de Fátima (North)	Centro de Dia da Ilha Verde	3	1.5	8	1.8	11	1.7
	União Geral das Associações dos Moradores de Macau	12	6.0	28	6.4	40	6.3
	Centro de Convívio da Associação de Mútuo Auxílio dos Moradores de Mong-Há	0	0.0	5	1.1	5	0.8
	Centro de Convívio da Obra das Mães	7	3.5	12	2.7	19	3.0
	Centro de Actividades para Idosos da Associação Beneficência Tung Sin Tong	16	8.0	15	3.4	31	4.9
Santo António and São Lázaro (Central)	Centro de Convívio da Associação de Mútuo Auxílio dos Moradores do Sam Pá Mun	0	0.0	10	2.3	10	1.6
Sé, São Lourenço and Nossa Senhora do Carmo (South & islands)	Centro de Convívio "Missão Luterana de Hong Kong e Macau / Centro de Terceira Idade Yan Kei"	0	0.0	10	2.3	10	1.6
	Centro de Cuidados Especiais Longevidade (Serviço de Apoio Domiciliário)	0	0.0	1	0.2	1	0.2
	Centro de Lazer e Recreação das Associações dos Moradores da Zona Sul de Macau	0	0.0	3	0.7	3	0.5
	Instituto Politécnico de Macau - Academia do Cidadão Sénior	6	3.0	1	0.2	7	1.1
	Associação Geral das Mulheres de Macau	13	6.5	54	12.4	67	10.5
Others	Individuals aged over 60 years old working in the sampling institutions of adults	90	44.8	125	28.6	215	33.7
Supplementary (North)	Centro de Dia de Mong-Há						
Supplementary (South & islands)	Federação das Associações dos Operários de Macau Centro de Convívio da Associação dos Habitantes das Ilhas Kuan Iek	54	26.9	165	37.8	219	34.3
	Total	**201**	**100**	**437**	**100**	**638**	**100**

Table 3-4-1-2 Residential distribution of subjects (%)

Parish	M	F	Total
São Francisco Xavier	6.5	9.4	**8.5**
Nossa Senhora do Carmo	18.4	17.2	**17.6**
São Lourenço	9.5	4.3	**6.0**
Sé	4.0	7.1	**6.1**
Santo António	16.4	15.3	**15.7**
São Lázaro	10.9	5.9	**7.5**
Nossa Senhora de Fátima	34.3	40.7	**38.7**

Table 3-4-1-3 Birthplace (%)

Gender	Birthplace	Ages 60-64	Ages 65-69	Total
M	Mainland	57.4	60.0	**58.7**
	Macao	31.7	31.0	**31.3**
	Hong Kong	1.0	3.0	**2.0**
	Portugal	1.0	0.0	**0.5**
	Others	8.9	6.0	**7.5**
F	Mainland	69.1	80.4	**74.1**
	Macao	19.3	13.4	**16.7**
	Hong Kong	2.5	2.1	**2.3**
	Portugal	0.0	0.0	**0.0**
	Others	9.1	4.1	**6.9**

Table 3-4-1-4 Education level (%)

Gender	Education level	Ages 60~64	Ages 65~69	Total
M	Below primary school	5.0	14.0	**9.5**
	Primary school	22.8	23.0	**22.9**
	Secondary school	55.4	56.0	**55.7**
	College and university	14.9	7.0	**10.9**
	Master	1.0	0.0	**0.5**
	Doctor	1.0	0.0	**0.5**
F	Below primary school	21.0	25.8	**23.1**
	Primary school	37.9	40.2	**38.9**
	Secondary school	36.2	30.4	**33.6**
	College and university	4.9	3.6	**4.4**

Table 3-4-1-5 Occupation before retirement /current occupation (%)

Gender	Category	Occupation before retirement	Ages 60~64	Ages 65~69	Total
M	Labor intensive	Legislative officers, public administration officers, community leaders or managers	3.0	1.0	**2.0**
		Professionals	1.0	1.0	**1.0**
		Technicians or professional assistants	2.0	10.0	**6.0**
		Office clerks	3.0	0.0	**1.5**
		Customer service or sales representatives	23.8	18.0	**20.9**
		Skilled agricultural and fishery workers	0.0	3.0	**1.5**
		Craftsmen or artisans	16.8	13.0	**14.9**
		Machine operators, drivers or assemblers	9.9	13.0	**11.4**
		Non-technicians	5.9	8.0	**7.0**
		Others	1.0	2.0	**1.5**
		House chores	1.0	3.0	**2.0**
		Total	**67.3**	**72.0**	**69.7**
	Non-labor intensive	Legislative officers, public administration officers, community leaders or managers	1.0	3.0	**2.0**
		Professionals	9.9	3.0	**6.5**
		Technicians or professional assistants	8.9	5.0	**7.0**
		Office clerks	6.9	7.0	**7.0**
		Customer service or sales representatives	4.0	6.0	**5.0**
		Others	2.0	4.0	**3.0**
		Total	**32.7**	**28.0**	**30.3**
F	Labor intensive	Legislative officers, public administration officers, community leaders or managers	0.0	0.5	**0.2**
		Professionals	0.8	0.0	**0.4**
		Technicians or professional assistants	1.2	1.6	**1.4**
		Office clerks	1.6	2.1	**1.8**
		Customer service or sales representatives	16.9	12.9	**15.1**
		Skilled agricultural and fishery workers	0.0	1.0	**0.4**
		Craftsmen or artisans	16.5	20.6	**18.3**
		Machine operators, drivers or assemblers	0.0	1.0	**0.4**
		Non-technicians	15.3	14.9	**15.1**
		Others	1.2	5.6	**3.2**
		House chores	18.1	22.7	**20.1**
		Total	**71.6**	**83.0**	**76.7**
	Non-labor intensive	Legislative officers, public administration officers, community leaders or managers	1.2	0.5	**0.9**
		Professionals	3.3	1.5	**2.5**
		Technicians or professional assistants	1.6	1.0	**1.4**
		Office clerks	14.8	6.7	**11.2**
		Customer service or sales representatives	4.9	4.6	**4.8**
		Craftsmen or artisans	0.4	0.0	**0.2**
		Others	0.8	2.1	**1.4**
		Unemployed	1.2	0.5	**0.9**
		Total	**28.4**	**17.0**	**23.3**

Table 3-4-1-6 Working environment before retirement (%)

Gender	Working environment before retirement	Ages 60~64	Ages 65~69	Total
M	Outdoors	25.7	28.0	**26.9**
	Indoors (naturally ventilated)	26.7	29.0	**27.9**
	Indoors (air conditioned)	47.5	43.0	**45.3**
F	Outdoors	7.8	9.8	**8.7**
	Indoors (naturally ventilated)	34.2	39.7	**36.6**
	Indoors (air conditioned)	58.0	50.5	**54.7**

Table 3-4-1-7   Average working hours per week (%)

Gender	Working hours before retirement (hrs)	Ages 60~64	Ages 65~69	Total
M	Unemployed	34.7	74.0	**54.2**
	Less than 20	7.9	9.0	**8.5**
	20~35	5.9	4.0	**5.0**
	35~40	25.7	0.0	**12.9**
	40~50	17.8	10.0	**13.9**
	50 or more	7.9	3.0	**5.5**
F	Unemployed	59.7	77.8	**67.7**
	Less than 20	6.2	11.9	**8.7**
	20~35	7.0	4.6	**5.9**
	35~40	9.9	2.6	**6.6**
	40~50	12.8	3.1	**8.5**
	50 or more	4.5	0.0	**2.5**

2. Lifestyle

Table 3-4-2-1 Average sleeping hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Below 6 hrs	6~9 hrs	9 hrs or more
M	60~64	101	18.8	73.3	7.9
	65~69	100	27.0	68.0	5.0
F	60~64	243	30.5	66.7	2.9
	65~69	194	38.1	59.8	2.1
Total		**638**	**30.4**	**65.8**	**3.8**

Table 3-4-2-2 Quality of sleep (%)

Gender	Age group (yrs)	Subjects (n)	Poor	Average	Good
M	60~64	101	7.9	65.3	26.7
	65~69	100	9.0	59.0	32.0
F	60~64	243	22.2	49.8	28.0
	65~69	194	24.7	47.9	27.3
Total		**638**	**18.7**	**53.1**	**28.2**

Table 3-4-2-3 Average walking hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Below 30 mins	30~60 mins	1~2 hrs	2 hrs or more
M	60~64	101	19.8	33.7	32.7	13.9
	65~69	100	11.0	35.0	29.0	25.0
F	60~64	243	13.2	29.2	33.7	23.9
	65~69	194	11.3	26.8	35.1	26.8
Total		**638**	**13.3**	**30.1**	**33.2**	**23.4**

Table 3-4-2-4 Average sitting hours per day (%)

Gender	Age group (yrs)	Subjects (n)	Below 3 hrs	3~6 hrs	6~9 hrs	9~12 hrs	12 hrs or more
M	60~64	101	21.8	53.5	19.8	5.0	0.0
	65~69	100	25.0	54.0	19.0	2.0	0.0
F	60~64	243	32.1	49.4	14.0	3.7	0.8
	65~69	194	35.6	53.6	7.2	3.1	0.5
Total		**638**	**30.4**	**52.0**	**13.6**	**3.5**	**0.5**

Table 3-4-2-5 Cigarette Consumption (%)

Gender	Age group (yrs)	Subjects (n)	Smokers	Less than 10 cigarettes per day	10~20 cigarettes per day	More than 20 cigarettes per day	Quit smoking for less than 2 years	Quit smoking for at least 2 years
M	60~64	101	39	30.8	23.1	7.7	5.1	33.3
	65~69	100	36	22.2	22.2	8.3	13.9	33.3
F	60~64	243	1	0.0	100.0	0.0	0.0	0.0
	65~69	194	0	0.0	0.0	0.0	0.0	0.0
Total		**638**	**76**	**26.3**	**23.7**	**7.9**	**9.2**	**32.9**

Table 3-4-2-6 Duration of smoking (%)

Gender	Age group (yrs)	Subjects (n)	Less than 5 years	5~10 years	10~15 years	15 years or more
M	60~64	39	7.7	12.8	17.9	61.5
	65~69	35	5.7	0.0	17.1	77.1
F	60~64	1	0.0	0.0	0.0	100.0
	65~69	0	0.0	0.0	0.0	0.0
Total		**75**	**6.7**	**6.7**	**17.3**	**69.3**

Table 3-4-2-7 Alcohol consumption (%)

Gender	Age group (yrs)	Subjects (n)	Non-drinkers	Drinkers
M	60~64	101	65.3	34.7
	65~69	100	56.0	44.0
F	60~64	242	88.8	11.2
	65~69	194	92.3	7.7
Total		**637**	**81.0**	**19.0**

Table 3-4-2-8 Frequency of drinking (%)

Gender	Age group (yrs)	Drinkers (n)	Once a month	1~2 times/ week	3~4 times/ week	5~7 times/ week
M	60~64	35	22.9	31.4	17.1	28.6
	65~69	44	22.7	34.1	22.7	20.5
F	60~64	27	48.1	37.0	7.4	7.4
	65~69	15	33.3	26.7	26.7	13.3
Total		**121**	**29.8**	**33.0**	**18.2**	**19.0**

Table 3-4-2-9 Types of alcohol consumed (%)

Gender	Age group (yrs)	Drinkers (n)	Liquor	Beer	Yellow wine	Rice wine	Wine or fruit wine	Mixed wine
M	60~64	35	5.7	40.0	0.0	22.9	28.6	2.9
	65~69	44	2.3	38.6	0.0	15.9	36.4	6.8
F	60~64	27	0.0	18.5	0.0	14.8	66.7	0.0
	65~69	15	0.0	6.7	0.0	33.3	53.3	6.7
Total		**121**	**2.5**	**30.6**	**0.0**	**19.8**	**43.0**	**4.1**

Table 3-4-2-10 Activities during leisure time (%)

Gender	Age group (yrs)	Subjects (n)	Physical exercise	Chess	Traveling	Social gathering	Audio-visual entertainment	House chores	Sleeping	Others
M	60~64	101	66.3	5.0	7.9	29.7	43.6	33.7	14.9	20.8
	65~69	100	73.0	12.0	9.0	23.0	51.0	24.0	12.0	14.0
F	60~64	243	74.1	4.1	9.1	21.8	39.1	72.8	13.2	11.9
	65~69	194	87.1	8.8	5.2	23.2	35.1	71.6	6.2	13.4
Total		**638**	**76.6**	**6.9**	**7.7**	**23.7**	**40.4**	**58.6**	**11.1**	**14.1**

Table 3-4-2-11 Frequency of physical exercise per week (%)

Gender	Age group (yrs)	Subjects (n)	Participants (n)	Less than 1 time	1~2 times	3~4 times	5 times or more
M	60~64	101	85	14.1	11.8	38.8	35.3
	65~69	100	84	6.0	15.5	33.3	45.2
F	60~64	243	206	5.3	19.9	21.8	52.9
	65~69	194	182	2.2	13.2	20.9	63.7
Total		**638**	**557**	**5.7**	**15.8**	**25.9**	**52.6**

Table 3-4-2-12 Duration of each physical exercise (%)

Gender	Age group (yrs)	Participants (n)	Less than 30 mins	30~60 mins	60 mins or more
M	60~64	85	21.2	44.7	34.1
	65~69	84	11.9	44.0	44.0
F	60~64	206	13.6	48.1	38.3
	65~69	182	13.7	45.6	40.7
Total		**557**	**14.5**	**46.1**	**39.3**

Table 3-4-2-13 Self-perception during physical exercise (%)

Gender	Age group (yrs)	Participants (n)	Not much change in breathing and heart rate	Slight increase in breathing and heart rate with little perspiration	Rapid breathing, apparent increase in heart rate and perspiring greatly
M	60~64	85	27.1	57.6	15.3
	65~69	84	39.3	53.6	7.1
F	60~64	206	35.9	51.9	12.1
	65~69	182	44.5	48.9	6.6
Total		**557**	**37.9**	**52.1**	**10.0**

Table 3-4-2-14 Duration of persistent physical exercising (%)

Gender	Age group (yrs)	Participants (n)	Less than 6 months	6~12 months	1~3 years	3~5 years	5 years or more
M	60~64	85	14.1	8.2	16.5	17.6	43.5
	65~69	84	6.0	8.3	10.7	10.7	64.3
F	60~64	206	10.7	5.8	20.4	13.1	50.0
	65~69	182	11.0	6.0	18.1	13.7	51.1
Total		**557**	**10.6**	**6.6**	**17.6**	**13.6**	**51.5**

Table 3-4-2-15 Purposes of physical exercise (%)

Gender	Age group (yrs)	Participants (n)	Prevent and cure diseases	Improve exercise ability	Lose weight and keep fit	Relieve pressure and regulate mood	Socialize	Others
M	60~64	85	74.1	49.4	15.3	27.1	16.5	15.3
	65~69	84	73.8	44.0	9.5	22.6	21.4	7.1
F	60~64	206	70.9	36.4	19.4	30.1	26.7	5.3
	65~69	182	76.9	32.4	14.3	25.8	25.3	6.6
Total		**557**	**73.8**	**38.2**	**15.6**	**27.1**	**23.9**	**7.5**

Table 3-4-2-16 Major locations of physical exercise (%)

Gender	M		F		Total
Age group (yrs)	60~64	65~69	60~64	65~69	
Participants (n)	85	84	206	182	**557**
Stadium or gym	34.1	35.7	33.5	29.8	**32.7**
Park	71.8	71.4	67.5	65.7	**68.2**
Office or home	10.6	8.3	13.6	14.4	**12.6**
Open area	10.6	14.3	7.8	8.8	**9.5**
Road or street	23.5	16.7	6.8	6.6	**10.8**
Club	5.9	3.6	4.9	5.5	**5.0**
Others	20.0	16.7	12.6	12.7	**14.4**

Table 3-4-2-17 Types of physical exercise (%)

Gender	M		F		Total
Age group (yrs)	60~64	65~69	60~64	65~69	
Participants (n)	85	84	206	182	**557**
Jogging	27.1	16.7	6.8	4.4	**10.6**
Swimming	21.2	19.0	13.6	11.5	**14.9**
Walking	58.8	53.6	41.7	45.1	**47.2**
Ball games	10.6	11.9	4.4	3.3	**6.1**
Hiking	5.9	14.3	7.3	1.1	**6.1**
Bicycling	14.1	4.8	1.5	1.1	**3.8**
Equipment work out and strength training	10.6	13.1	4.4	6.6	**7.4**
Aerobics, yangko dance	10.6	8.3	45.1	47.8	**35.2**
Martial arts or qigong	18.8	32.1	31.1	33.0	**30.0**
Others	15.3	9.5	17.0	14.8	**14.9**

Table 3-4-2-18 Major obstacles for participating in physical exercise (%)

Gender	M		F		Total
Age group (yrs)	60~64	65~69	60~64	65~69	
Subjects (n)	98	99	243	194	**634**
Lack of interest	8.2	8.1	5.8	4.1	**6.0**
Laziness	24.5	26.3	18.9	16.0	**20.0**
Healthy, not necessary to exercise	2.0	1.0	0.4	0.5	**0.8**
Physically unsuitable	9.2	8.1	14.4	18.0	**13.7**
Too much labor intensive work	7.1	5.1	3.7	0.5	**3.5**
Lack of time	33.7	25.3	44.4	32.0	**36.0**
Lack of locations and facilities	11.2	6.1	3.7	2.1	**4.7**
Lack of coaching	3.1	3.0	3.3	1.5	**2.7**
Lack of organization	3.1	2.0	3.7	3.1	**3.2**
Financial restraint	1.0	0.0	0.8	0.5	**0.6**
Others	29.6	36.4	33.3	42.8	**36.1**

Table 3-4-2-19 Sports events frequently watched (%)

Gender	M		F		Total
Age group (yrs)	60~64	65~69	60~64	65~69	
Subjects (n)	100	98	243	194	**635**
Basketball	18.0	14.3	6.6	8.8	**10.2**
Volleyball	9.0	8.2	9.9	7.2	**8.7**
Football	38.0	32.7	6.6	4.6	**15.0**
Gymnastics	10.0	7.1	18.5	16.5	**14.8**
Swimming	9.0	20.4	22.2	13.4	**17.2**
Martial arts	9.0	12.2	11.1	6.7	**9.6**
Boxing	4.0	3.1	0.0	1.0	**1.4**
Table tennis	14.0	11.2	9.1	5.2	**9.0**
Billiards	3.0	2.0	0.4	0.5	**1.1**
Golf	0.0	0.0	0.0	0.5	**0.2**
Badminton	14.0	13.3	8.2	4.1	**8.6**
Wrestling or judo	1.0	1.0	0.0	0.5	**0.5**
Others	36.0	37.8	53.9	63.4	**51.5**

Table 3-4-2-20 Occurrence of diseases in the past five years (%)

Gender	Age group (yrs)	Subjects (n)	Yes	No
M	60~64	101	43.6	56.4
	65~69	100	60.0	40.0
F	60~64	243	57.2	42.8
	65~69	194	71.1	28.9
Total		**638**	**59.7**	**40.3**

Table 3-4-2-21 Diseases diagnosed in the past five years (%)

Gender	M		F		Total
Age group (yrs)	60~64	65~69	60~64	65~69	
Subjects diagnosed with diseases	40	60	139	138	**377**
Cancer	2.3	1.7	4.3	2.2	**2.9**
Cardiovascular disease	11.4	6.7	10.1	8.7	**9.2**
Respiratory disease	11.4	6.7	6.5	6.5	**7.1**
Accidental injury	4.5	3.3	5.1	7.2	**5.5**
Gastro-intestinal diseases	22.7	11.7	13.8	13.0	**14.1**
Hypertension	52.3	56.7	53.6	58.7	**55.8**
Endocrine disease	2.3	0.0	3.6	0.7	**1.8**
Urinary or reproductive disease	9.1	13.3	3.6	1.4	**5.0**
Diabetes	6.8	25.0	14.5	22.5	**18.3**
Others	15.9	18.3	23.2	31.9	**24.8**

Table 3-4-2-22 Previously heard of or had participated in the "Physical Fitness Study" (%)

Gender	Age group (yrs)	Subjects (n)	Heard of the Study	Previously participated in the Study
M	60~64	101	68.3	44.6
	65~69	100	47.0	31.0
F	60~64	243	58.8	40.3
	65~69	194	56.7	32.5
	Total	**638**	**57.8**	**37.1**

Table 3-4-2-23 Perception of the "Physical Fitness Study" (%)

Gender	Age group (yrs)	Subjects (n)	Meaningless	Understand physical fitness status of oneself	Recognize the importance of physical exercise	Increase scientific knowledge of physical fitness
M	60~64	101	4.0	90.1	41.6	37.6
	65~69	100	5.0	82.0	48.0	26.0
F	60~64	242	6.2	88.8	40.9	33.9
	65~69	194	6.2	91.8	32.0	25.8
	Total	**637**	**5.7**	**88.9**	**39.4**	**30.8**

Table 3-4-2-24 Frequency of having breakfast per week (%)

Gender	Age group (yrs)	Subjects (n)	0 day	1~2 days	3~5 days	6 or more days
M	60~64	101	0.0	2.0	4.0	94.1
	65~69	100	0.0	0.0	6.0	94.0
F	60~64	243	1.6	2.5	4.9	90.9
	65~69	194	0.5	2.1	4.1	93.3
	Total	**638**	**0.8**	**1.9**	**4.7**	**92.6**

Table 3-4-2-25 Frequency of eating out per week (%)

Gender	Age group (yrs)	Subjects (n)	0 meal	1~3 meals	4~6 meals	7~9 meals	10 meals or more
M	60~64	101	25.7	39.6	19.8	8.9	6.0
	65~69	100	28.0	49.0	11.0	7.0	5.0
F	60~64	242	37.6	38.0	13.2	6.2	5.0
	65~69	193	44.6	37.8	8.3	5.2	4.1
	Total	**636**	**36.3**	**39.9**	**12.4**	**6.5**	**4.9**

Table 3-4-2-26 Frequency of consuming high-fat and high-sugary snacks per week (%)

Gender	Age group (yrs)	Subjects (n)	0 time	1~2 times	3~5 times	6 or more times
M	60~64	101	35.6	50.5	9.9	4.0
	65~69	100	39.0	44.0	11.0	6.0
F	60~64	242	43.0	43.4	9.1	4.5
	65~69	194	54.1	35.1	8.8	2.1
	Total	**637**	**44.6**	**42.1**	**9.4**	**3.9**

3. Anthropometric Measurements

Table 3-4-3-1 Height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	166.3	5.89	155.2	158.4	162.7	167.0	170.0	173.0	176.5
	65~69	100	166.1	5.87	154.9	158.3	162.3	166.1	170.2	173.7	177.8
F	60~64	243	154.9	4.99	144.8	148.5	151.7	154.8	158.1	161.0	163.6
	65~69	194	153.7	5.44	143.1	147.0	149.7	153.5	157.6	161.2	163.6

Table 3-4-3-2 Sitting height (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	89.5	2.91	84.0	86.1	87.5	89.4	91.4	92.8	94.6
	65~69	100	89.1	3.11	83.3	84.7	87.2	89.0	91.1	93.0	95.8
F	60~64	243	84.0	2.72	79.0	80.2	82.0	84.0	85.8	87.5	88.9
	65~69	193	82.8	3.07	77.0	79.1	80.6	82.8	85.0	86.7	88.5

Table 3-4-3-3 Foot Length (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	24.8	1.08	22.7	23.4	24.0	24.8	25.5	26.0	26.4
	65~69	100	24.6	1.23	22.5	23.0	23.8	24.6	25.7	26.3	26.7
F	60~64	243	22.9	1.02	21.2	21.7	22.2	22.9	23.5	24.2	24.9
	65~69	194	22.8	1.04	20.9	21.4	22.1	22.7	23.4	24.0	25.0

Table 3-4-3-4 Weight (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	65.6	7.83	52.8	54.9	60.1	65.5	71.4	75.5	80.5
	65~69	100	64.7	8.97	45.3	51.9	59.8	65.2	70.0	74.7	83.6
F	60~64	243	57.8	8.20	43.2	46.9	52.3	57.6	63.3	67.3	76.1
	65~69	194	56.9	8.40	40.9	46.0	50.5	57.1	63.1	67.7	72.3

Table 3-4-3-5 BMI

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	23.7	2.53	19.3	20.3	22.1	23.5	25.3	26.9	28.7
	65~69	100	23.4	2.75	17.8	20.0	21.9	23.4	25.1	26.8	28.7
F	60~64	243	24.1	3.02	18.5	20.5	21.8	24.2	25.9	27.8	30.2
	65~69	194	24.1	3.42	18.3	19.4	21.5	24.2	26.6	28.3	31.1

Table 3-4-3-6 Weight status according to height-for-weight standards (%)

Gender	Age group (yrs)	n	Underweight	Normal	Overweight	Obese
M	60~64	101	1.0	56.4	36.6	5.9
	65~69	100	7.0	52.0	36.0	5.0
	Total	**201**	**4.0**	**54.2**	**36.3**	**5.5**
F	60~64	243	2.1	46.1	43.6	8.2
	65~69	194	3.6	43.3	41.2	11.9
	Total	**437**	**2.7**	**44.9**	**42.6**	**9.8**

Table 3-4-3-7 Chest circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	91.8	6.04	82.0	84.0	87.3	91.2	95.6	99.4	102.0
	65~69	100	91.7	6.21	77.4	84.1	88.8	91.6	95.1	99.2	103.0
F	60~64	243	88.9	6.71	76.0	80.2	85.0	88.9	93.4	97.3	101.8
	65~69	194	89.1	6.71	74.5	80.5	84.5	88.6	94.0	97.5	101.0

Table 3-4-3-8 Waist circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	85.4	8.32	69.9	75.0	79.5	85.1	90.5	96.4	100.0
	65~69	100	86.5	8.45	68.5	72.5	82.6	86.6	92.9	96.9	98.9
F	60~64	243	83.1	8.50	67.8	72.0	78.0	83.0	88.5	93.4	100.3
	65~69	194	83.2	9.55	65.0	71.0	76.9	83.3	89.2	96.0	100.0

Table 3-4-3-9 Hip circumference (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	91.8	4.68	84.5	85.5	88.5	92.0	94.5	97.5	99.6
	65~69	99	91.0	5.51	80.2	82.9	87.3	91.0	94.3	97.7	102.4
F	60~64	243	94.5	5.99	83.3	87.0	90.8	94.0	98.2	102.0	107.0
	65~69	194	94.2	6.57	83.0	86.0	89.2	93.8	98.5	103.2	106.5

Table 3-4-3-10 Waist-Hip Ratio (WHR)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	0.930	0.065	0.804	0.847	0.882	0.936	0.982	1.013	1.042
	65~69	99	0.949	0.058	0.834	0.861	0.921	0.954	0.987	1.018	1.036
F	60~64	243	0.879	0.064	0.763	0.794	0.838	0.883	0.916	0.960	1.000
	65~69	194	0.882	0.068	0.740	0.793	0.841	0.888	0.924	0.954	0.995

Table 3-4-3-11 Shoulder width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	38.4	1.70	35.1	36.2	37.6	38.2	39.6	40.5	41.9
	65~69	100	37.9	2.06	33.7	35.6	36.8	38.2	39.2	40.4	40.8
F	60~64	242	34.0	1.68	30.7	32.0	33.0	34.0	35.1	36.0	36.9
	65~69	194	33.6	1.57	30.4	31.5	32.5	33.6	34.7	35.5	36.5

Table 3-4-3-12 Pelvis width (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	27.8	1.67	25.3	25.8	26.8	27.9	28.8	29.7	31.6
	65~69	100	28.0	1.92	24.9	25.9	26.9	28.0	29.0	30.0	30.9
F	60~64	243	28.2	1.88	24.7	25.9	27.0	28.2	29.3	30.5	31.5
	65~69	194	27.9	1.97	24.1	25.6	26.7	28.0	29.1	30.0	31.3

Table 3-4-3-13 Upper arm skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	10.6	4.64	4.5	5.0	7.0	10.0	12.5	16.0	21.0
	65~69	99	10.3	4.33	1.0	5.0	7.0	10.0	13.5	16.0	19.0
F	60~64	242	23.1	6.43	11.5	15.0	19.0	22.0	28.0	31.0	35.0
	65~69	194	23.6	7.35	12.0	15.0	18.5	22.8	28.5	34.0	39.0

Table 3-4-3-14 Subscapular skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	18.4	6.88	9.0	10.5	13.0	17.5	22.5	28.0	32.5
	65~69	100	18.9	7.49	5.0	10.0	14.0	18.0	24.5	29.0	32.5
F	60~64	243	21.3	7.15	8.5	11.0	16.5	20.5	26.5	31.0	35.0
	65~69	194	20.3	7.79	7.0	10.0	15.0	19.0	25.0	31.0	36.0

Table 3-4-3-15 Abdominal skinfold thickness (mm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	23.3	7.94	10.0	14.0	17.0	22.5	28.0	33.0	35.5
	65~69	100	22.9	8.85	3.8	10.8	16.8	24.0	28.8	33.5	39.3
F	60~64	243	30.0	9.12	14.5	19.5	23.5	30.0	35.0	41.0	50.5
	65~69	194	29.6	9.67	10.0	16.0	25.0	30.0	35.5	40.5	50.0

Table 3-4-3-16 Body fat percentage (%)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	17.9	4.87	11.1	11.8	14.1	17.2	21.0	25.1	27.8
	65~69	100	18.0	5.11	7.9	11.9	14.5	18.1	22.0	25.5	27.0
F	60~64	243	29.3	6.77	17.8	21.1	24.5	28.7	33.6	38.3	41.9
	65~69	194	29.0	7.86	15.7	19.5	23.3	27.8	34.2	40.1	46.2

Table 3-4-3-17 Lean body mass (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	53.7	5.79	43.8	46.0	50.4	53.6	57.3	61.3	63.9
	65~69	100	52.7	6.01	40.4	45.0	48.8	53.4	57.2	60.0	64.2
F	60~64	243	40.6	4.83	32.7	34.4	37.3	40.6	43.3	46.4	51.2
	65~69	194	40.0	4.54	31.8	34.6	37.0	39.4	42.8	46.3	49.6

4. Physiological Function

Table 3-4-4-1 Resting pulse (bpm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	101	73.3	9.81	52.0	62.0	68.0	73.0	78.0	88.0	91.0
	65~69	100	74.8	10.24	57.0	63.0	67.5	74.5	82.0	87.5	96.0
F	60~64	241	72.9	9.46	58.0	62.0	66.0	72.0	79.0	84.0	94.0
	65~69	193	73.2	10.85	52.0	61.0	66.0	73.0	80.0	86.0	97.0

Table 3-4-4-2 Systolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	60~64	101	132.8	16.84	102.0	110.0	123.0	131.0	143.0	156.0	165.0
	65~69	100	133.9	15.79	107.0	114.0	123.5	134.0	142.0	155.0	167.0
F	60~64	243	131.4	16.30	101.0	111.0	120.0	131.0	142.0	151.0	163.0
	65~69	193	130.6	17.55	101.0	107.0	118.0	129.0	142.0	153.0	167.0

Table 3-4-4-3 Diastolic blood pressure (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	60~64	101	75.8	10.89	59.0	63.0	68.0	76.0	82.0	89.0	98.0
	65~69	100	74.0	8.36	57.0	62.0	68.0	75.5	80.0	84.0	88.0
F	60~64	243	74.2	9.97	56.0	61.0	67.0	74.0	81.0	86.0	91.0
	65~69	194	71.6	10.04	56.0	60.0	65.0	71.0	78.0	84.0	95.0

Table 3-4-4-4 Pressure difference (mmHg)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	60~64	101	57.0	10.74	39.0	45.0	49.0	56.0	65.0	70.0	75.0
	65~69	100	59.9	12.89	41.0	44.5	50.0	59.5	66.5	80.5	89.5
F	60~64	243	57.2	12.71	37.0	42.0	48.0	57.0	64.0	75.0	83.0
	65~69	193	59.1	13.29	37.0	43.0	49.0	59.0	67.0	77.0	88.0

Table 3-4-4-5 Vital capacity (ml)

Gender	Age group (yrs)	n	Mean	SD	P3	P10	P25	P50	P75	P90	P97
M	60~64	101	3043.7	652.00	1770	2240	2650	3070	3525	3955	4075
	65~69	100	2816.6	640.84	1560	2105	2395	2738	3188	3608	4175
F	60~64	243	1966.3	510.54	1035	1355	1620	1925	2290	2580	3010
	65~69	193	1816.8	432.39	960	1235	1480	1840	2170	2325	2545

Table 3-4-4-6 Vital capacity/weight (ml/kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_10	P_25	P_50	P_75	P_90	P_97
M	60~64	101	47.0	11.18	26.7	32.0	40.3	46.6	55.7	59.9	65.7
	65~69	100	44.0	10.00	26.8	31.6	36.8	44.4	51.4	55.0	63.7
F	60~64	243	34.7	10.01	18.8	22.6	27.6	33.8	40.7	47.5	54.8
	65~69	193	32.6	9.16	17.5	21.0	26.4	31.6	38.9	44.7	50.2

5. Physical Fitness

Table 3-4-5-1 Grip strength (kg)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_10	P_25	P_50	P_75	P_90	P_97
M	60~64	101	37.7	6.91	26.9	30.0	33.4	36.1	42.4	47.2	49.0
	65~69	100	37.0	7.03	22.4	29.9	32.9	37.3	40.5	45.5	52.2
F	60~64	241	23.0	5.54	12.9	16.7	19.2	22.5	26.6	30.8	33.8
	65~69	193	21.1	4.93	12.6	15.6	17.5	20.9	24.6	27.2	31.3

Table 3-4-5-2 Sit and reach (cm)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_10	P_25	P_50	P_75	P_90	P_97
M	60~64	99	0.9	9.07	-17.4	-10.7	-4.4	-0.5	8.0	12.8	17.2
	65~69	100	0.9	9.80	-19.5	-10.8	-5.2	0.7	6.3	15.7	20.1
F	60~64	239	7.8	9.01	-10.8	-3.9	1.9	8.6	13.6	19.1	24.3
	65~69	193	6.6	8.09	-9.2	-4.1	1.3	6.3	12.8	17.0	21.9

Table 3-4-5-3 Choice reaction time (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_10	P_25	P_50	P_75	P_90	P_97
M	60~64	101	0.50	0.124	0.36	0.40	0.44	0.48	0.53	0.63	0.77
	65~69	100	0.53	0.162	0.40	0.42	0.45	0.50	0.55	0.63	1.02
F	60~64	243	0.56	0.157	0.39	0.44	0.47	0.52	0.60	0.69	0.97
	65~69	194	0.60	0.166	0.41	0.45	0.49	0.57	0.67	0.77	0.99

Table 3-4-5-4 One foot stands with eyes closed (sec)

Gender	Age group (yrs)	n	Mean	SD	P_3	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	P_{97}
M	60~64	100	12.2	12.38	3.0	4.0	5.0	8.0	15.5	26.5	39.5
	65~69	100	8.2	8.15	3.0	3.0	4.0	6.0	9.0	14.5	38.5
F	60~64	240	8.4	9.08	2.0	3.0	4.0	5.0	10.0	17.5	31.0
	65~69	190	7.2	9.55	1.0	2.0	3.0	5.0	8.0	12.0	24.0

Part IV
-
Appendix

Appendix 1: Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents

I. Young Children
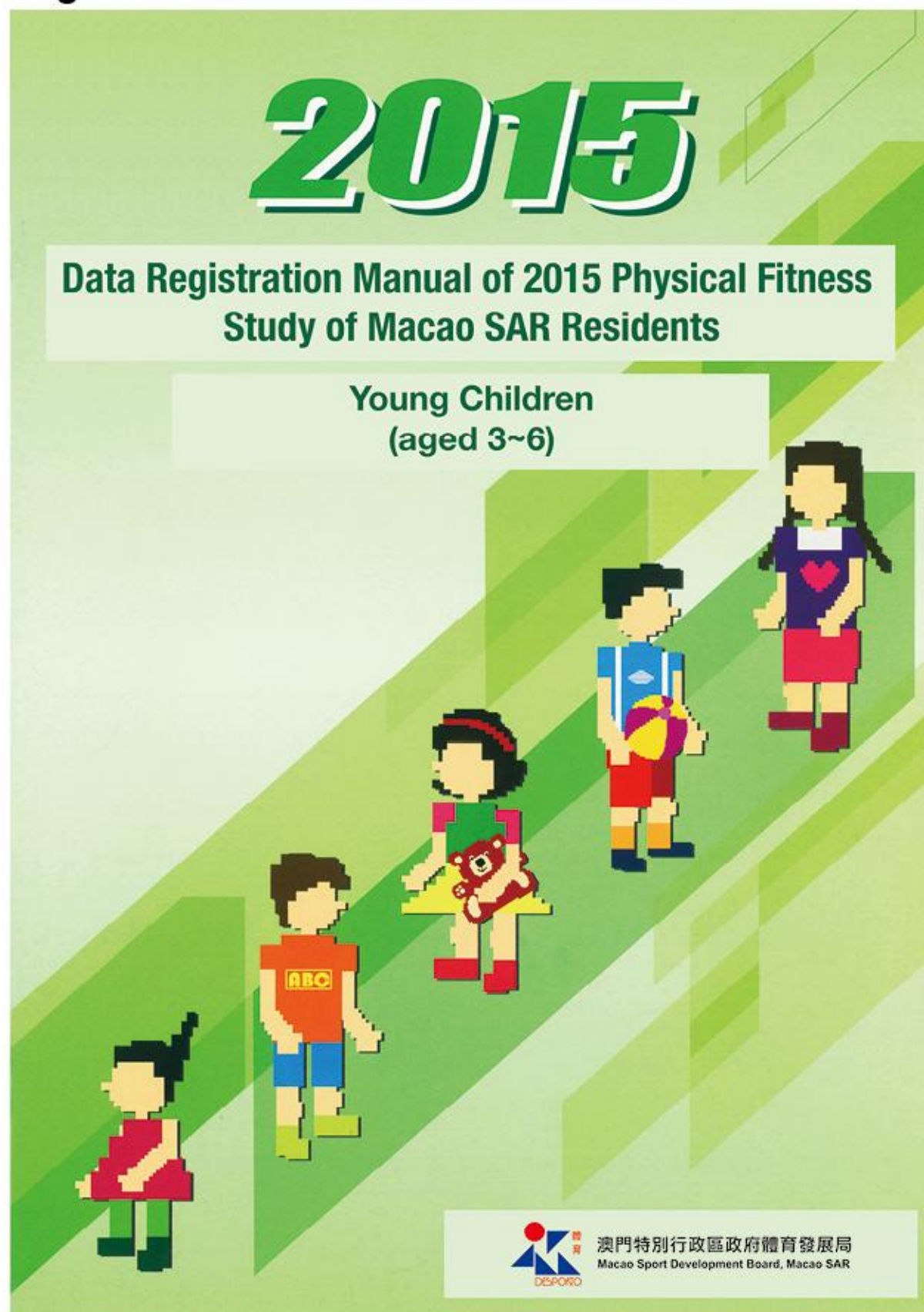
2015

Data Registration Manual of 2015 Physical Fitness
Study of Macao SAR Residents

Young Children
(aged 3~6)

澳門特別行政區政府體育發展局
Macao Sport Development Board, Macao SAR

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

Thank you for participating in our Physical Fitness Study! This study is organized by the Macao SAR Government to promote sports for all. We are grateful for your participation. Your honesty and sincerity in filling the questionnaire are appreciated. We promise to keep your personal data confidential and we will not publish or use your data individually. It will only be used as part of the whole study for statistical purposes.

For any questions on the questionnaire or testing, please contact Sports Medicine Center of Macao Sport Development Board!

Telephone: 2881 0896, 8893 4540

Preview of Declaration
Sports Medicine Center of Macao Sport Development Board

This declaration is intended to assure data subjects or their parents or guardians that we will strictly comply with the relevant provisions of Act 8/2005 - Personal Data Protection Act.

1. Personal data controller: Macao Sport Development Board, at Av. Dr. Rodrigo Rodrigues, Forum de Macau, Edif. Complementar, Bl. 1, 4-andar. Representative - José Maria da Fonseca Tavares, President of Macao Sport Development Board.

2. Purposes of processing personal data: To provide scientific references for the development of relevant policies regarding sports and medical care. Data collected through the physical fitness study of Macao residents will only be used to update the database for statistical purposes.

3. Categories of data subjects: Macao residents participated in the Study (random sampling by age).

4. Personal data recipients: Data subjects (or their parents or guardians), Sports Medicine Center and China Institute of Sports Science.

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

5. Conditions of receiving and processing personal data: Data subjects (or their parents or guardians) are entitled by Act 8/2005 - Personal Data Protection Act to the rights to review and rectify their own personal data collected. The Sports Medicine Center hereby commits to take proper measures to rectify, delete or block the incorrect data.

6. Security and confidentiality of processing personal data: Appropriate measures are implemented to process and edit the personal data to ensure strict confidentiality, safety and security of the data.

I, the undersigned, am aware of the contents and my legal rights in the above Declaration.

_____

(Signature of data subject/parents/guardian)

_____ /_____ /_____

(DD) / (MM) / (YY)

Name: _____

Gender: _____

Age: _____ (years)

Kindergarten: _____

Telephone: _____

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

Instructions for filling the questionnaire:

Please fill in the blank squares with corresponding numbers. For example, if you select Choice 1, fill in the square with "1". If the number has two-digits, write both digits in the same square. For instance, if you select Choice 11, fill in the square with 11 . For multiple choice questions, if you only select one or two choice(s), please fill the remaining blank square(s) with "0".

I. General Information
(to be filled by parents or guardian of young children)

1. Macao ID card number										

2. Gender	(1) M	(2) F	

3. Date of birth				Y		M		D

4. Examination date *(to be filled by examiner)*				Y		M		D

5. Kindergarten code number *(to be filled by examiner)*			

6. Serial number *(to be filled by examiner)*		

7. Years of residence in Macao *(refers to years of continuous residence in Macao)*
(If the child left Macao over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)

II. Questionnaire

(to be filled by parents or guardian of young children)

(I) Personal Information of Young Child

1. Birth place				
(1) Mainland	(2) Macao	(3)Hong Kong	(4) Portugal	(5) Others

2. Parish of residence

(1) Paróquia de São Francisco Xavier *(Coloane)*

(2) Paróquia de Nossa Senhora do Carmo *(Taipa)*

(3) Paróquia de S. Lourenço
(Zonas das Colinas da Barra e da Penha, da Praia do Manduco e do Porto Interior)

(4) Paróquia da Sé Catedral
(Zonas da Almeida Ribeiro, da Praia Grande, da Rua do Campo, dos Lotes norte e sul do Porto Exterior e da Zona do Lago Nam Van)

(5) Paróquia de Santo António
(Zonas da Freguesia de Santo António, do Oeste de Macau, incluindo Av. Horta e Costa, de San Kiu e do Patane)

(6) Paróquia de S. Lázaro *(Zona do Conselheiro Ferreira de Almeida e da Colina da Guia)*

(7) Paróquia de Nossa Senhora de Fátima
(Zonas Norte, incluindo Ilha Verde, Tamagnini Barbosa, Areia Preta, Fái Chi Kei e Reservatório)

3. Birth weight (kg) *(If not sure, please fill in 99.9)*

4. Birth length (cm) *(If not sure, please fill in 99.9)*

5. Gestational age

(1) Premature *(birth at least two weeks before term)*

(2) Term *(birth within two weeks of expectancy date)*

(3) Post-term *(birth at least two weeks after term)*

6. Feeding patterns within four months after birth		
(1) Breast feeding	(2) Formula feeding	(3) Mixed feeding

7. Number of siblings *(Excluding the young child himself or herself. If none, please write 0)*

8. Birth order among siblings *(If no siblings, please write 0)*

9. Frequency of flu or fever within the past year			
(1) Never	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

10. Disease diagnosed by doctors *(If the answer is "no", skip to question 12)*		
(1) Yes	(2) No	

11. Diseases suffered *(in order of precedence, at most three diseases):*		
(1) Chronic Bronchitis	(2) Pneumonia	(3) Tuberculosis
(4) Asthma	(5) Hematologic disease	(6) Heart disease
(7) Hypertension	(8) Anemia	(9) Nephritis
(10) Hepatitis	(11) Hyperthyroidism	(12) Hypothyroidism
(13) Rhachitis	(14) Epilepsy	
(15) Accidental injury *(injury to the body that needs treatments, or injury that affects normal activities)*		
(16) Others		

- -

Please answer the following questions according to the subject's status in the past half year:

12. Average cumulative sleeping hours per day *(including naps)*		
(1) Less than 8 hours	(2) 8~10 hours	(3) 10 hours or more

13. Kindergarten attendance			
(1) Never	(2) Half day	(3) Full day	(4) Boarding

14. Caretaker at home			
(1) Parents	(2) Senior family members	(3) Babysitter (worker)	(4) Others

15. Extracurricular hobby classes *(in order of precedence, at most three items)*			
(1) None	(2) Physical exercise	(3) Tutoring	(4) Chess-related
(5) Music and dancing	(6) Drawing and calligraphy	(7) Others	

16. Average cumulative time spent on outdoor activities per day *(including activities in and out of kindergarten)*			
(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs	(4) 2 hrs or more

17. Average cumulative time spent on watching TV, video and playing video games per day ☐

(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs
(4) 2~3 hrs	(5) 3 hrs or more	

18. Physical exercises frequently participated *(in order of precedence, at most three items)* ☐☐☐

(1) Swimming	(2) Track & field	(3) Ball games	(4) Gymnastics
(5) Skating	(6) Dancing	(7) Rope skipping	(8) Martial arts, Taekwondo
(9) Bicycling	(10) Judo	(11) Karate	(12) Yoga
(13) Others			

19. Do you brush teeth every day? ☐

(1) Yes	(2) No

20. Do you use dental floss in addition to tooth-brushing every day? ☐

(1) Yes	(2) No

21. Did you go to a dental clinic for dental examination within the past 12 months? ☐

(1) Yes	(2) No

22. Do you have any decayed tooth? *(If the answer is "no"or "don't know", skip to question 24)* ☐

(1) Yes	(2) No	(3) Don't know

23. If yes, have you visited a dental clinic for treatment? ☐

(1) Yes	(2) No

24. How many days per week on an average do you have breakfast? ☐

(1) 0 day	(2) 1~2 days	(3) 3~5 days	(4) 6 days or more

25. How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at a fast food restaurant? ☐

(1) 0 meal	(2) 1~3 meals	(3) 4~6 meals	(4) 7~9 meals	(5) 10 meals or more

26. How many times per week on an average do you take the following foods or drinks? ☐
(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastry, ice cream, fish balls, instant noodles, soda water/packaged juice/sweet drinks)

(1) 0 time	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

(II) Paternal Personal Information

1. Date of birth ⬜⬜⬜⬜ Y ⬜⬜ M ⬜⬜ D

2. Birth place ⬜

| (1) Mainland | (2) Macao | (3) Hong Kong | (4) Portugal | (5) Others |

3. Years of residence in Macao *(refers to years of continuous residence in Macao)* ⬜⬜

   (If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)

4. Height (cm) ⬜⬜⬜ . ⬜

5. Weight (kg) ⬜⬜⬜ . ⬜

6. Education level ⬜

| (1) Below primary school education | (2) Primary school | (3) Secondary school |
| (4) University or college | (5) Master | (6) Doctoral |

7. Current occupation ⬜

(1) Legislative officer, public administration officer, community leader or manager

(2) Professional *(professionals in various disciplines including higher education and secondary school teaching staff)*

(3) Technician or professional assistant
(persons who engaged in technical works in various disciplines including preschool, primary school and special education teachers)

(4) Office clerk *(secretaries, secretarial work office clerks, cashiers, receptionists, ticket agents and workers of similar nature)*

(5) Customer service or sales representative
(persons who engaged in tourism, catering, beauty care, insurance, and also including firemen, traffic and public security policemen, security staff, sales personnel etc.)

(6) Skilled worker in the fishery or agricultural field
(fishermen, farmers, and persons who engaged in storing and selling of fishery, agricultural, and livestock products etc.)

(7) Artisan or craftsman *(including building workers and handicraft workers)*

(8) Machine operator, driver or assembler

(9) Non-technician *(ex. cleaners, property management officers, postmen, porters)*

| (10) Others | (11) Unemployed | (12) Household duties |

8. Frequency of physical exercise per week *(If select (1), skip questions 9 & 10)* ⬜

| (1) Never | (2) Less than 1 time | (3) 1~2 times | (4) 3~4 times | (5) At least 5 times |

9. Physical exercises frequently participated *(in order of precedence, at most three items)*

(1) Jogging	(2) Swimming	(3) Walking
(4) Ball games	(5) Hiking	(6) Bicycling
(7) Equipment work out	(8) Aerobics, yangko dance	(9) Martial arts or qigong
(10) Boxing	(11) Fencing	(12) Yoga
(13) Judo	(14) Taekwondo	(15) Karate
(16) Others		

10. Average duration of physical exercise per time

(1) Less than 30 mins	(2) 30~60 mins	(3) At least 60 mins

(III) Maternal Personal Information

1. Date of birth   ☐☐☐☐ Y ☐☐ M ☐☐ D

2. Birth place   ☐

(1) Mainland	(2) Macao	(3)Hong Kong	(4) Portugal	(5) Others

3. Years of residence in Macao *(refers to years of continuous residence in Macao)*
   (If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)   ☐☐

4. Height (cm)   ☐☐☐ . ☐

5. Weight (kg)   ☐☐☐ . ☐

6. Education level   ☐

(1) Below primary school education	(2) Primary school	(3) Secondary school
(4) University or college	(5) Master	(6) Doctoral

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

7. Current occupation

(1) Legislative officer, public administration officer, community leader or manager

(2) Professional *(professionals in various disciplines including higher education and secondary school teaching staff)*

(3) Technician or professional assistant
(persons who engaged in technical works in various disciplines including preschool, primary school and special education teachers)

(4) Office clerk *(secretaries, secretarial work office clerks, cashiers, receptionists, ticket agents and workers of similar nature)*

(5) Customer service or sales representative
(persons who engaged in tourism, catering, beauty care, insurance, and also including firemen, traffic and public security policemen, security staff, sales personnel etc.)

(6) Skilled worker in the fishery or agricultural field
(fishermen, farmers, and persons who engaged in storing and selling of fishery, agricultural, and livestock products etc.)

(7) Artisan or craftsman *(including building workers and handicraft workers)*

(8) Machine operator, driver or assembler

(9) Non-technician *(ex. cleaners, property management officers, postmen, porters)*

(10) Others	(11) Unemployed	(12) Household duties

8. Frequency of physical exercise per week *(If select (1), skip questions 9 & 10)*

(1) Never	(2) Less than 1 time	(3) 1~2 times	(4) 3~4 times	(5) At least 5 times

9. Physical exercises frequently participated *(in order of precedence, at most three items)*

(1) Jogging	(2) Swimming	(3) Walking
(4) Ball games	(5) Hiking	(6) Bicycling
(7) Equipment work out	(8) Aerobics, yangko dance	(9) Martial arts or qigong
(10) Boxing	(11) Fencing	(12) Yoga
(13) Judo	(14) Taekwondo	(15) Karate
(16) Others		

10. Average duration of physical exercise per time

(1) Less than 30 mins	(2) 30~60 mins	(3) At least 60 mins

End of the questionnaire,
thank you for participating.

III. Testing indicators
(to be filled by examiner at location)

1. Height (cm)

2. Sitting height (cm)

3. **Weight (kg)**

4. Chest circumference (cm)

5. Waist circumference (cm)

6. Hip circumference (cm)

7. Upper arm skinfold thickness (mm)

8. Subscapular skinfold thickness (mm)

9. Abdominal skinfold thickness (mm)

10. Shoulder width (cm)

11. Pelvis width (cm)

12. Foot length (cm)

13. Resting heart rate (bpm)

14. **Sit and reach (cm)**

15. **10m shuttle run (sec)**

16. **Standing long jump (cm)**

17. **Tennis ball distance throw (m)**

18. **Successive jumps with both feet (sec)**
(If subject failed to complete, please write 99.9)
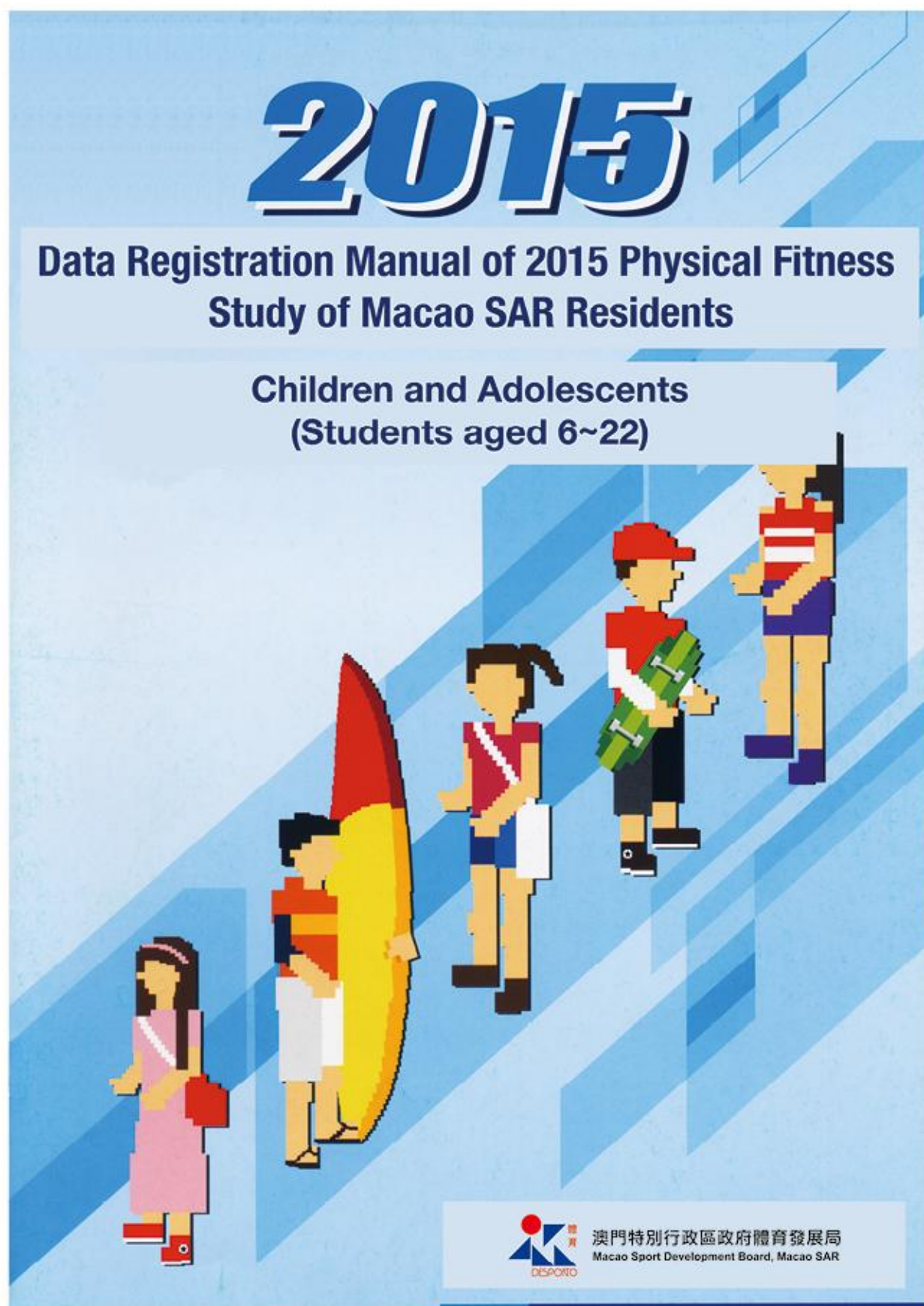
Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Young Children (aged 3~6)

19. Walking on balance beam				
Completion format	(1) Walking forward	(2) Moving sideways	(3) Incomplete	
Completion time (sec)				

20. Dental decay																

d ☐ D ☐ m ☐ M ☐ f ☐ F ☐

Examiner: _____

II. Children and Adolescents (Students)

2015

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents

Children and Adolescents
(Students aged 6~22)

澳門特別行政區政府體育發展局
Macao Sport Development Board, Macao SAR

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

Thank you for participating in our Physical Fitness Study! This study is organized by the Macao SAR Government to promote sports for all. We are grateful for your participation. Your honesty and sincerity in filling the questionnaire are appreciated. We promise to keep your personal data confidential and we will not publish or use your data individually. It will only be used as part of the whole study for statistical purposes.

For any questions on the questionnaire or testing, please contact Sports Medicine Center of Macao Sport Development Board!

Telephone: 2881 0896, 8893 4540

Preview of Declaration
Sports Medicine Center of Macao Sport Development Board

This declaration is intended to assure data subjects or their parents or guardians that we will strictly comply with the relevant provisions of Act 8/2005 - Personal Data Protection Act.

1. Personal data controller: Macao Sport Development Board, at Av. Dr. Rodrigo Rodrigues, Forum de Macau, Edif. Complementar, Bl. 1, 4-andar. Representative - José Maria da Fonseca Tavares, President of Macao Sport Development Board.

2. Purposes of processing personal data: To provide scientific references for the development of relevant policies regarding sports and medical care. Data collected through the physical fitness study of Macao residents will only be used to update the database for statistical purposes.

3. Categories of data subjects: Macao residents participated in the Study (random sampling by age).

4. Personal data recipients: Data subjects (or their parents or guardians), Sports Medicine Center and China Institute of Sports Science.

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

5. Conditions of receiving and processing personal data: Data subjects (or their parents or guardians) are entitled by Act 8/2005 - Personal Data Protection Act to the rights to review and rectify their own personal data collected. The Sports Medicine Center hereby commits to take proper measures to rectify, delete or block the incorrect data.

6. Security and confidentiality of processing personal data: Appropriate measures are implemented to process and edit the personal data to ensure strict confidentiality, safety and security of the data.

I, the undersigned, am aware of the contents and my legal rights in the above Declaration.

_____

(Signature of data subject/parents/guardian)

_____ /_____ /_____

(DD) / (MM) / (YY)

Name:	_____
Gender:	_____
Age:	_____ (years)
School / University:	_____
Telephone:	_____

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

Instructions for filling the questionnaire:

Please fill in the blank squares with corresponding numbers. For example, if you select Choice 1, fill in the square with "1". If the number has two-digits, write both digits in the same square. For instance, if you select Choice 11, fill in the square with 11. For multiple choice questions, if you only select one or two choice(s), please fill the remaining blank square(s) with "0".

I. General Information
(primary student's personal information can be filled by the parents or guardian)

1. Macao ID card number		
2. Gender	(1) M	(2) F
3. Date of birth		Y M D
4. Examination date *(to be filled by examiner)*		Y M D
5. School/University code number *(to be filled by examiner)*		
6. Serial number *(to be filled by examiner)*		
7. Years of residence in Macao *(refers to years of continuous residence in Macao.)* (If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)		

II. Questionnaire

(primary school student's personal information can be filled out by the parents or guardian)

1. Birth place

(1) Mainland	(2) Macao	(3) Hong Kong	(4) Portugal	(5) Others

2. Parish of residence

(1) Paróquia de São Francisco Xavier *(Coloane)*

(2) Paróquia de Nossa Senhora do Carmo *(Taipa)*

(3) Paróquia de S. Lourenço
(Zonas das Colinas da Barra e da Penha, da Praia do Manduco e do Porto Interior)

(4) Paróquia da Sé Catedral
(Zonas da Almeida Ribeiro, da Praia Grande, da Rua do Campo, dos Lotes norte e sul do Porto Exterior e da Zona do Lago Nam Van)

(5) Paróquia de Santo António
(Zonas da Freguesia de Santo António, do Oeste de Macau, incluindo Av. Horta e Costa, de San Kiu e do Patane)

(6) Paróquia de S. Lázaro *(Zona do Conselheiro Ferreira de Almeida e da Colina da Guia)*

(7) Paróquia de Nossa Senhora de Fátima
(Zonas Norte, incluindo Ilha Verde, Tamagnini Barbosa, Areia Preta, Fái Chi Kei e Reservatório)

3. Disease diagnosed by doctors within the past 5 years *(If the answer is "no", skip to question 5)*

(1) Yes	(2) No

4. Diseases suffered *(in order of precedence, at most three diseases):*

(1) Chronic Bronchitis	(2) Pneumonia	(3) Tuberculosis
(4) Asthma	(5) Hematologic disease	(6) Heart disease
(7) Hypertension	(8) Anemia	(9) Nephritis
(10) Hepatitis	(11) Hyperthyroidism	(12) Hypothyroidism
(13) Rhachitis	(14) Epilepsy	

(15) Accidental injury *(injury to the body that needs treatments, or injury that affects normal activities)*

(16) Others

5. Number of siblings *(Excluding yourself. If none, please write 0)*

6. Birth order among siblings *(If no siblings, please write 0)*

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

Please answer the following questions according to the subject's status in the past half year:

7. School attendance ☐

(1) Never	(2) Half day	(3) Full day	(4) Boarding

8. Major transportation means to school ☐

(1) Walking	(2) Motorcycle	(3) Public transportation	(4) Private car

9.Total time spent commuting to and from school per day ☐

(1) Less than 30 mins	(2) 30 mins ~1 hr	(3) 1~2 hrs	(4) 2 hrs or more

10. Frequency of physical education (PE) class per week ☐
(two continuous classes shall only be counted as once, if choose (5), skip to question 13)

(1) 1 time	(2) 2 times	(3) 3 times	(4) 4 times or more	(5) 0 time

11. Number of session(s) used in physical education (PE) class each time ☐

(1) 1 session	(2) 2 sessions	(3) more than 2 sessions

12. Self-perception during PE class ☐

(1) Breathing and heart rate remained almost the same

(2) Slight increase in breathing and heart rate, perspired slightly

(3) Rapid breathing and increased heart rate, perspired greatly

13. Average cumulative out-of-school time spent on outdoor activities per day ☐

(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs	(4) 2 hrs or more

14. Average cumulative time spent on watching TV, video and playing video games per day ☐

(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs	(4) 2~3 hours	(5) 3 hrs or more

15. Extracurricular hobby classes attended *(in order of precedence, at most three items)* ☐☐☐

(1) None	(2) Physical exercise	(3) Tutoring	(4) Chess-related
(5) Music and dancing	(6) Drawing and calligraphy	(7) Others	

16. Frequency of extracurricular physical exercise per week *(If choose choice (1), skip to question 21)* ☐

(1) Never	(2) Less than 1 time	(3) 1~2 times	(4) 3~4 times	(5) At least 5 times

2015 PHYSICAL FITNESS REPORT OF Macao SAR Residents

Part IV Appendix

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

17. Extracurricular physical exercises frequently participated

(in order of precedence, at most three items) (If choose choice (3), question 18 must be answered, otherwise skip question 18)

(1) Swimming	(2) Track & field	(3) Ball games	(4) Gymnastics
(5) Skating	(6) Dancing	(7) Rope skipping	(8) Martial arts, Taekwondo
(9) Bicycling	(10) Judo	(11) Karate	(12) Yoga
(13) Others			

18. Ball games frequently participated

(1) Basketball	(2) Volleyball	(3) Football	(4) Table tennis	(5) Badminton
(6) Tennis	(7) Golf	(8) Billiards	(9) Others	

19. Average duration of physical exercise per time

(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs	(4) 2 hrs or more

20. Self-perception after physical exercise

(1) Breathing and heart rate remained almost the same

(2) Slight increase in breathing and heart rate, perspired slightly

(3) Rapid breathing and increased heart rate, perspired greatly

21. Average cumulative time spent on homeworks and studying lessons each day

(1) Less than 30 mins	(2) 30 mins~1 hr	(3) 1~2 hrs	(4) 2~3 hrs	(5) 3 hrs or more

22. Average cumulative sleeping hours per day *(including naps)*

(1) Less than 8 hours	(2) 8~10 hours	(3) 10 hours or more

23. Do you brush teeth every day?

(1) Yes	(2) No

24. Do you use dental floss in addition to tooth-brushing every day?

(1) Yes	(2) No

25. Did you go to a dental clinic for dental examination within the past 12 months?

(1) Yes	(2) No

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

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26. Do you have any decayed tooth? *(If the answer is "no" or "don't know", skip to question 28)*

(1) Yes	(2) No	(3) Don't know

27. If yes, have you visited a dental clinic for treatment?

(1) Yes	(2) No

28. How many days per week on an average do you have breakfast?

(1) 0 day	(2) 1~2 days	(3) 3~5 days	(4) 6 days or more

29. How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at a fast food restaurants?

(1) 0 meal	(2) 1~3 meals	(3) 4~6 meals	(4) 7~9 meals	(5) 10 meals or more

30. How many times per week on an average do you take the following foods or drinks?
(Potato chips/shrimp chips, French fries, chocolate/candies cookies/sweet pastry, ice cream, fish ball, instant noodles, soda water/packaged juice/sweet drinks)

(1) 0 time	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

**End of the questionnaire,
thank you for participating.**

III. Testing indicators
(to be filled by examiner at location)

1. Height (cm)

2. Sitting height (cm)

3. **Weight (kg)**

4. Chest circumference (cm)

5. Waist circumference (cm)

6. Hip circumference (cm)

7. Upper arm skinfold thickness (mm)

8. Subscapular skinfold thickness (mm)

9. Abdominal skinfold thickness (mm)

10. Shoulder width (cm)

11. Pelvis width (cm)

12. Foot length (cm)

13. Resting heart rate (bpm)

14. Systolic blood pressure (mmHg)

15. Diastolic blood pressure (mmHg)

16. **Vital capacity (ml)**

17. **Inclined pull-ups** *(times) (6-12 years M) /*
    Pull-ups *(times) (13-22 years M) /*
    One-minute sit-ups *(times) (6-22 years F)*

18. **Standing long jump (cm)**

19. **50m run (sec)**

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Children and Adolescents (Students aged 6~22)

20. 50m × 8 shuttle run (sec) (6-12 years) /
800m run (sec) (13-22 years F) /
1000m run (sec) (13-22 years M)

21. Grip strength (kg)

22. Vertical jump (cm)

23. Back strength (kg)

24. Sit and reach (cm)

25. One foot stands with eyes closed (OFSEC) (sec)

26. Choice reaction time (sec)

27. Dental decay (6-18 years)

d☐　D☐　m☐　M☐　f☐　F☐

28. Vision

Naked eyes: left ☐☐　right　☐☐

String mirror correction: left　Positive

　　　　　　　　　　　　　　　Negative

String mirror correction: right　Positive

　　　　　　　　　　　　　　　Negative

Refractive errors: left ☐　　Refractive errors: right ☐

(0) Normal　　(1) Near sighted　　(2) Far sighted　　(3) Others

29. Color vision deficiency exam: ☐

(1) Normal　　　　　　　　(2) Abnormal

Examiner: _____

III. Adults (aged 20~39)

2015

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents

Adults
(aged 20~39)

澳門特別行政區政府體育發展局
Macao Sport Development Board, Macao SAR

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

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Telephone: 2881 0896, 8893 4540

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2. Purposes of processing personal data: To provide scientific references for the development of relevant policies regarding sports and medical care. Data collected through the physical fitness study of Macao residents will only be used to update the database for statistical purposes.

3. Categories of data subjects: Macao residents participated in the Study (random sampling by age).

4. Personal data recipients: Data subjects (or their parents or guardians), Sports Medicine Center and China Institute of Sports Science.

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

5. Conditions of receiving and processing personal data: Data subjects (or their parents or guardians) are entitled by Act 8/2005 - Personal Data Protection Act to the rights to review and rectify their own personal data collected. The Sports Medicine Center hereby commits to take proper measures to rectify, delete or block the incorrect data.

6. Security and confidentiality of processing personal data: Appropriate measures are implemented to process and edit the personal data to ensure strict confidentiality, safety and security of the data.

I, the undersigned, am aware of the contents and my legal rights in the above Declaration.

_____

(Signature of data subject/parents/guardian)

_____ /_____ /_____

(DD) / (MM) / (YY)

Name: _____

Gender: _____

Age: _____ (years)

Working unit: _____

Telephone: _____

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

Instructions for filling the questionnaire:

Please fill in the blank squares with corresponding numbers. For example, if you select Choice 1, fill in the square with "1". If the number has two-digits, write both digits in the same square. For instance, if you select Choice 11, fill in the square with 11. For multiple choice questions, if you only select one or two choice(s), please fill the remaining blank square(s) with "0".

I. General Information

1. Macao ID card number		
2. Gender	(1) M	(2) F
3. Date of birth	Y M D	
4. Examination date (to be filled by examiner)	Y M D	
5. Working unit code number (to be filled by examiner)		
6. Serial number (to be filled by examiner)		
7. Years of residence in Macao (refers to years of continuous residence in Macao) (If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)		
8. Category of occupation		
(1) Labour intensive work (persons engaged in light or heavy labour, and mainly standing at work)		
(2) Non-labour intensive work (persons engaged in intellectual work, and mainly sitting at work)		

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

II. Questionnaire

1. Birth place

(1) Mainland	(2) Macao	(3) Hong Kong	(4) Portugal	(5) Others

2. Parish of residence

(1) Paróquia de São Francisco Xavier *(Coloane)*

(2) Paróquia de Nossa Senhora do Carmo *(Taipa)*

(3) Paróquia de S. Lourenço
(Zonas das Colinas da Barra e da Penha, da Praia do Manduco e do Porto Interior)

(4) Paróquia da Sé Catedral
(Zonas da Almeida Ribeiro, da Praia Grande, da Rua do Campo, dos Lotes norte e sul do Porto Exterior e da Zona do Lago Nam Van)

(5) Paróquia de Santo António
(Zonas da Freguesia de Santo António, do Oeste de Macau, incluindo Av. Horta e Costa, de San Kiu e do Patane)

(6) Paróquia de S. Lázaro *(Zona do Conselheiro Ferreira de Almeida e da Colina da Guia)*

(7) Paróquia de Nossa Senhora de Fátima
(Zonas Norte, incluindo Ilha Verde, Tamagnini Barbosa, Areia Preta, Fái Chi Kei e Reservatório)

3. Education level

(1) Below primary school education	(2) Primary school	(3) Secondary school
(4) University or professional college	(5) Master	(6) Doctoral

4. Current occupation

(1) Legislative officer, public administration officer, community leader or manager

(2) Professional *(professionals in various disciplines including higher education and secondary school teaching staff)*

(3) Technician or professional assistant
(persons who engaged in technical works in various disciplines including preschool, primary school and special education teachers)

(4) Office clerk *(secretaries, secretarial work office clerks, cashiers, receptionists, ticket agents and workers of similar nature)*

(5) Customer service or sales representative
(persons who engaged in tourism, catering, beauty care, insurance, and also including firemen, traffic and public security policemen, security staff, sales personnel etc.)

(6) Skilled worker in the fishery or agricultural field
(fishermen, farmers, and persons who engaged in storing and selling of fishery, agricultural, and livestock products etc.)

(7) Artisan or craftsman *(including building workers and handicraft workers)*

(8) Machine operator, driver or assembler

(9) Non-technician *(ex. cleaners, property management officers, postmen, porters)*

(10) Others	(11) Unemployed	(12) Household duties

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

5. Working environment

(1) Outdoor	(2) Indoor *(naturally ventilated)*	(3) Indoor *(air conditioned)*

6. Disease diagnosed by doctors within the past 5 years *(If the answer is "no", skip to question 8)*

(1) Yes	(2) No

7. Diseases suffered *(in order of precedence, at most three diseases)*

(1) Cancer	(2) Cardiovascular diseases	(3) Respiratory

(4) Accidental injury *(injury to the body that needs treatments, or injury that affects normal activities)*

(5) Gastrointestinal diseases	(6) Hypertension	(7) Endocrine diseases
(8) Urinary or reproductive	(9) Diabetes	(10) Others

- -

Please answer the following questions according to your status within the past half year:

8. Average working hours per week

(1) Unemployed	(2) Less than 20 hrs	(3) 20~35 hrs
(4) 35~40 hrs	(5) 40~50 hrs	(6) 50 hrs or more

9. Average cumulative sleeping hours per day *(including naps)*

(1) Less than 6 hrs	(2) 6~9 hrs	(3) 9 hrs or more

10. Quality of sleep

(1) Poor	(2) Average	(3) Good

11. Average cumulative walking hours per day
(walks that last longer than 10 mins each time but not including walks during physical exercise)

(1) Less than 30 mins	(2) 30~60 mins	(3) 1~2 hrs	(4) 2 hrs or more

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

12. Average cumulative sitting time per day
(during work, watching TV, commuting, using computer, dining or chatting etc.)

(1) Less than 3 hrs	(2) 3~6 hrs	(3) 6~9 hrs
(4) 9~12 hrs	(5) 12 hrs or more	

13. Cigarette consumption

(1) None	(2) Less than 10 cigarettes per day
(3) 10~20 cigarettes per day	(4) 20 cigarettes or more per day
(5) Quitted smoking for less than 2 years	(6) Quitted smoking for more than 2 years

14. Duration of smoking *(smokers only)*

(1) Less than 5 years	(2) 5~10 years	(3) 10~15 years	(4) 15 years or more

15. Alcohol consumption *(If choose choice (1), skip to question 18)*

(1) No	(2) Yes

16. Frequency of alcohol drinking

(1) Once per month	(2) 1~2 times per week	(3) 3~4 times per week	(4) 5~7 times per week

17. Types of alcohol frequently consumed

(1) Liquor *(ABV≥20%, i.e. whisky, Moutai, Erguotou)*	(2) Beer
(3) Yellow wine *(Shaoxing wine, Jimo yellow wine, Huadiao)*	(4) Rice wine *(mijiu, sweet wine)*
(5) Wine or fruit wine	(6) Mixed wine *(cocktail, Slings)*

18. Activities frequently participated during leisure time
(in order of precedence, at most three items)

(1) Physical exercise	(2) Chess or poker	(3) Traveling	(4) Social gathering
(5) AV entertainment	(6) House chores	(7) Sleeping	(8) Others

19. Sports events frequently watched *(in order of precedence, at most three items)*

(1) Basketball	(2) Volleyball	(3) Football	(4) Gymnastics
(5) Swimming	(6) Martial arts	(7) Boxing	(8) Table tennis
(9) Billiards	(10) Golf	(11) Badminton	(12) Water polo
(13) Baseball	(14) Softball	(15) Weight-lifting	(16) Fencing
(17) Wrestling or judo	(18) Others		

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

---

20. Average frequency of physical exercise per week *(If choose choice (1), skip to question 28)*

| (1) Never | (2) Less than 1 time | (3) 1~2 times | (4) 3~4 times | (5) At least 5 times |

21. Average duration of physical exercise each time

| (1) Less than 30 mins | (2) 30~60 mins | (3) At least 60 mins |

22. Duration of persistent exercising

| (1) Less than 6 months | (2) 6~12 months | (3) 1~3 years | (4) 3~5 years | (5) 5 years or more |

23. Purposes of physical exercise *(in order of precedence, at most three items)*

| (1) To prevent or cure diseas | (2) To improve physical fitness | (3) To lose weight and keep fit |
| (4) To relieve stress & regulate mood | (5) To socialize | (6) Others |

24. Physical exercises frequently participated
(in order of precedence, at most three items) (if choose choice (4), question 25 must be answered. If choice (4) is not chosen, skip question 25)

(1) Jogging	(2) Swimming	(3) Walking	(4) Ball games
(5) Hiking	(6) Bicycling	(7) Equipment work out	(8) Aerobics, yangko dance
(9) Martial arts or qigong	(10) Boxing	(11) Fencing	(12) Yoga
(13) Judo	(14) Taekwondo	(15) Karate	(16) Others

25. Ball games frequently participated *(in order of precedence, at most three items)*

| (1) Basketball | (2) Volleyball | (3) Football | (4) Table tennis | (5) Badminton |
| (6) Tennis | (7) Golf | (8) Billiards | (9) Others | |

26. Locations of physical exercise *(in order of precedence, at most three items)*

| (1) Stadium/gym | (2) Park | (3) Office or home | (4) Open area |
| (5) Road or street | (6) Recreational club | (7) Others | |

27. Self-perception after physical exercise

(1) Breathing and heart rate remained almost the same

(2) Slight increase in breathing and heart rate, perspired slightly

(3) Rapid breathing and increased heart rate, perspired greatly

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

28. Main obstacles for participating in physical exercise
(in order of precedence, at most three items)

(1) Lack of interest	(2) Laziness
(3) Healthy, not necessary to exercise	(4) Physically not suitable to exercise
(5) Frequently involved in labour intensive work, therefore not necessary to exercise	
(6) Lack of time	(7) Lack of locations and facilities
(8) Lack of coaching	(9) Lack of organization
(10) Financial restraint	(11) Embarrassment
(12) Others	

29. Have you ever heard of the "Physical Fitness Study"?

(1) Yes	(2) No

30. Have you ever participated in the "Physical Fitness Study"?

(1) Yes	(2) No

31. What is your understanding of the "Physical Fitness Study"?
(in order of precedence, at most three items)

(1) Meaningless	(2) To understand the physical fitness status of oneself
(3) To recognize the importance of physical exercising	(4) To improve scientific knowledge of doing exercises

32. How many days per week on an average do you have breakfast?

(1) 0 day	(2) 1~2 days	(3) 3~5 days	(4) 6 days or more

33. How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at a fast food restaurants?

(1) 0 meal	(2) 1~3 meals	(3) 4~6 meals	(4) 7~9 meals	(5) 10 meals or more

34. How many times per week on an average do you take the following foods or drinks?
(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastry, ice cream, fish ball, instant noodles, soda water/packaged juice/sweet drinks)

(1) 0 time	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

End of the questionnaire,
thank you for participating.

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

III. Testing indicators
(to be filled by examiner at location)

1. Height (cm)

2. Sitting height (cm)

3. Weight (kg)

4. Chest circumference (cm)

5. Waist circumference (cm)

6. Hip circumference (cm)

7. Upper arm skinfold thickness (mm)

8. Subscapular skinfold thickness (mm)

9. Abdominal skinfold thickness (mm)

10. Shoulder width (cm)

11. Pelvis width (cm)

12. Foot length (cm)

13. Resting heart rate (bpm)

14. Systolic blood pressure (mmHg)

15. Diastolic blood pressure (mmHg)

16. Vital capacity (ml)

17. Grip strength (kg)

18. Vertical jump (cm)

19. Push-ups (M) / One-minute sit-ups (F) (times)

20. Back strength (kg)

21. One foot stands with eyes closed (OFSEC) (sec)

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 20~39)

22. Choice reaction time (sec)		☐ . ☐ ☐
23. Sit and reach (cm)		☐ ☐ ☐ . ☐

24. Step test	Time (sec)	☐ ☐ ☐
	Heart rate after 1 min (times)	☐ ☐ ☐
	Heart rate after 2 mins (times)	☐ ☐ ☐
	Heart rate after 3 mins (times)	☐ ☐ ☐

Examiner: _____

IV. Adults (aged 40~59)

2015

Data Registration Manual of 2015 Physical Fitness
Study of Macao SAR Residents

Adults
(aged 40~59)

澳門特別行政區政府體育發展局
Macao Sport Development Board, Macao SAR

Thank you for participating in our Physical Fitness Study! This study is organized by the Macao SAR Government to promote sports for all. We are grateful for your participation. Your honesty and sincerity in filling the questionnaire are appreciated. We promise to keep your personal data confidential and we will not publish or use your data individually. It will only be used as part of the whole study for statistical purposes.

For any questions on the questionnaire or testing, please contact Sports Medicine Center of Macao Sport Development Board!

Telephone: 2881 0896, 8893 4540

Preview of Declaration
Sports Medicine Center of Macao Sport Development Board

This declaration is intended to assure data subjects or their parents or guardians that we will strictly comply with the relevant provisions of Act 8/2005 - Personal Data Protection Act.

1. Personal data controller: Macao Sport Development Board, at Av. Dr. Rodrigo Rodrigues, Forum de Macau, Edif. Complementar, Bl. 1, 4-andar. Representative - José Maria da Fonseca Tavares, President of Macao Sport Development Board.

2. Purposes of processing personal data: To provide scientific references for the development of relevant policies regarding sports and medical care. Data collected through the physical fitness study of Macao residents will only be used to update the database for statistical purposes.

3. Categories of data subjects: Macao residents participated in the Study (random sampling by age).

4. Personal data recipients: Data subjects (or their parents or guardians), Sports Medicine Center and China Institute of Sports Science.

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 40~59)

5. Conditions of receiving and processing personal data: Data subjects (or their parents or guardians) are entitled by Act 8/2005 - Personal Data Protection Act to the rights to review and rectify their own personal data collected. The Sports Medicine Center hereby commits to take proper measures to rectify, delete or block the incorrect data.

6. Security and confidentiality of processing personal data: Appropriate measures are implemented to process and edit the personal data to ensure strict confidentiality, safety and security of the data.

I, the undersigned, am aware of the contents and my legal rights in the above Declaration.

_____

(Signature of data subject/parents/guardian)

_____ /_____ /_____

(DD) / (MM) / (YY)

Name: _____

Gender: _____

Age: _____ (years)

Working Unit: _____

Telephone: _____

Instructions for filling the questionnaire:

Please fill in the blank squares with corresponding numbers. For example, if you select Choice 1, fill in the square with "1". If the number has two-digits, write both digits in the same square. For instance, if you select Choice 11, fill in the square with 11 . For multiple choice questions, if you only select one or two choice(s), please fill the remaining blank square(s) with "0".

I. General Information

1. Macao ID card number		
2. Gender	(1) M (2) F	
3. Date of birth	Y M D	
4. Examination date	Y M D	
5. Working unit code number *(to be filled by examiner)*		
6. Serial number *(to be filled by examiner)*		
7. Years of residence in Macao *(refers to years of continuous residence in Macao)* *(If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)*		
8. Category of occupation		
(1) Labour intensive work *(persons engaged in light or heavy labour, and mainly standing at work)*		
(2) Non-labour intensive work *(persons engaged in intellectual work, and mainly sitting at work)*		

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 40~59)

II. Questionnaire

1. Birth place

(1) Mainland	(2) Macao	(3) Hong Kong	(4) Portugal	(5) Others

2. Parish of residence

(1) Paróquia de São Francisco Xavier *(Coloane)*

(2) Paróquia de Nossa Senhora do Carmo *(Taipa)*

(3) Paróquia de S. Lourenço
(Zonas das Colinas da Barra e da Penha, da Praia do Manduco e do Porto Interior)

(4) Paróquia da Sé Catedral
(Zonas da Almeida Ribeiro, da Praia Grande, da Rua do Campo, dos Lotes norte e sul do Porto Exterior e da Zona do Lago Nam Van)

(5) Paróquia de Santo António
(Zonas da Freguesia de Santo António, do Oeste de Macau, incluindo Av. Horta e Costa, de San Kiu e do Patane)

(6) Paróquia de S. Lázaro *(Zona do Conselheiro Ferreira de Almeida e da Colina da Guia)*

(7) Paróquia de Nossa Senhora de Fátima
(Zonas Norte, incluindo Ilha Verde, Tamagnini Barbosa, Areia Preta, Fái Chi Kei e Reservatório)

3. Education level

(1) Below primary school education	(2) Primary school	(3) Secondary school
(4) University or professional college	(5) Master	(6) Doctoral

4. Current occupation

(1) Legislative officer, public administration officer, community leader or manager

(2) Professional *(professionals in various disciplines including higher education and secondary school teaching staff)*

(3) Technician or professional assistant
(persons who engaged in technical works in various disciplines including preschool, primary school and special education teachers)

(4) Office clerk *(secretaries, secretarial work office clerks, cashiers, receptionists, ticket agents and workers of similar nature)*

(5) Customer service or sales representative
(persons who engaged in tourism, catering, beauty care, insurance, and also including firemen, traffic and public security policemen, security staff, sales personnel etc.)

(6) Skilled worker in the fishery or agricultural field
(fishermen, farmers, and persons who engaged in storing and selling of fishery, agricultural, and livestock products etc.)

(7) Artisan or craftsman *(including building workers and handicraft workers)*

(8) Machine operator, driver or assembler

(9) Non-technician *(ex. cleaners, property management officers, postmen, porters)*

(10) Others	(11) Unemployed	(12) Household duties

5. Working environment [ ]

| (1) Outdoor | (2) Indoor *(naturally ventilated)* | (3) Indoor *(air conditioned)* |

6. Disease diagnosed by doctors within the past 5 years *(If the answer is "no", skip to question 8)* [ ]

| (1) Yes | (2) No |

7. Diseases suffered *(in order of precedence, at most three diseases)* [ ][ ][ ]

| (1) Cancer | (2) Cardiovascular diseases | (3) Respiratory |

(4) Accidental injury *(injury to the body that needs treatments, or injury that affects normal activities)*

| (5) Gastrointestinal diseases | (6) Hypertension | (7) Endocrine diseases |
| (8) Urinary or reproductive | (9) Diabetes | (10) Others |

- -

Please answer the following questions according to your status within the past half year:

8. Average working hours per week [ ]

| (1) Unemployed | (2) Less than 20 hrs | (3) 20~35 hrs |
| (4) 35~40 hrs | (5) 40~50 hrs | (6) 50 hrs or more |

9. Average cumulative sleeping hours per day *(including naps)* [ ]

| (1) Less than 6 hrs | (2) 6~9 hrs | (3) 9 hrs or more |

10. Quality of sleep [ ]

| (1) Poor | (2) Average | (3) Good |

11. Average cumulative walking hours per day
(walks that last longer than 10 mins each time but not including walks during physical exercise) [ ]

| (1) Less than 30 mins | (2) 30~60 mins | (3) 1~2 hrs | (4) 2 hrs or more |

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 40~59)

12. Average cumulative sitting time per day
(during work, watching TV, commuting, using computer, dining or chatting etc.)

(1) Less than 3 hrs	(2) 3~6 hrs	(3) 6~9 hrs
(4) 9~12 hrs	(5) 12 hrs or more	

13. Cigarette consumption

(1) None	(2) Less than 10 cigarettes per day
(3) 10~20 cigarettes per day	(4) 20 cigarettes or more per day
(5) Quitted smoking for less than 2 years	(6) Quitted smoking for more than 2 years

14. Duration of smoking *(smokers only)*

(1) Less than 5 years	(2) 5~10 years	(3) 10~15 years	(4) 15 years or more

15. Alcohol consumption *(If choose choice (1), skip to question 18)*

(1) No	(2) Yes

16. Frequency of alcohol drinking

(1) Once per month	(2) 1~2 times per week	(3) 3~4 times per week	(4) 5~7 times per week

17. Types of alcohol frequently consumed

(1) Liquor *(ABV≥20%, i.e. whisky, Moutai, Erguotou)*	(2) Beer
(3) Yellow wine *(Shaoxing wine, Jimo yellow wine, Huadiao)*	(4) Rice wine *(mijiu, sweet wine)*
(5) Wine or fruit wine	(6) Mixed wine *(cocktail, Slings)*

18. Activities frequently participated during leisure time
(in order of precedence, at most three items)

(1) Physical exercise	(2) Chess or poker	(3) Traveling	(4) Social gathering
(5) AV entertainment	(6) House chores	(7) Sleeping	(8) Others

19. Sports events frequently watched *(in order of precedence, at most three items)*

(1) Basketball	(2) Volleyball	(3) Football	(4) Gymnastics
(5) Swimming	(6) Martial arts	(7) Boxing	(8) Table tennis
(9) Billiards	(10) Golf	(11) Badminton	(12) Water polo
(13) Baseball	(14) Softball	(15) Weight-lifting	(16) Fencing
(17) Wrestling or judo	(18) Others		

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20. Average frequency of physical exercise per week *(If choose choice (1), skip to question 28)*

(1) Never	(2) Less than 1 time	(3) 1~2 times	(4) 3~4 times	(5) At least 5 times

21. Average duration of physical exercise each time

(1) Less than 30 mins	(2) 30~60 mins	(3) At least 60 mins

22. Duration of persistent exercising

(1) Less than 6 months	(2) 6~12 months	(3) 1~3 years	(4) 3~5 years	(5) 5 years or more

23. Purposes of physical exercise *(in order of precedence, at most three items)*

(1) To prevent or cure diseas	(2) To improve physical fitness	(3) To lose weight and keep fit
(4) To relieve stress & regulate mood	(5) To socialize	(6) Others

24. Physical exercises frequently participated

(in order of precedence, at most three items) (if choose choice (4), question 25 must be answered. If choice (4) is not chosen, skip question 25)

(1) Jogging	(2) Swimming	(3) Walking	(4) Ball games
(5) Hiking	(6) Bicycling	(7) Equipment work out	(8) Aerobics, yangko dance
(9) Martial arts or qigong	(10) Boxing	(11) Fencing	(12) Yoga
(13) Judo	(14) Taekwondo	(15) Karate	(16) Others

25. Ball games frequently participated *(in order of precedence, at most three items)*

(1) Basketball	(2) Volleyball	(3) Football	(4) Table tennis	(5) Badminton
(6) Tennis	(7) Golf	(8) Billiards	(9) Others	

26. Locations of physical exercise *(in order of precedence, at most three items)*

(1) Stadium/gym	(2) Park	(3) Office or home	(4) Open area
(5) Road or street	(6) Recreational club	(7) Others	

27. Self-perception after physical exercise

(1) Breathing and heart rate remained almost the same

(2) Slight increase in breathing and heart rate, perspired slightly

(3) Rapid breathing and increased heart rate, perspired greatly

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 40~59)

28. Main obstacles for participating in physical exercise
(in order of precedence, at most three items)

(1) Lack of interest	(2) Laziness
(3) Healthy, not necessary to exercise	(4) Physically not suitable to exercise
(5) Frequently involved in labour intensive work, therefore not necessary to exercise	
(6) Lack of time	(7) Lack of locations and facilities
(8) Lack of coaching	(9) Lack of organization
(10) Financial restraint	(11) Embarrassment
(12) Others	

29. Have you ever heard of the "Physical Fitness Study"?

(1) Yes	(2) No

30. Have you ever participated in the "Physical Fitness Study"?

(1) Yes	(2) No

31. What is your understanding of the "Physical Fitness Study"?
(in order of precedence, at most three items)

(1) Meaningless	(2) To understand the physical fitness status of oneself
(3) To recognize the importance of physical exercising	(4) To improve scientific knowledge of doing exercises

32. How many days per week on an average do you have breakfast?

(1) 0 day	(2) 1~2 days	(3) 3~5 days	(4) 6 days or more

33. How many meals per week on an average *(breakfast, lunch or dinner)* **do you eat out or eat at a fast food restaurants?**

(1) 0 meal	(2) 1~3 meals	(3) 4~6 meals	(4) 7~9 meals	(5) 10 meals or more

34. How many times per week on an average do you take the following foods or drinks?
(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastry, ice cream, fish ball, instant noodles, soda water/packaged juice/sweet drinks)

(1) 0 time	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

**End of the questionnaire,
thank you for participating.**

III. Testing indicators
(to be filled by examiner at location)

1. Height (cm)

2. Sitting height (cm)

3. Weight (kg)

4. Chest circumference (cm)

5. Waist circumference (cm)

6. Hip circumference (cm)

7. Upper arm skinfold thickness (mm)

8. Subscapular skinfold thickness (mm)

9. Abdominal skinfold thickness (mm)

10. Shoulder width (cm)

11. Pelvis width (cm)

12. Foot length (cm)

13. Resting heart rate (bpm)

14. Systolic blood pressure (mmHg)

15. Diastolic blood pressure (mmHg)

16. Vital capacity (ml)

17. Grip strength (kg)

18. One foot stands with eyes closed (OFSEC) (sec)

19. Choice reaction time (sec)

20. Sit and reach (cm)

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Adults (aged 40~59)

21. Step test	Time (sec)			
	Heart rate after 1 min (times)			
	Heart rate after 2 mins (times)			
	Heart rate after 3 mins (times)			

Examiner: _____

V. Seniors
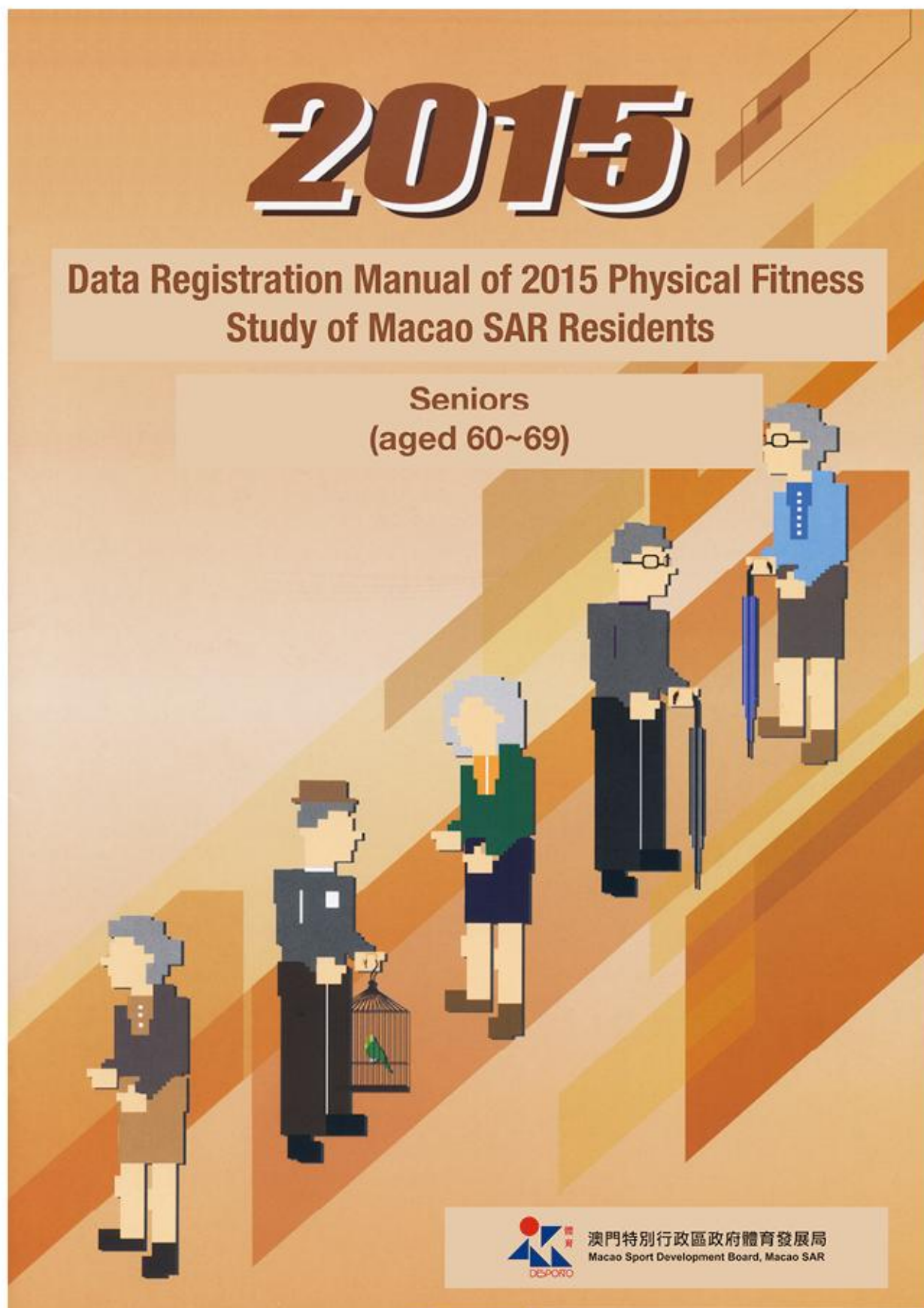
2015

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents

Seniors
(aged 60~69)

澳門特別行政區政府體育發展局
Macao Sport Development Board, Macao SAR

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Seniors (aged 60~69)

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For any questions on the questionnaire or testing, please contact Sports Medicine Center of Macao Sport Development Board!

Telephone: 2881 0896, 8893 4540

Preview of Declaration
Sports Medicine Center of Macao Sport Development Board

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2. Purposes of processing personal data: To provide scientific references for the development of relevant policies regarding sports and medical care. Data collected through the physical fitness study of Macao residents will only be used to update the database for statistical purposes.

3. Categories of data subjects: Macao residents participated in the Study (random sampling by age).

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Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Seniors (aged 60~69)

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I, the undersigned, am aware of the contents and my legal rights in the above Declaration.

_____

(Signature of data subject/parents/guardian)

_____ /_____ /_____

(DD) / (MM) / (YY)

Name: _____

Gender: _____

Age: _____ (years)

Organization associated with: _____

Telephone: _____

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Seniors (aged 60~69)

Instructions for filling the questionnaire:

Please fill in the blank squares with corresponding numbers. For example, if you select Choice 1, fill in the square with "1". If the number has two-digits, write both digits in the same square. For instance, if you select Choice 11, fill in the square with 11 . For multiple choice questions, if you only select one or two choice(s), please fill the remaining blank square(s) with "0".

I. General Information

1. Macao ID card number									

2. Gender	(1) M	(2) F	

3. Date of birth					Y			M			D

4. Examination date					Y			M			D

5. Working unit code number (to be filled by examiner)				

6. Serial number (to be filled by examiner)			

7. Years of residence in Macao (refers to years of continuous residence in Macao)
(If the time of leaving Macao was over 1 year, the years of residence in Macao shall be recalculated from the time of returning to Macao.)

II. Questionnaire

1. Birth place

(1) Mainland	(2) Macao	(3) Hong Kong	(4) Portugal	(5) Others

2. Parish of residence

(1) Paróquia de São Francisco Xavier *(Coloane)*

(2) Paróquia de Nossa Senhora do Carmo *(Taipa)*

(3) Paróquia de S. Lourenço
(Zonas das Colinas da Barra e da Penha, da Praia do Manduco e do Porto Interior)

(4) Paróquia da Sé Catedral
(Zonas da Almeida Ribeiro, da Praia Grande, da Rua do Campo, dos Lotes norte e sul do Porto Exterior e da Zona do Lago Nam Van)

(5) Paróquia de Santo António
(Zonas da Freguesia de Santo António, do Oeste de Macau, incluindo Av. Horta e Costa, de San Kiu e do Patane)

(6) Paróquia de S. Lázaro *(Zona do Conselheiro Ferreira de Almeida e da Colina da Guia)*

(7) Paróquia de Nossa Senhora de Fátima
(Zonas Norte, incluindo Ilha Verde, Tamagnini Barbosa, Areia Preta, Fái Chi Kei e Reservatório)

3. Education level

(1) Below primary school education	(2) Primary school	(3) Secondary school
(4) University or professional college	(5) Master	(6) Doctoral

4. Retired

(1) Yes	(2) No

5. Occupation before retirement/current occupation

(1) Legislative officer, public administration officer, community leader or manager

(2) Professional *(professionals in various disciplines including higher education and secondary school teaching staff)*

(3) Technician or professional assistant
(persons who engaged in technical works in various disciplines including preschool, primary school and special education teachers)

(4) Office clerk *(secretaries, secretarial work office clerks, cashiers, receptionists, ticket agents and workers of similar nature)*

(5) Customer service or sales representative
(persons who engaged in tourism, catering, beauty care, insurance, and also including firemen, traffic and public security policemen, security staff, sales personnel etc.)

(6) Skilled worker in the fishery or agricultural field
(fishermen, farmers, and persons who engaged in storing and selling of fishery, agricultural, and livestock products etc.)

(7) Artisan or craftsman *(including building workers and handicraft workers)*

(8) Machine operator, driver or assembler

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Seniors (aged 60~69)

(9) Non-technician *(ex. cleaners, property management officers, postmen, porters)*		
(10) Others	(11) Unemployed	(12) Household duties

6. Occupation category before retirement/current occupation category ☐

(1) Labour intensive work *(persons engaged in light or heavy labour, and mainly standing at work)*
(2) Non-labour intensive work *(persons engaged in intellectual work, and mainly sitting at work)*

7. Working environment before retirement/current working environment ☐

(1) Outdoor	(2) Indoor *(naturally ventilated)*	(3) Indoor *(air conditioned)*

8. Disease diagnosed by doctors within the past 5 years *(If the answer is "no", skip to question 10)* ☐

(1) Yes	(2) No

9. Diseases suffered *(in order of precedence, at most three diseases)* ☐☐☐

(1) Cancer	(2) Cardiovascular diseases	(3) Respiratory
(4) Accidental injury *(injury to the body that needs treatments, or injury that affects normal activities)*		
(5) Gastrointestinal diseases	(6) Hypertension	(7) Endocrine diseases
(8) Urinary or reproductive	(9) Diabetes	(10) Others

- -

Please answer the following questions according to your status within the past half year:

10. Average working hours per week ☐

(1) Unemployed	(2) Less than 20 hrs	(3) 20~35 hrs
(4) 35~40 hrs	(5) 40~50 hrs	(6) 50 hrs or more

11. Average cumulative sleeping hours per day *(including naps)* ☐

(1) Less than 6 hrs	(2) 6~9 hrs	(3) 9 hrs or more

12. Quality of sleep ☐

(1) Poor	(2) Average	(3) Good

13. Average cumulative walking hours per day
(walks that last longer than 10 mins each time but not including walks during physical exercise)

(1) Less than 30 mins	(2) 30~60 mins	(3) 1~2 hrs	(4) 2 hrs or more

14. Average cumulative sitting time per day
(during work, watching TV, commuting, using computer, dining or chatting etc.)

(1) Less than 3 hrs	(2) 3~6 hrs	(3) 6~9 hrs
(4) 9~12 hrs	(5) 12 hrs or more	

15. Cigarette consumption

(1) None	(2) Less than 10 cigarettes per day
(3) 10~20 cigarettes per day	(4) 20 cigarettes or more per day
(5) Quitted smoking for less than 2 years	(6) Quitted smoking for more than 2 years

16. Duration of smoking *(smokers only)*

(1) Less than 5 years	(2) 5~10 years	(3) 10~15 years	(4) 15 years or more

17. Alcohol consumption *(If choose choice (1), skip to question 20)*

(1) No	(2) Yes

18. Frequency of alcohol drinking

(1) Once per month	(2) 1~2 times per week	(3) 3~4 times per week	(4) 5~7 times per week

19. Types of alcohol frequently consumed

(1) Liquor *(ABV≥20%, i.e. whisky, Moutai, Erguotou)*	(2) Beer
(3) Yellow wine *(Shaoxing wine, Jimo yellow wine, Huadiao)*	(4) Rice wine *(mijiu, sweet wine)*
(5) Wine or fruit wine	(6) Mixed wine *(cocktail, Slings)*

20. Activities frequently participated during leisure time
(in order of precedence, at most three items)

(1) Physical exercise	(2) Chess or poker	(3) Traveling	(4) Social gathering
(5) AV entertainment	(6) House chores	(7) Sleeping	(8) Others

Data Registration Manual of 2015 Physical Fitness Study of Macao SAR Residents
Seniors (aged 60~69)

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21. Sports events frequently watched *(in order of precedence, at most three items)*

(1) Basketball	(2) Volleyball	(3) Football	(4) Gymnastics	(5) Swimming
(6) Martial arts	(7) Boxing	(8) Table tennis	(9) Billiards	(10) Golf
(11) Badminton	(12) Water polo	(13) Baseball	(14) Softball	(15) Weight-lifting
(16) Fencing	(17) Wrestling or judo	(18) Others		

22. Average frequency of physical exercise per week *(If choose choice (1), skip to question 29)*

(1) Never	(2) Less than 1 time	(3) 1~2 times	(4) 3~4 times	(5) At least 5 times

23. Average duration of physical exercise each time

(1) Less than 30 mins	(2) 30~60 mins	(3) At least 60 mins

24. Duration of persistent exercising

(1) Less than 6 months	(2) 6~12 months	(3) 1~3 years	(4) 3~5 years	(5) 5 years or more

25. Purposes of physical exercise *(in order of precedence, at most three items)*

(1) To prevent or cure diseas	(2) To improve physical fitness	(3) To lose weight and keep fit
(4) To relieve stress & regulate mood	(5) To socialize	(6) Others

26. Physical exercises frequently participated *(in order of precedence, at most three items)*

(1) Jogging	(2) Swimming	(3) Walking	(4) Ball games
(5) Hiking	(6) Bicycling	(7) Equipment work out	(8) Aerobics, yangko dance
(9) Martial arts or qigong	(10) Others		

27. Locations of physical exercise *(in order of precedence, at most three items)*

(1) Stadium/gym	(2) Park	(3) Office or home	(4) Open area
(5) Road or street	(6) Recreational club	(7) Others	

28. Self-perception after physical exercise

(1) Breathing and heart rate remained almost the same	(2) Slight increase in breathing and heart rate, perspired slightly
(3) Rapid breathing and increased heart rate, perspired greatly	

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29. Main obstacles for participating in physical exercise
(in order of precedence, at most three items)

(1) Lack of interest	(2) Laziness
(3) Healthy, not necessary to exercise	(4) Physically not suitable to exercise
(5) Frequently involved in labour intensive work, therefore not necessary to exercise	
(6) Lack of time	(7) Lack of locations and facilities
(8) Lack of coaching	(9) Lack of organization
(10) Financial restraint	(11) Embarrassment
(12) Others	

30. Have you ever heard of the "Physical Fitness Study"?

(1) Yes	(2) No

31. Have you ever participated in the "Physical Fitness Study"?

(1) Yes	(2) No

32. What is your understanding of the "Physical Fitness Study"?
(in order of precedence, at most three items)

(1) Meaningless	(2) To understand the physical fitness status of oneself
(3) To recognize the importance of physical exercising	(4) To improve scientific knowledge of doing exercises

33. How many days per week on an average do you have breakfast?

(1) 0 day	(2) 1~2 days	(3) 3~5 days	(4) 6 days or more

34. How many meals per week on an average *(breakfast, lunch or dinner)* do you eat out or eat at a fast food restaurants?

(1) 0 meal	(2) 1~3 meals	(3) 4~6 meals	(4) 7~9 meals	(5) 10 meals or more

35. How many times per week on an average do you take the following foods or drinks?
(Potato chips/shrimp chips, French fries, chocolate/candies, cookies/sweet pastry, ice cream, fish ball, instant noodles, soda water/packaged juice/sweet drinks)

(1) 0 time	(2) 1~2 times	(3) 3~5 times	(4) 6 times or more

End of the questionnaire,
thank you for participating.

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III. Testing indicators (to be filled by examiner at location)

1. Height (cm)

2. Sitting height (cm)

3. Weight (kg)

4. Chest circumference (cm)

5. Waist circumference (cm)

6. Hip circumference (cm)

7. Upper arm skinfold thickness (mm)

8. Subscapular skinfold thickness (mm)

9. Abdominal skinfold thickness (mm)

10. Shoulder width (cm)

11. Pelvis width (cm)

12. Foot length (cm)

13. Resting heart rate (bpm)

14. Systolic blood pressure (mmHg)

15. Diastolic blood pressure (mmHg)

16. Vital capacity (ml)

17. Grip strength (kg)

18. One foot stands with eyes closed (OFSEC) (sec)

19. Choice reaction time (sec)

20. Sit and reach (cm)

Examiner:_____

Appendix 2: Methods for Filling out "2015 Physical Fitness Study of Macao SAR Residents" Questionnaire

I. Basic Information

Name, gender and age must be valid since they are important information used to classify subjects into different categories and to file data registration manuals. The information could be filled out either by the subjects themselves or by the examiners after examination. When filling, examiners need to ensure the accuracy and integrity of the information. If any uncertainty occurred, they should clarify with the subjects. All questions must be filled. After examination, these manuals should be filed and saved according to gender and age group on a timely manner. Requirements for filling out the first page of the manual were as follows:

1. Name and Gender

Valid information was to be filled.

2. Age

Age was to be filled after calculation by methods mentioned in **Sampling Methods of Part One "Physical Fitness Study and implementation".**

3. Name and Telephone Number of Kindergarten, School, Working Unit and Affiliated Unit

Names of these institutes were to be filled out on the "lines". For young children who had not commenced kindergartens, "Have not begun kindergarten" should be written down. For seniors, name of the senior center should be written down.

Current and accessible telephone number should be written down.

4. Explanations

Before examination, the subjects should be reminded to read and understand the explanations in the manuals.

II. Category by Code

1. Macao ID Card Number

Subjects should provide valid information.

2. Gender

The national gender code system was adopted. 1 represented male and 2 represented female.

3. Date of Birth and Examination Date

Dates were to be filled according to western calendar. Examination date referred to the date the subject first participated in the examination and would be filled out by the examiners. Methods for filling were as follows:

The first four blanks were for year; the fifth and sixth blanks for month (if subjects were born from January to September, the fifth blank should be "0"); the seventh and eighth blanks for day (if subjects were born on dates ranging from 1st to 9th, the seventh blank should be "0").

e.g.: a subject was born on 12th April, 1964 and the examination date was 12th April, 2015, the manual should be filled in as follows:

Date of birth: | 1 | 9 | 6 | 4 | Y | 0 | 4 | M | 1 | 2 | D

Examination date: | 2 | 0 | 1 | 5 | Y | 0 | 4 | M | 1 | 2 | D

4. Code Number of Kindergarten, School, Working Unit and Affiliated Unit

Before examination, participating institutes were coded by the Physical Fitness Monitoring Center for Macao Residents with numbers and they were registered and saved accordingly.

Coding: (1) There were 3-digit or 4-digit code numbers. The first digit indicated the year of the Study; the 2nd-3rd or 2nd-4th digits were for the sampling sites. (2) 2005 was the year of the first study, the original codes were all 2-digit numbers. (3) 2010 Coding: for the original sampling sites in 2005, "0" was added to the original code numbers. Kindergarten code numbers: 001~020. School code numbers: 021~040. Working unit code numbers: 041~070. Senior center code numbers: 071~099. The newly increased sampling sites in 2010 were coded in sequence. Kindergarten code numbers: 101~120. School code numbers: 121~140. Working unit code numbers: 141~170. Senior center code numbers: 171~199. (4) 2015 Coding: for the original sampling sites in 2010, if the first digit was "0", revised it to "2"; if the first digit was "1", "2" was added to the code numbers. Kindergarten code numbers: 201~220 or 2101~2120. School code numbers: 221~240 or 2121~2140. Working unit code numbers: 241~270 or 2141~2170. Senior center code numbers: 271~299 or 2171~2199. The newly increased sampling sites in 2015 were coded in sequence, with the first digit being "3". Kindergarten code numbers: 301~320. School code numbers: 321~340. Working unit code numbers: 341~370. Senior center code numbers: 371~399. Each blank should only be filled with single digit.

E.g.: the code number for Macao University of Science and Technology was "028" *(original sampling site in 2010)*, then the blanks would be:

| 0 | 2 | 8 |

E.g.: the code number for Macao St. Joseph University was "321" *(new sampling site in 2015)*, then the blanks would be:

| 3 | 2 | 1 |

5. Serial Number

Serial number referred to subject's code number. Supervised by Physical Fitness Monitoring Center for Macao Residents, subjects were coded according to categories: young children, students, adults and seniors, age groups and genders. Examiners filled in the serial numbers and kept them for reference. Serial number ranged from 0001~9999.

6. Years of Residence in Macao

This referred to the number of years the subjects had continuously been living in Macao. Valid information was required.

e.g. If a subject had lived in Macao for 8 years, it would be:

0	8

7. Occupation Code

This was for adults only. Labor intensive work (Code 1) referred to light or heavy labor-intensive work such as sales representative, customer service personnel, technician and professional assistant, worker in the fishery and agricultural fields, artisan, craftsman, machine operator, driver or assembler. Non-labor intensive work (Code 2) referred to intellectual works such as head of organization, professional, technician, office clerk etc.

Subjects should filled the code according to their actual occupation.

e.g.: If a subject was an office clerk, it would be:

2

III. Questionnaire

Questionnaire was composed of both single choice and multiple choice questions.

■ Single Choice Question

Subjects should select a choice closest to their situation and put the corresponding number in the blank.

e.g. If the guardian of a young child was a senior family member, the corresponding number for Question 14 would be 2. The blank would be:

2

If the corresponding number was two-digits, both digits should be filled in the same blank. For instance, if the answer was (11), the blank would be:

11

■ Multiple Choice Question

Subjects selected choices (at most 3 choices) closest to their situation and put the corresponding numbers in the blanks according to their precedence.

If a subject only selected one or two choice(s), the last one or two blank(s) needed to be filled in with a "0". As a reminder, subject needed to select at least one choice for multiple choice questions.

For example: A young child had three hobby classes during his spare time: physical exercise, tutoring, dancing and music, then the blanks would be:

2	3	5

Another example: A subject had only selected "physical exercise", the blank would be:

2	0	0

■ Before filling out the questionnaire, examiners should remind subjects to read the questions and answer with care in order to avoid errors

1. Questionnaire for Young Children

The questionnaire for young children included three parts: personal information of young children, paternal and maternal personal information. Information of the young children could be completed by their parents.

■ Personal Information of Young Children

(1) Birth place

This referred to the place where the birth certificate of the child was issued by hospital.

e.g. If the child was born in Macao, the blank would be:

2

(2) Parish of residence

This referred to the parish where the subject lived.

e.g. If a subject lived in S. Francisco (Coloane), the blank would be:

1

(3) Birth weight and birth length

These should be according to the birth certificate issued by the hospital. If unsure, filled the blank with 99.9.

(4) Gestational age

This should be identified by a hospital or doctor. Usually, a gestational age of 40 weeks was medically considered as term (standard). Premature birth referred to birth at least two weeks before term. Post-term referred to birth at least two weeks after term. Term birth was birth within two weeks before or after term.

(5) Feeding patterns within 4 months after birth

Formula feeding referred to any feedings other than breast milk (e.g. milk or milk powder). Mixed feeding referred to the combination of breast feeding and formula feeding.

(6) Number of siblings and birth order

This referred to the number of brothers and sisters in the family. If the subject was an only child, filled the blank with 0.

(7) Frequency of flu or fever within the past year

This referred to flu occurred within one year from the physical fitness examination date. Flu symptoms included stuffy nose, runny nose, sneezing, sore throat, fever, muscle pain; sometimes incurred along with gastrointestinal problems such as stomach ache, vomiting or diarrhea.

(8) Diseases suffered

This referred to whether the young children had been diagnosed with any diseases since birth. . This was a multiple choice question with at most 3 disease choices. The information filled should be valid diagnosis from a doctor. If the disease diagnosed could not be found from the choices, then selected "others". If no diseases had been suffered, selected "no" and skipped question 11.

(9) Sleeping time

This referred to the average sleeping hours (nap time included) per day in the past half year.

(10) Kindergarten attendance

Half day meant the young children only spent half a day at kindergarten. Full day meant the young children spent a full day at kindergarten but night time at home. Boarding referred to the young children living at the kindergarten and returned home during weekends or holidays.

(11) Caretaker at home

This referred to the person who took care of the child at home and who spent most time with the child. The goal was to investigate who was most influential on the child's habits and behavior.

(12) Hobby classes

This was a multiple choice question. It referred to the types of hobby classes the young children participated.

e.g.: A subject took physical exercise, tutoring and chess as hobby classes, then the blanks would be:

2	3	4

If the subject did not attend any hobby classes, the blanks should be filled in with 1, 0, 0.

(13) Average time spent on outdoor activities per day

This referred to the average time per day spent playing outdoor, doing exercises and physical activities within the past half year.

(14) Time spent on watching TV, video or playing video games per day

This referred to the average time per day spent on watching TV, video or playing video games within the past half year.

(15) Physical exercise frequently participated

This was a multiple choice question. It mainly referred to the sports activities played outside of kindergarten which could include hobby classes or activities at recreational clubs.

(16) Frequency of tooth brushing, flossing teeth and receiving dental examination

Maintaining good oral hygiene is crucial for oral health and physical health. Tooth brushing is a key part of family dental care. It is necessary to use dental floss at least once a day and have regular dental examinations in order to prevent periodontal disease.

(17) Occurrence of dental caries

It should be filled according to caries diagnosis by dentists.

(18) Frequency of eating out or eating at fast food restaurants (breakfast, lunch or dinner) per week

This referred to the number of meals that the subject ate out at restaurants or at fast food places per week.

(19) Frequency of taking the following foods or drinks per week

The goal was to investigate the young children's habits of eating high-calorie foods, such as fried foods, sweet foods, sodas, etc. This referred to the average intake of high-calorie foods per week within the past month.

■ Paternal and Maternal Personal Information

(1) Date of birth

Valid information was required.

(2) Birthplace

Refer to in III-1-(1) in Appendix 2 in the information of young children.

(3) Years of residence in Macao

This referred to the number of years the subjects' parents had lived in Macao continuously.

(4) Height and weight

If possible, the kindergartens or examiners provided assistance in measuring the parents' weight and height before filling these two blanks in order to obtain accurate data.

(5) Education level

This referred to the highest education level the subjects' parents achieved with proven diplomas or certificates.

(6) Occupation

This referred to current occupation of the subjects' parents.

According to "Macao Occupational Classification" (1997), the explanations of each occupation were as follows:

① Legislative officer, high rank officer of public administration, community leader or manager

In general, this referred to one who recommended, made decision and formulated legislative or public policies and regulations in the government, municipal or community groups. The person also planned, directed and coordinated activities of enterprises, institutions and relevant departments. This would include legislative officers, public administration officers, community leaders, enterprise managers and small business managers (administrator). Legislative officer referred to one who made decision, formulated, directed, advised, authorized, modified and abolished government or municipal policies, laws and regulations. This would include chief executive, legislative council members, advisory council members and municipal council members.

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Principle public administration officer referred to one who engaged in the formulation of government or municipal policies, directed and monitored the interpretation and implementation of policies and laws, acted as representative of the government in foreign countries and regions, coordinated work between government departments and supervised work of others. This would include, secretaries for government agencies, heads of departments or bureaus, high commissioners, secretary-generals and persons of similar nature.

Community leader referred to one who managed human resources, formulated and implemented policies in political parties, chamber of commerce, labour unions; professional, industry or athletic associations etc. This person represented relevant organizations and their members in the negotiation and protection of their interests and rights from legislative bodies and government. This would include heads of political organizations, chambers of commerce, labour unions; charity, community and athletic organizations.

Enterprise manager referred to one who formulated policies, planned, implemented and coordinated the operation of enterprises, organizations (with ten or more staff) or departments. This would include enterprise directors, general managers, presidents and department managers.

Small enterprise manager (administrator) referred to one who managed a small business (with at most ten staff), planned, formulated and implemented polices, supervised daily work, assessed performance, negotiated with suppliers, customers and other enterprises; planned, recruited and managed human resources; submitted report to employer. This would include administrators of various industries such as agriculture, forestry, fishery, construction, mining, manufacturing, wholesale, retail trading, hotel and restaurant business, transportation, tourism, communication, banking, commercial, insurance, real estate and social work.

② Professional

Referred to one who engaged in analysis, research and development, theory and operation; applied knowledge and made recommendations in the fields of natural science (including mathematics, engineering and technologies), life science (including medical science), social science and human science; involved in teaching, provided commercial, legal and social services; participated in arts creation; provided spiritual guidance and published academic papers. This would include professionals in physics, mathematics, engineering, life science, health; teaching staff in higher and secondary education or similar professions; professionals in law, administration, commerce, social science and human science etc.

③ Technician or professional assistant

Referred to one who engaged in the study and application of natural science (including mathematics, engineering and technologies), life science (including medical science), social science and human science; teaching staff of primary school, preschool and special education for people with physical and mental disabilities; engaged in technical work in commerce, finance, administration and social services; engaged in arts and recreational sports activities. This would include technicians or assistants in physics, chemistry, engineering, life science and health science; professionals in primary school, preschool and similar aspects; technicians or assistants in administration, commerce, social services and law etc.

④ Office clerk

Referred to one who engaged in shorthand, typewriting, word processing and office equipment operation; input data into computers; performed secretarial work; recorded and calculated data; handled inventory, manufacturing and transportation records; handled passenger and flight records; performed library works, processed documents, provided postal services, performed accounting duties, made travel arrangement, provided customers with necessary resources, made appointments, arranged meetings, answered telephone etc. This would include office clerks, cashiers, tellers, receptionists, ticket agents and personnel of similar nature.

⑤ Customer service or sales representative

Referred to one who engaged in tourism, domestic services, foods and beverages, child care; beauty care, escort, astrology or fortune-telling services. Person who provided ecurity services, worked as arts or commercial models, participated in business sales or marketing, demonstrated products to customers. This would include security officers, models, salesmen and product demonstrators.

⑥ Worker in the fishery or agricultural field

Referred to one who engaged in the preparation and cultivation of agricultural lands; prepared seeds, grew plants, fruits and vegetables, applied fertilizer and harvested products; raised livestock for meat, milk, leather; engaged in catching, storing and selling of marine products and mollusks. This would include skilled workers in fishery, agriculture and animal husbandry fields.

⑦ Artisan or craftsman

Referred to one who exploited and processed minerals; built, maintained and repaired buildings and other structures; casted, welded and processed metals; constructed metal frameworks; built machines, tools, equipments and other metal products; maintained and repaired craft machines; manufactured precise instruments, jewelries, household appliances, precious metal items, ceramics and glass products; manufactured handicrafts; printing; manufactured and processed foods, textile, wood, leather or other products. This would include workers in mining, construction, metal and machinery, precision instrument, printing, handicraft, food processing, wood handling, textile, leather industries etc.

⑧ Machine operator, driver or assembler

Referred to one who operated, monitored and handled materials such as wood, metal, minerals, industrial machines and tools etc.; assembled specific multi-component products; operated vehicles, mobile machines and equipments. This would include operators of machine, vehicle, vessel, heavy mobile equipment and product assemblers.

⑨ Non-technician

Referred to one who engaged in mobile sales of goods; cleaned houses, hotels and offices; guarded apartment buildings; collected garbage; delivered mails, documents and parcels; collected money from vending machines; carried luggage; drove passengers in a rickshaw; engaged in simple works related to construction, manufacturing, transportation, fishery and agriculture industries. This would include non-technicians in sales and services, fishery and agriculture, mining, construction, manufacturing and transportation.

⑩ Others not listed in the above classifications.

In addition, explanations of the following two choices were:

⑪ Unemployed: referred to one who had not reached retirement age and was able to work; however, presently jobless.

⑫ Household duties: referred to one who had not reached retirement age and was able to work; however, presently engaged in household duties at home instead of working.

(7) Physical exercise

Physical exercise referred to all kinds of exercises, either with or without the help of equipments to increase fitness, stress management or life enrichment.

The answer should be truthful. If the subjects' parents never participated in any physical exercise, they could skip questions 9 and 10., For those who exercised could select at most three choices.

2. Questionnaire for Children and Adolescents (Students)

Primary school students could fill out this questionnaire with the help of their parents. Secondary school and university students needed to complete the questionnaire by themselves.

(1) Birthplace and parish of residence

Refer to in III-1-(1), (2) in Appendix 2 in the personal information of young children.

(2) Diseases suffered

This referred to any disease suffered within the past five years. The type of diseases should be diagnosed by a doctor and the maximum number of diseases written down should not be more than three. If disease suffered could not be found from the choices, select "others". If no disease had been experienced, "no" was selected and skipped question 4.

(3) Number of siblings and birth order

Refer to in III-1-(6) in Appendix 2 in the personal information of young children.

(4) School attendance

Half day referred to subjects only spent half a day at school. Full day referred to full day at school but night time at home. Boarding referred to living at school and returned home during weekends or holidays.

(5) Transportation means and commuting time

This referred to the transportation methods and total commuting time the students traveled to and from school within the past half year.

(6) Physical education (PE) class

This referred to PE classes the students attended within the past half year including self perception on changes in breathing and heart rate.

(7) Time spent on outdoor activities during out-of-school time per day

This referred to the average time spent on extracurricular outdoor activities per day within the past half year including playing games, exercising or sports activities.

(8) Time spent on watching TV, video or playing video games

Refer to in III-1-(14) in Appendix 2 in the personal information of young children.

(9) Hobby classes

Refer to in III-1-(12) in Appendix 2 in the personal information of young children.

(10) Type of sports frequently participated

A multiple choice question which referred to the students' participation in extracurricular sports activities within the past half year. If subjects selected ball games, the type of ball game participated most frequently should be chosen. In addition, subjects also needed to fill in the average duration spent per time on sports and their self perception afterwards.

(11) Time for homework

This referred to the average time spent on studying and doing homework at home each day.

(12) Sleeping time

Refer to in III-1-(9) in Appendix 2 in the information of young children.

(13) Frequency of tooth brushing, flossing and receiving dental examination; occurrence of dental caries

Refer to in III-1-(16), (17) in Appendix 2 in the information of young children.

(14) Eating habits

Refer to in III-1-(18), (19) in Appendix 2 in the information of young children.

3. Questionnaire for Adults and Seniors

Questionnaires for adults and seniors should be completed by the subjects themselves at the site. Subjects were encouraged to questions when in doubt.

(1) Birthplace

Refer to III-1-(2) in Appendix 2 in the information of young children's parents.

(2) Parish of residence

Refer to III-1-(2) in Appendix 2 in the information of young children.

(3) Education level and occupation

Refer to III-1-(5), (6) in Appendix 2 in the information of young children's parents.

(4) Working environment and intensity of labor

Adults should answer according to their current occupation. "Indoor jobs" referred to an indoor working environment and was further classified into naturally ventilated and air-conditioned.

Seniors should answer according to their current occupation or occupation before retirement, and chose from labour intensive or non-labour intensive.

(5) Diseases suffered

Refer to III-1-(8) in Appendix 2 in the information of young children and III-2-(2) in Appendix 2 in the information of children and adolescents (students). It should be filled according to diagnosis from a doctor.

(6) Average working hours and sleeping hours per week

Average working hours per week was the sum of average working hours per day in a week. Average sleeping hours was calculated the same way (naps included). As a reminder, when choices were related to a range of time, the upper limit of the first choice was the lower limit of the second choice. For instance, (1) 20~35 hours meant the subject had reached 20 hours but not 35 hours, (2) subjects choosing 35~ 40 hours meant he/she had reached the amount of 35 hours. The same applied to questions 9, 11, 12, 14, 16, 20, 21, 22, 32, 33 and 34 in the questionnaire for adults, and questions 11, 13, 14, 16, 18, 22, 23, 24, 33, 34 and 35 in the questionnaire for seniors.

(7) Quality of sleep

"Poor" meant the subjects felt asleep slowly, dreamt and suffered from insomnia frequently. "Good" meant the subjects felt asleep quickly, slept soundly and did not have insomnia. "Average" was meant when the quality of sleep was between "good" and "poor".

(8) Average walking time per day

It included time walking to and from work, shopping and during work. Time walking less then 10 minutes each time or walking during sports activities would be excluded.

(9) Average sitting time per day

This included sitting time while working, reading, watching TV or entertaining and other activities that were mainly done by sitting but activities like bicycling would be excluded.

(10) Smoking and drinking

Valid information was requested.

(11) Activity during leisure time

A multiple choice question. "Chess and poker" referred to all kinds of chess, mahjong or poker. "Social gathering" referred to various types of gathering, dining or chatting with friends or relatives. "Traveling" referred to shopping, going to park or traveling. "AV entertainment" referred to watching TV, surfing internet, listening to radio or attending concert.

(12) Sports events most frequently watched

A multiple choice question. Subjects filled in the corresponding numbers in the blanks according to their most frequently watched sports events.

(13) Physical exercise

Refer to III-1-(7) in Appendix 2 in the information of young children's parents. If subjects selected "never", then questions 21~27 could be skipped for adults and questions 23~28 could be skipped for seniors. If adult subjects selected "ball games", the type of ball games should also be selected.

Self-perception after sports activities was described by changes in breathing, heart rate and amount of perspiration.

(14) Main obstacles for participating in physical exercise

A multiple choice question. Subjects filled in the corresponding numbers in the blanks according to their actual conditions.

(15) Perception of "Physical Fitness Study"

The Physical Fitness Study was a process that included testing, evaluating and giving advice with the goal of improving the physical fitness of Macao Residents. Subjects should answer the question according to their perception of this study.

(16) Eating habits

Refer to in III-1-(18), (19) in Appendix 2 in the information of young children.

IV. Examined Indicators

1. When recording examination data, each blank was for one Arabic number only. If examination and recording were conducted by two different people, the examiner needed to loudly report the number and the recorder should loudly repeat the number. For example, when the examiner reported 168.5, the recorder should repeat 168.5 in order to ensure accuracy.

2. When recording results, all blanks before and after the decimal should be filled. If the result was a whole number, the blank after the decimal should be filled with a "0". If there were three blanks before the decimal and the result was only two-digits, the first blank should be filled with "0".

For instance: a subject's height was 168.5 cm and weight was 59.0 kg, the blanks should be filled in:

Height | 1 | 6 | 8 | . | 5 | (cm)

Weight | 0 | 5 | 9 | . | 0 | (kg)

3. For sit and reach, the first blank should be "+" or "-", representing a positive or negative result. Results should be filled from the second blank.

4. For walking on the balance beam, if the young child succeeded in moving forward on the beam, "1" should be filled in the blank. If young child managed to move sideways on the beam, "2" should be filled in the blank. If the young child failed to complete either, "3" should be filled in the blank.

5. For successive jumps with both feet, if the young child failed to complete it, "99.9" was filled in the blank.

6. For 50m × 8 shuttle run, 800m run or 1000m run, results should be recorded in seconds.

Appendix 3: Methods of Examining the Indicators of 2015 Physical Fitness Study of Macao SAR Residents

"Skeletons of the whole body and the main bony landmarks" (figure 1) was used as reference for locating examination point.
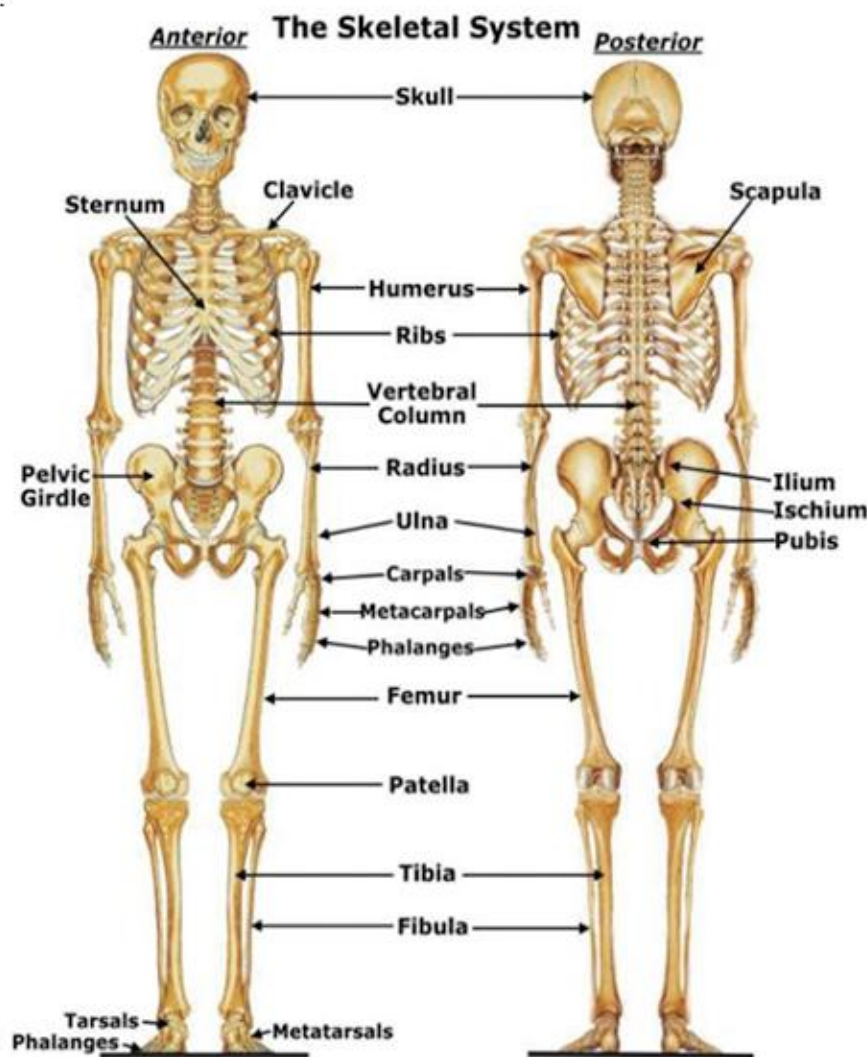
Figure 1 Skeleton of the Whole Body and the Main Bony Landmarks

I. Anthropometric Indicators

1. Height

Apparatus: Stadiometer

Methods: On bare feet, the examinee should stand upright, eyes looking straight (with upper part of ears and lowest part of eyes in a horizontal line – "two points horizontal"), against the stadiometer. Upper limbs should be naturally down and both legs straight. Two heels should be kept together forming a 60° angle. Three points namely heels, coccyx and shoulders of the examinee should touch the vertical board ("three points against the scale"), forming a straight line when standing (figure 2). The horizontal bar was slid down onto the examinee's head. The eyes of the examiner were kept at the same height as the horizontal bar when reading the scale. Measurement was done in centimeters, rounded to one decimal place.

Note:

a)   The stadiometer should be placed on a flat surface, against the wall.

b)   The examiner should hold onto the horizontal bar when moving it.

c)   The "three points against the scale" and "two points horizontal" should be strictly adhered to.

d)   The tightness of the horizontal bar should be adjusted suitably when placing it onto the examinee's head. If an examinee had frizzy hair, the hair should be pushed down when sliding the horizontal bar. Any hair accessories should be taken off and ponytails should be untied.

e)   When reading was completed, the horizontal bar should be slid up to a safe height to prevent accidents.

Figure 2   Height

2. Sitting height

Apparatus: Stadiometer and stepping box

Methods: The examinee was to sit on the seat with sacrum and shoulders touching the vertical board. The body and head was to keep straight and look horizontally to the front. The upper part of the ear and lower part of the eye should form a horizontal line (figure 3). The examiner should stand at the right side of the examinee and slide the horizontal bar onto the examinee's head. Recording should be done with the examiner's eyes on the same level as the horizontal bar. Measurement was done in centimeters, rounded to one decimal place.

Note:

a)   To guarantee proper positioning, the examinee should bend slightly first before sitting to ensure that the coccyx touched against the scale this way, the proper position would be guaranteed.

b)   Shorter children should place their feet on a stepping box of suitable height in order to prevent them from slipping forward during the examination.

c)   Other important points were the same as above.

Figure 3   Sitting height

3. Weight

Apparatus: Electronic digital scale

Methods:

Turned on the scale by pressing the on/off button and a flickering signal would appear on the screen. The scale was ready when the screen showed "0.0".The examinee should wear shorts and stand steadily at the center of the scale (figure 4). Weight of the examinee was recorded when the value on the screen stopped flickering. Recorded in kilograms as the measuring unit and rounded to one decimal place.

Note:

a)   During examination, the scale should be on a flat surface.

b)   The examinee should wear as little clothes as possible.

c)   The examinee should step on and off the scale slowly and gently.
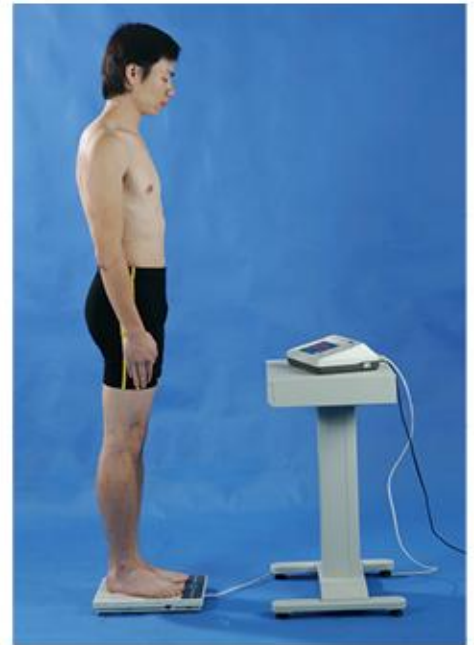
Figure 4   Weight

4. Chest Circumference

Apparatus: Measuring tape

Methods: Examinee should stand straignt and shoulders relaxed with both arms down naturally. Feet should be kept shoulder width apart and the examinee should maintain a smooth breathe.

The examiner should stand facing the examinee and wrapped the measuring tape around the examinee's chest from the scapular. For pre-puberty males and females, the lower part of the tape should be placed on the nipples (figure 5). For females after puberty, the tape should be placed on top of the nipples, parallel to the fourth rib. The examiner should keep the tape at a proper tightness (without any indentation mark on the skin). The value at which crossed with the "0" point of the tape was recorded.

The value should be read when the examinee exhaled. Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   During examination, the examiner should pay attention to the standing status of the examinee. Wrong posture, ex. lowering of the head or shrugging the shoulders should be corrected promptly.

b)   The examiner should control the tightness of the measuring tape properly.

c)   If the scapular was difficult to find, the examiner could ask the examinee to flex his/her chest. Only when the scapular was clearly identified, the examinee should be changed back to the right posture.

d)   If the two sides of the scapular were not of the same height, the lower side should be used for measurement.

Figure 5 Chest circumference

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5. Waist Circumference

Apparatus: Measuring tape

Methods: Examinee should stand straight and shoulders relaxed with two arms crossed before the chest. The examiner should stand facing the examinee and wrapped the tape around the examinee 0.5~1 cm above the belly button (the thickest part of the waist should be measured for overweight examinees) (figure 6). The examiner should keep the tape at a proper tightness to prevent any indentation mark on the skin. The value at which crossed "0" point of the tape was recorded. Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   The examiner should control the tightness of the tape properly.

b)   During examination, the waist of the examinee should be fully exposed.

c)   During examination, the examinee should not intentionally tighten or loosen the abdominal part.

Figure 6   Waist circumference

6. Hip Circumference

Apparatus: Measuring tape

Methods: Examinee should stand straight and shoulders relaxed with two arms crossed at the chest. The examiner should face the examinee diagonally and wrapped the tape around the examinee along the gluteus maximums (figure 7). The examiner should keep the tape at a proper tightness to prevent any indentation mark on the skin. The value at which crossed the "0" point of the tape was recorded. Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   The examiner should control the tightness of the tape properly.

b)   During examination, males should only wear shorts and females should wear shorts, tank top or short sleeve shirt.

c)   During examination, the examinee should not intentionally tighten or loosen the abdominal part.

Figure 7 Hip circumference

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7. Skinfold Thickness

Apparatus: Skinfold caliper

Measuring sites: Upper arm, subscapular and abdominal skinfold.

Methods: The examinee should stand straight and exposed the examined parts fully. The examiner should pinch the skin and hypodermis of the measuring sites with left thumb, index and middle fingers, then measured the thickness 1 cm under the pinch point (figure 8). This examination should be done three times and the average value or the value of two same results should be recorded. Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Measuring site for upper arm skinfold thickness:

Grasp the fold of skin and subcutaneous adipose tissue at the midpoint between the shoulder and the elbow on the posterior surface of the right upper arm, with skinfold parallel to the upper arm.

Measuring site for subscapular skinfold thickness:

Grasp the fold of skin and subcutaneous adipose tissue 1.0 cm below the right scapula, with skinfold at about 45° towards the spine.

Measuring site for abdominal skinfold thickness:

Grasp the fold of skin and subcutaneous adipose tissue at the intersection point between the horizontal line of the navel and the right collar bone, with skinfold parallel to the long axis of the trunk.

Note:

a)   The examinee should stand straight and muscle relaxed so that the weight would be put on both legs.

b)   During examination, the examiner should pinch the skin and hypodermis but not the muscle.

c)   During examination, the caliper should be perpendicular to the skin.

d)   During examination, the dial and pressure of the caliper should be calibrated frequently.
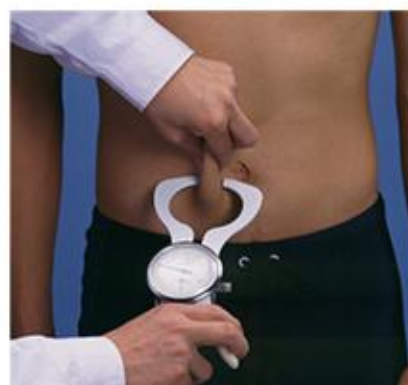
| Upper arm | Subscapular | Abdominal |

Figure 8   Skinfold thickness

8. Shoulder Width

Apparatus: Bare L-square

Methods: The examinee should stand straight with shoulders relxed and legs kept shoulder width apart. The examiner should stand behind the examinee and found the most convex part or peak point of the shoulders by feeling along the scapular area using both index fingers. The distance between the two peak points of the shoulder was measured with the bare L-square (figure 9). Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   The examinee should relax both shoulders naturally, avoid shrugging and being nervous.

b)   The examiner should find the peak points precisely first and then adjusted the bare L-square.

Figure 9 Shoulder width

9. Pelvis Width

Apparatus: Bare L-square

Methods: The examinee should stand straight with both shoulders relaxed and legs shoulder width apart. The examiner should be facing the examinee diagonally and find the ilium point which was the widest part of the hip by using both index fingers (figure 10). Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   The examinee should not bow, bend legs or turn the body.

b)   The examiner should find the ilium point first and then adjusted the bare L-square.
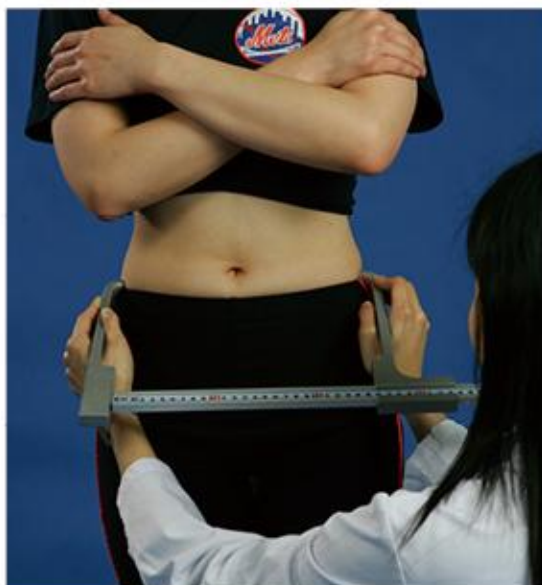
Figure 10 Pelvis width

10. Foot Length

Apparatus: Foot length ruler

Methods: The examiner should stand straight with bare right foot on the ruler. The heel should be against the fixed board with the pelma touching the bottom of the ruler tightly and the outer part of foot closest to the side board of the ruler. The examiner should move the slipping board to the tip of the toe and measure the maximum length from heel to toe (figure 11). Recording was done using centimeters as the measuring unit and was rounded to one decimal place.

Note:

a)   During examination, the examinee should not bend the toes.

b)   The length of the foot should be parallel to the ruler.

Figure 11   Foot length

II. Physiological Function Indicators

1. Resting Pulse (Heart Rate)

Apparatus: Stopwatch and stethoscope

Methods: The examinee should sit down placing the right forearm on the table with palm facing up. The examiner should sit at the right side of the examinee and measure the pulse of the examinee with ends of index finger, middle finger and ring finger. For young children, the examinee should be examined lying down and the heart rate be measured with a stethoscope by placing it on the heart area (the intersecting point of the collar bone and the fifth rib bone) (figure 12).

Before examination, the examiner should make sure that the examinee was in a calm state. (That was, using 10 seconds as a unit, measured the pulse for three consecutive 10 seconds. If the value of two units was the same and the difference with the third unit was less than one, it could be concluded that the examinee was in a calm state; otherwise, the examinee needed to rest until he/she met the requirement.) Then, measured the pulse for 30 seconds and doubled the figure to get the result. Measuring unit was the number of heart beats.

Measurement of heart rate was the same as that of the pulse.

Note:

a)   The examinee should avoid strenuous exercise one or two hours before the examination.

b)   Adult and senior examinees should sit calmly for about 10 minutes before the examination.

c)   Examination for children could take place after their afternoon nap.

Figure 12 Resting pulse (Heart rate)

2. Blood Pressure

Apparatus: Sphygmomanometer and stethoscope

Methods: The examinee should sit down placing the right arm naturally on the desk with palm faced up. The "0" point of sphygmomanometer should be roughly at the same vertical height as the heart and right arm of the examinee. The examiner should put on the inflation cuff properly with an appropriate tightness, with the elbow adequately exposed. The stethoscope was put on the brachial artery at the anterior part of the elbow(cubital fossa). The stethoscope should not be pressed too hard or put under the cuff. The examiner should inflate the cuff raising the mercury column quickly till the arterial pulse was occluded, then further raise the mercury column to 20 to 30 mmHg. After that, the examiner should release the air slowly until the first pulse beat was clearly heard. This point was the systolic pressure. The examiner should release the air further till the clear and loud sound of a heart beat became vague and reverberating. This was the diastolic pressure (figure 13). Blood pressure should be measured in one trial; otherwise, a re-examination was needed. Recording for systolic pressure and diastolic pressure used mmHg as the measuring unit.

Note:

a) The examinee should avoid strenuous exercise one to two hours before the examination.

b) The examinee should sit for about 10 to 15 minutes to calm down before the examination.

c) The examiner should check whether the mercury was at "0" point initially before the examination. If not, the examiner should adjust it. The examiner should also check whether there were bubbles in the mercury column and removed them if any. During examination, the sleeves of the shirt should not be tightly wrapped around the arm.

d) The bottom of the inflation cuff should be 2.5 cm above the elbow.

e) If a re-examination was needed, the examiner should wait until the mercury column dropped back down to "0".

Figure 13 Blood pressure

f) If a re-examination was needed, the examinee should rest for about 10 to 15 minutes before beginning the re-examination. Professionals on site should pay attention to examinees with a high blood pressure reading.

3. Vital capacity

Apparatus: Electronic Spirometer

Methods: Turned on the switch and pressed the button of the spirometer. A flickering "8888" signal would show on the screen and when it stopped at "0", it meant that the spirometer was ready.

Put a disposable mouthpiece in the air inlet and gave it to the examinee. The examinee should hold on to the tube and take a deep breathe with head leaning back slightly. Then, the examinee should exhale forcefully into the mouthpiece (figure 14).

The value shown on the screen was the vital capacity measurement. The examination should be done twice and the examiner should record the larger value using ml as the measuring unit and rounding it to the nearest whole number.

Note:

a)   During examination, a disposable mouthpiece should be used. If the mouthpiece had previously been used, it must be disposed.

b)   Before examination, the examiner should explain and demonstrate the methods. The examinee could also try once.

c)   During examination, the examinee should not exhale too forcefully in order to prevent leaking of air from the mouthpiece. Also, the soft tube must be at the top of the inlet.

d)   No inhaling was allowed once the examinee started exhaling into the spirometer.

e)   The examiner should also correct the examinee if he/she breathed through the nose. The examiner could ask the examinee to put on a nose clip or clipped the nose with his hands.

f)   Before the second examination, the examiner should press the button again to restore the spirometer to "0".

Figure 14   Vital capacity

4. Step Test

Apparatus: Steps (height of steps for males: 30 cm; height of steps for females: 25 cm), heart rate monitor, stopwatch (stand-by).

Methods: The examinee should stand in front of the steps and get ready for the test. Turned on the heart rate monitor. When the flickering signals appeared on the screen, pressed the button and the monitor was ready. After three loud beeps, the examinee should start stepping up and down the steps according to the beat of the monitor.

The examinee should step up with one foot on the first beep, then up with the other foot on the second beep; both legs should be straight when standing on the step. The examinee then stepped down with the first foot on the third beep followed by the other foot on the fourth beep. This would continue for 3 minutes (figure 15). A long beep signified the end and the examinee would stop, sit down with arm placed forward and palm facing up and fingers relaxed. Clipped the finger sensor onto the tip of the index or middle finger.

Figure 15 Step test

The heart rate monitor examined the post-exercise pulse three times. After examination, the examiner should press the "function" button and record the duration of exercise. 30-second pulse figures of one minute, two minutes and three minutes post-exercise would be recorded.

During examination, if the examinee could not complete the exercise or could not step up and down the steps according to the beat, the examiner should stop the examinee from continuing, press the "function" button, put on the finger sensor and started the pulse recording procedures.

Note:

a)   Examinees with heart malfunction or heart disease should not participate in this examination.

b)   Examinees should avoid any vigorous exercise before the examination.

c)   When completely standing on the steps, both legs and knees should be straight.

d)   The examinee should step up and down according to the beats of the monitor.

e)   The examiner should also measure the pulse of the examinee manually and compare with the monitor. If a difference of 2 beats within 10 beats was detected, the monitor would be considered inaccurate and manual measuring should be used instead.

f)   Manual pulse measuring: measured the post-exercise pulse at three intervals – from one to one and a half minute, two to two and a half minute and three to three and a half minute after exercise.

III. Physical Fitness

1. 10m Shuttle Run (Young children)

Apparatus: Several 10m straight lines each 1.22 meters apart should be drawn on a flat ground (not limited to any type of ground) to lay out the lanes. One end was the starting /finishing line, and the other end was the turning point. Placed a target line three meters from the starting/finishing line and an object at the turning point (wooden box or wall) (figure 16). Stopwatches were needed.

Figure 16 10m shuttle run track

Methods: At least two examinees were needed to perform the examination. They should stand at the starting line with one leg forward and one leg back. On hearing the starting signal, the examinees should run immediately towards the turning point, touched the object (wooden box or wall) with hands and then turned back towards the target line (Figure 17). The examiner should stand on the side and at the front of the starting line to give instructions. The examiner started the stopwatch once the examinee began to run, ended when the examinee's chest passed through the finishing line. This examination would only be tested once. Recording was done using seconds as the measuring unit and rounded to one decimal place. The number after two decimal places was rounded up if it was not "0".

Note:

a) Before examination, the examiner should explain clearly that the examinee was to run in a straight line and at full speed towards the turning point, not onto other lanes on the track.

b) Before starting to run, the examinee should not step on or cross the starting line.

c) When starting, if the examinee failed to hear the starting signal, the examiner could softly push the examinee to signal that he could start to run.

d) The examinee should only slow down after passing through the starting/finishing line.

e) At the target line, a specific person should be appointed to protect the examinees from falling down.

Figure 17 10 meters shuttle run

2. 50m Run (Students)

Apparatus: Several 50m long lines each 1.22 meters apart shoud be drawn on a flat ground (not limited to any types of ground) to lay out the lanes. One end was the starting line and the other end was the finishing line (figure 18). Flag, whistle and stopwatches were needed.
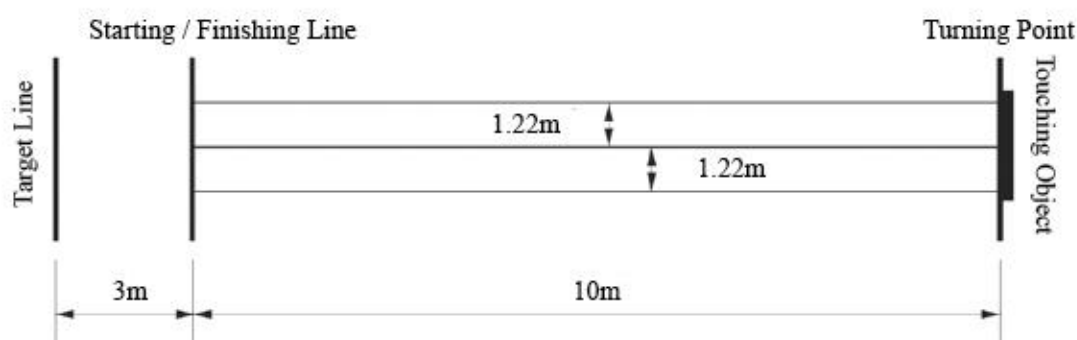

Figure 18   50m run track

Methods: At least two examinees were needed to perform the examination. They should wait at the starting line and on hearing the starting signal, the examinees began to run for the finishing line at full speed. The starter should stand on the side and at the front of the starting line, waved the flag while blowing the whistle. The timer at the finishing line started timing once the flag was waved (figure 19). Recording was done using seconds as the measuring unit and rounded to one decimal place. The number after two decimal places was rounded up if it was not "0".

Note:

a)   Before examination, the examiner should explain clearly that the examinee was to run in a straight line at full speed towards the finishing line, not onto other lanes on the track.

b)   Before starting to run, the examinee should not step on or cross the starting line. If any examinee began to run before the starting signal, the examiner should recall the examinee and restart.

c)   During examination, the examinee should wear sportswear and no spiked shoes.

d)   If it was a windy day, the examinee should run in the same direction as the wind.

Figure 19 50 meters run

3. 50m x 8 Shuttle Run (Students)

Apparatus: Several 50m long lines each 1.22 meters apart were drawn on a flat ground (not limited to any type of ground) to lay out the lanes. One end was the starting/finishing line and the other end was the returning line. Placed a target line three meters away from the starting/finishing line and a 1.2 meters high station pole was put in the middle of the track about 0.5 meter away from the starting/finishing line and returning line (figure 20). Flag, whistle and stopwatches were needed.

Figure 20 50m x 8 shuttle run track
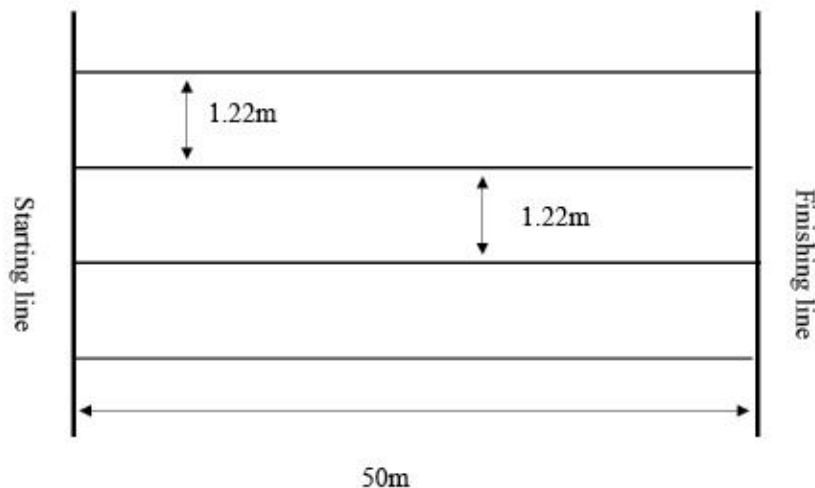
Methods: At least two examinees were needed to perform the examination. They should wait at the starting line and on hearing the starting signal, the examinees began to run for the returning line at full speed. A complete round was when the examinee reached the returning line and ran around the station pole in an anti-clockwise direction back to the starting/finishing line, then ran around the station pole in an anti-clockwise direction for the return line again. This shuttle run composed of four rounds. When returning, the examinee should not touch the station poles or used the poles for balance. The starter should stand at the side of the starting/finishing line and began to time when the examinee started to run. The examiner should record the time when the examinee's chest crossed the finishing line at the last round (figure 21). This examination should only be done once using seconds as the measuring unit and rounded to one decimal place. The number after two decimal places was rounded up if it was not "0".

Note:

a) Before examination, the examiner should explain clearly that the examinee was to run in a straight line at full speed towards the turning point and not onto other lanes on the track.

b) Before starting to run, the examinee should not step on or cross the starting line. If any examinee began to run before the starting signal, the examiner should recall the examinee and restart.

c) During examination, the examiner should report the number of rounds left to the examinee to prevent any miscalculation.

Figure 21 50 meters x 8 shuttle run

d)   During examination, the examinee should wear sportswear and no spiked shoes.

e)   The examinee could only slow down after passing the starting/finishing line.

4. 800m Run (Females) or 1000m Run (Males)

Apparatus: flat running tracks, starting flag, whistle, stopwatches
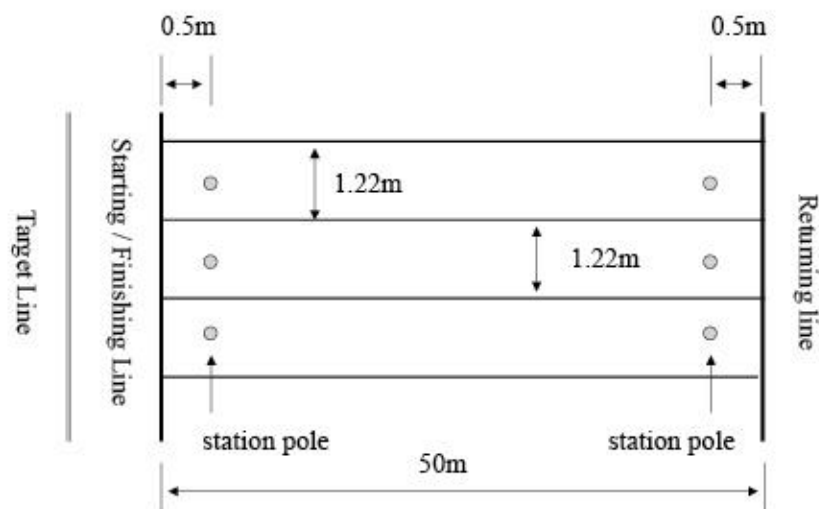
Methods: At least two examinees were needed to perform the examination. They should wait at the starting line and on hearing the starting signal, the examinees began to run for the finishing line at full speed. The starter should stand at the side of the starting line and wave the starting flag while blowing the whistle. The timer should stand at the finishing line and began to time when the flag was waved. When the examinee completed the whole distance, the timer should stop timing (figure 22). The examination should only be done once. The examiner recorded the completion time in seconds rounding to one decimal place. The number after two decimal places was rounded up if it was not "0".

Note: Same as 50m x 8 shuttle run.
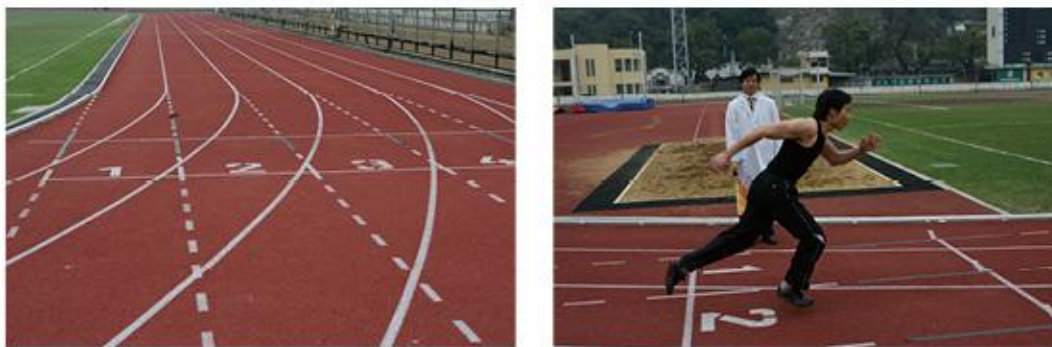
Figure 22 800m or 1000m run

5. Standing Long Jump

Apparatus: Electronic standing long jump mat

Methods: Turned on the switch and pressed the button of the device, a flickering signal would show on the screen. When the examinee stood at the starting line, the value on the screen should be "0" meaning that the apparatus was ready.

The examinee selected the starting line based on their capability and stood in front of the line with legs apart. Waved both arms backward before jumping forward with full strength (figure 23). Three seconds after landing, the distance of the jump would appeared on the screen. The examinee jumped twice and the higher score was recorded using centimeter as the measuring unit and rounded to the nearest whole number.

Note:

a)   Before starting to jump, the examinee should not step on or crossed the starting line.

b)   If instructions were not followed properly, the score would be invalid and the examinee needed to jump again until valid.

c)   When jumping, the examinee could not bounce multiple times at the same spot, run up and jump, or make consecutive jumps etc.

d)   Before each jump, the value shown on the screen must be "0" or else the button needed to be pressed to reset to "0".
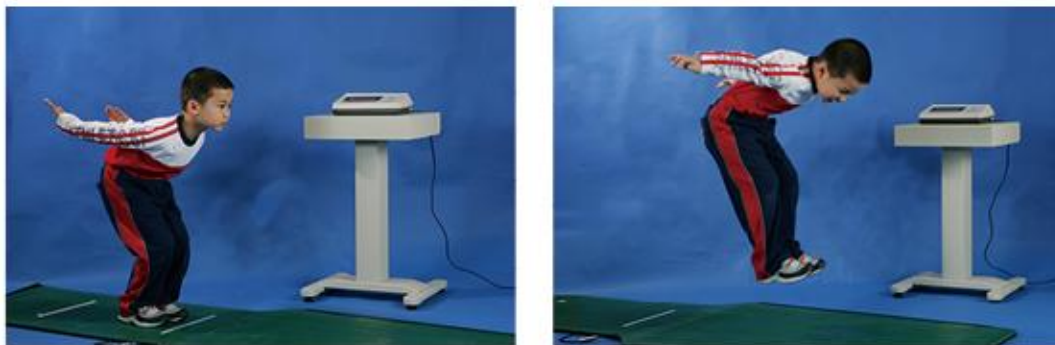
Figure 23 Standing long jump

6. Tennis Ball Distance Throw (Young children)

Apparatus: A rectangle 20 meters long and 6 meter wide. One end of the rectangle was the throwing line. At every 0.5 meter from the throwing line and from each line onward, placed a straight line and labelled the distance (figure 24). Measuring tape and standard tennis balls were needed.
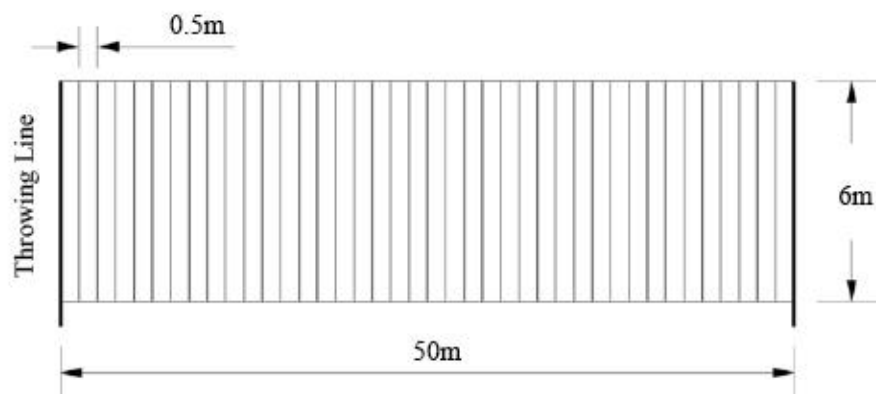
Figure 24 Tennis ball distance throw field

Methods: The examinee should stand behind the throwing line with one leg forward, one leg back, and tennis ball in one hand. The ball was thrown from behind the shoulder. When throwing the ball, the hind leg could move forward a step but could not step on or cross the throwing line (figure 25). An examiner would stand on the side and at the front of the throwing line to give instructions. Another examiner would observe the landing point of the ball and record the distance. The test was done twice. The higher score was recorded using meters as the measuring unit and rounding to one decimal place.

Recording method: If the ball landed on a line, the value of the recording line was recorded. If the ball landed between two lines, then the value of the recording line closer to the throwing line was recorded. If the ball landed beyond 20 meters, the examiner should measure the distance with a measuring tape. If the ball landed beyond 6 meters wide, the ball needed to be thrown again.

Note:

a)   During examination, the examiner should watch the landing point of the ball closely,

b)   The examinee should not step on or cross the throwing line when throwing the ball. Run and throw method was not allowed.

Figure 25 Tennis ball distance throw

7. Walking on Balance Beam (Young children)

Apparatus: A 30 centimeters high, 10 centimeters wide and 3 meters long balance beam was used. One end of the beam was the starting line and the other end was the finishing line. A 20 centimeters wide 20 centimeters long board served as platform was added at each end of the beam (figure 26).
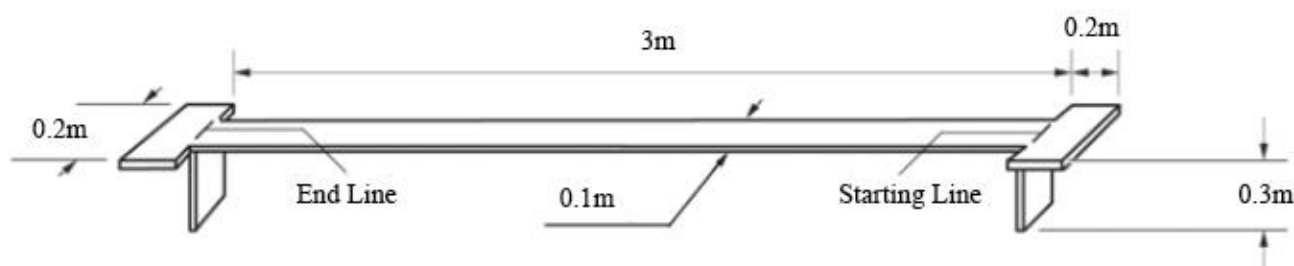
Figure 26 Balance beam

Methods: The examinee should stand on the platform at the starting line and face the beam with arms opened. When given the signal to "start", the examinee started walking towards the finishing line by alternating both feet (figure 27). The examiner should stand in front and at the side of the examinee to give instructions, begin to time once the examinee started to move and follow the movement of the examinee. At the same time, the examiner should watch the examinee closely to avoid any accidents. When the toes of the examinee crossed the finishing line, the examiner should stop timing. The examination was done twice. The higher score was recorded using seconds as the measuring unit and rounding to one decimal place. The number after two decimal places was rounded up if it was not "0".

Completion format: If the examinee finished the examination with two feet moving forward alternately, "1" was recorded. If the examinee finished the examination by moving sideway, "2" was recorded. If the examinee failed to complete the task, "3" was recorded.

Note:

a)   Before examination, the toes of the examinee should not cross the starting line.

b)   If the examinee fell while walking, a second trial was needed.

c)   The examiner should pay close attention to protect the examinee.

Figure 27 Walking on balance beam

8. Successive Jumps with Both Feet (Young children)

Apparatus: Measuring tape, stopwatch, ten soft packs (each 10 centimeters long, 5 centimeters wide and 5 centimeters high). A soft pack was put at every 50 centimeters in a straight line on a flat ground (figure 28).
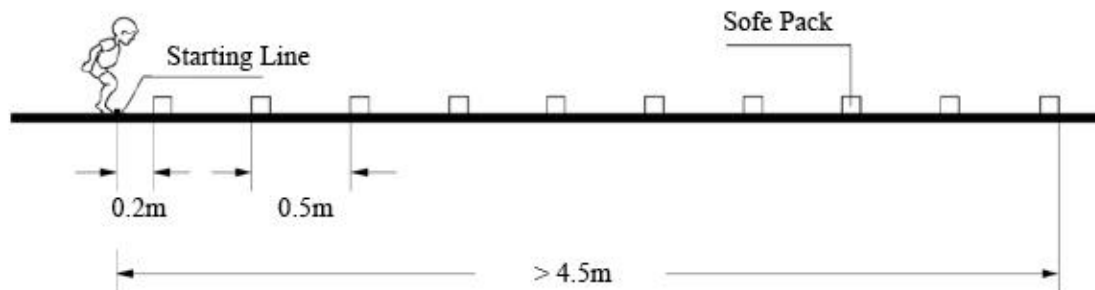
Figure 28 Successive jumps with both feet

Methods: The examinee should stand behind the starting line with both feet together and started jumping continuously with both feet together once the "start" signal was given. Jumping stopped when the examinee reached the tenth soft pack (figure 29). At the same time, the examiner should begin to time and stop timing once the examinee finished jumping over the tenth pack and landing on both feet. The examinee should do this exam twice. The higher score was recorded using seconds as the measuring unit and rounding to the nearest decimal point. The number after two decimal places was rounded up if it was not "0".

Note:

a)   If the examinee walked over the soft packs instead of jumping, jumped on the soft packs, kicked away the packs while jumping or jumped with both feet alternately etc., the examination should be restarted.

b)   If the examinee could not jump over the soft packs with one jump, two jumps were accepted.

Figure 29 Successive jumps with both feet

9. Sit-and-reach

Apparatus: Electronic sit-and-reach apparatus

Methods: The examiner should turn on the apparatus and move the cursor to the near end of the track. When "-20.0 centimeter" or below was shown on the screen, it meant that the apparatus was ready.

Facing the apparatus, the examinee sat on a mat with legs stretched forward and heels together, feet flat against the apparatus and naturally apart. The examiner should adjust the height of the track so that the tip of the examinee's toes was right below the cursor. During examination, the hands of the examinee should be together, palms face down, knees straight and reach as far as possible pushing the cursor with fingertips (figure 30). A value would show on the screen. The examination was done twice. The higher score was recorded in centimeters and rounded to one decimal place.

Note:

a)   Before examination, the examinee should do warm-up exercise.

b)   During examination, the examinee should not push the cursor with abrupt force, with one hand or bend the knees.

c)   Before each examination, the examiner should move the cursor back to the near end of the track,

d)   The examiner should record the examinee's score properly.

e)   If the score of the examinee was less than "-20.0 centimeter", it should be recorded as "-20.0 centimeter".
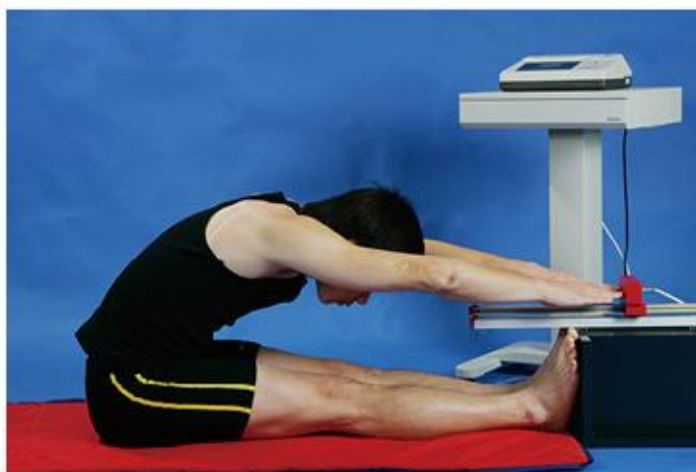
Figure 30 Sit and reach

10. Pull-ups with body inclined (Males)

Apparatus: One adjustable single low horizontal bar or several single horizontal bars of different height. The thickness of the bar should be suitable for grasping by the examinees.

Methods: The examiner adjusted or selected a horizontal bar that would be at chest (nipples) level of the examinee. Facing the single bar, the examinee should stand in a relaxed manner with hands apart at shoulder width, grasp the bar and stretch both legs with heels touching the mat. Another examiner should anchor the feet of the examinee to make sure that the two arms of the examinee were perpendicular to the body, and with the body slanting backwards. A complete pull-up composed of bending the arms, pulling the chin to touch or exceed the bar and completed with arms unbent to the starting position (figure 31). The examiner should count and record the number of pull-ups the examinee completed.

Note:

a)   When doing a pull-up, the body should be straight without curving the waist or the abdomen. If the examinee did a pull-up with the help of moving his feet, twisting the waist or the abdomen, or the chin failed to reach the bar, the pull-up would not be counted.

b)   After the examinee did a pull-up, he must return to the starting position.

c)   Mats could be put under the single bar and the examiner could stand at the side behind the examinee for protection.

Figure 31 Pull-ups with body inclined

11. Pull-ups (Males)

Apparatus: Several high single bars. The thickness of the bar should be suitable for grasping by the examinees

Methods: Facing the single bar, the examinee should stand at a relaxed manner, wave the arms backwards, jump and grasp the bar with two hands at shoulder width apart. When the body stopped swaying, the examinee should pull the body upwards using full arm strength and without assistance from supplementary movements of the body. One complete pull-up would be when the chin was above the bar and the examinee returned to the starting position (figure 32). The examiner counted and recorded the number of pull-ups done by the examinee.

Note:

a)   The examiner could assist if the examinee was relatively short and could not grasp the bar by himself even after jumping.

b)   During examination, the examinee should keep the body straight without bending the knees or curving the abdomen. If the examinee did a pull-up with the help of moving his feet, twisting the waist or the abdomen, the pull-up would not be counted.

c)   During examination, there should be safety measures to prevent any accidents.

Figure 32 Pull-ups

12. Vertical Jump

Apparatus: Vertical jump test mat

Methods: The examiner turned on the switch and pressed the button of the test mat. A flickering signal on the screen and a loud beep meant that the mat was ready. The examinee should step on the mat with legs apart and get ready for the jump. Examination started when "0.0" appeared on the screen. The examinee should squat with bended knees, wave the arms backwards and jump upwards vertically with full strength (figure 33). When the examinee landed back on the mat, the figure shown on the screen was the result of the examination. The examinee should jump twice. The higher score was recorded using centimeters as the measuring unit and rounding it to one decimal point.

Note:

a)   When jumping, the examinee should not run and jump, nor bounce multiple times on the spot.

b)   After jumping up and prior to landing, the examinee could not bend the hip or knees.

c)   If the examinee failed to land back on the mat, the jump would not be counted and the examinee must do again.

d)   Before each jump, the examiner should wait for the mat to go back to "0"automatically or press the button to reset the value to "0".

Figure 33 Vertical jump

13. Grip strength

Apparatus: Grip dynamometer

Method: Before examination, the examinee should grasp the dynamometer with their stronger hand and adjust the grip of the dynamometer with the other hand until it felt comfortable. The examiner should turn on the dynamometer and a flickering signal would appear on the screen. When "0.0" was shown, the dynamometer was ready. During examination, the examinee should stand still with legs at shoulder width apart, arms down, palms inward and grip the dynamometer with full strength (figure 34). The examinee should do the examination twice. The higher score was recorded using kilograms as the measuring unit and rounding it to one decimal place.

Note:

a)   During examination, the examinee should not move the arms, bend knees or hold the dynamometer against the body.

b)   If the examinee could not determine which hand was stronger, each hand could be examined twice and the highest scores would be recorded.

c)   Before each examination, the examiner should press the button to reset the value to "0".

Figure 34 Grip strength

14. Back strength

Apparatus: Back dynamometer

Methods: Turned on the dynamometer and pressed the button. A flickering signal would appear on the screen and a "0" meant that the dynamometer was ready.

The examinee should stand on the back dynamometer with feet about 15 centimeters apart, arms down in front of the legs. The examiner would measure the chain so that it would just about touch the fingertips of the examinee. This length of the chain would be hooked onto the dynamometer. During examination, the examinee should grasp the handle with arms straight, legs stretched and head upwards; pull with full power using strength from the back (figure 35). The examinee should do this twice and the higher score was recorded by the examiner using kilograms as the measuring unit. The number after the decimal point would be discarded.

Note:

a)   Before examination, the examinee should do warm-up exercise.

b)   During examination, elbows and knees should be straight.

c)   Before each examination, the examiner should press the button and reset the value to "0".

Figure 35 Back strength

15. One-foot Stands with Eyes Closed

Apparatus: Balance monitor

Methods: Turedn on the switch and pressed the button of the monitor. A flickering signal on the screen followed by a loud beep meant that the monitor was ready. The examinee would step on the sensor board with both feet, the stronger foot on the pressure sensor in the middle. A value of "0" would appear on the screen followed by a loud beep. Instructed the examinee to close his eyes and raise the foot that was not on the sensor (figure 36). The loud beep would stop and the monitor would start counting the time as soon as the other foot was off the board. When the supporting foot of the examinee moved or the raised foot touched the board, a beep would sound signifying end of the examination. The value shown on the screen was the length of balancing act in seconds. The examinee should do the examination twice and the higher score would be recorded by the examiner. The number after the decimal point would be discarded.

Note:

a) Before examination, the examinee should step on the board with both feet. The examination would begin only when the examinee stood still.

b) During examination, eyes should be closed at all times.

c) The examiner should pay attention to the examinee for safety precaution.

d) Before each examination, the examiner should wait for the monitor to go back to "0" automatically or press the button to reset the value to "0".

Figure 36 One-foot stands with eyes closed

16. Choice Reaction Time

Apparatus: Electronic selective reaction time apparatus

Methods: Turned on the apparatus and when"FYS" appeared on the screen, the apparatus was ready. Placed the fingers straight together with the middle finger pressing the "start" button. When a random "signal" light iluminated together with a beep sound, the same hand should press the corresponding button as fast as possible, return to the "start" button and wait for the next signal. There would be five signals in total for each test (figure 37). When a continuous beeping sound appeared and all signal lights were lit, the examination was completed and the choice reaction time would show on the screen. This examination was done twice and the faster reaction time was recorded and rounded to two decimal points.

Note:

a) During examination, the examinee should not slam the signal buttons.

b) The examinee should press the "start" button continuously until a beep was heard or a light was lit. Otherwise, the examination would be affected.

c) The "on/off" button should be pressed to begin the next examination.
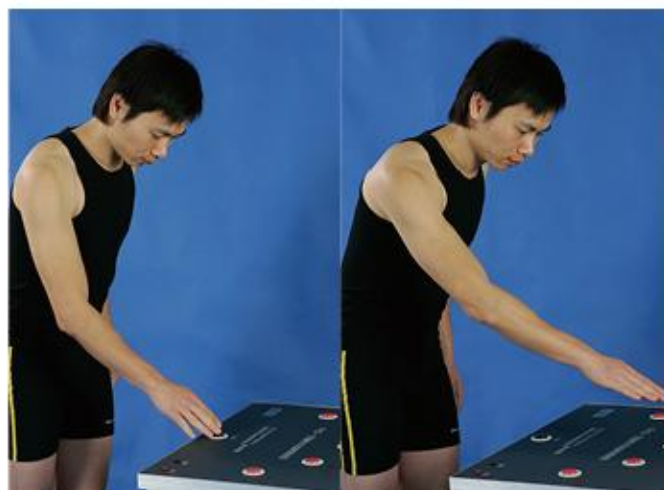
Figure 37 Choice reaction time

17. Push-ups (Males)

Apparatus: Electronic push-up counter

Methods: Before examination, the examinee should stretch out both arms at shoulder width apart. The examinee would then lie on the testing board faced down, hands on the board and legs stretched backward. The examiner should adjust the height of the infrared receiver and reflector to make sure that it could sense the examinee's 'up and down' movements. Afterwards, the examiner should turn on the switch and a "0" would show on the screen, meaning that the counter was ready. At this time, the examiner should press the red button on the testing board. On hearing a loud beep, the examinee should bend both arms to lower the body to the same level as the shoulders and elbows. Next, the examinee should push the body up and return to the starting position. This movements were counted as one push-up (figure 38). The examinee should repeat this movements continuously. When it took more than five seconds to complete one push-up or a position was freezed for more than 3 seconds, the apparatus would stop automatically. The number of push-ups done would be recorded.

Note:

a)   During examination, if the examinee failed to keep the body stretched or lower the body to the same height as the shoulders and elbows, the push-up would not be counted as valid.

b)   Pressed the red button to begin the next examination.
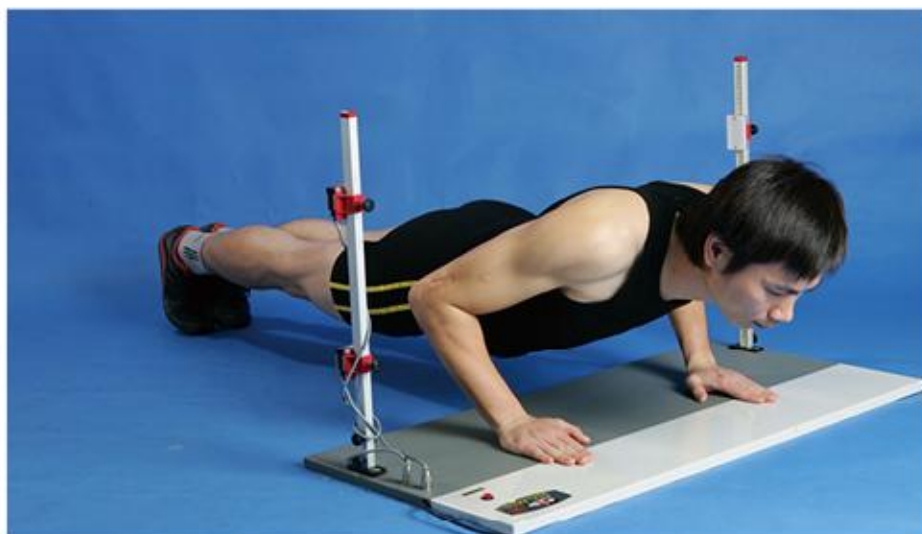
Figure 38 Push-ups

18. One-Minute Sit-ups (Females)

Apparatus: Electronic sit-up counter

Methods: Before examination, the examinee should put both hands behind the head with fingers crossed, legs spread slightly and feet tied onto the testing board. The examiner should adjust the knee-supporting frame and feet board so that the examinee could bend the knees at a proper angle. The height of the infrared receiver and reflector was adjusted to make sure that it could sense the sit-ups. The examiner should turn on the switch and a "0" would show on the screen meaning that the counter was ready. Next, the examiner should remove the knee-supporting frame and pressed the red "start" button on the testing board. On hearing a loud beep, with arms still behind the head, the examinee should flex up, elbows touch or exceed the knees, return to the starting position and this would be counted as one sit-up (figure 39). The examinee should do as many sit-ups as possible in one minute. The examination was over with a loud ending beep. The number of sit-ups done would be recorded.

Note:

a)   During examination, if the examinee did a sit-up with the help of elbow or hip motions, or if the elbows failed to touch or exceed the knees, it would not be counted as one sit-up.

b)   During examination, the examiner should report to the examinee the number of sit-ups done.

c)   Pressed the red button to begin the next examination.
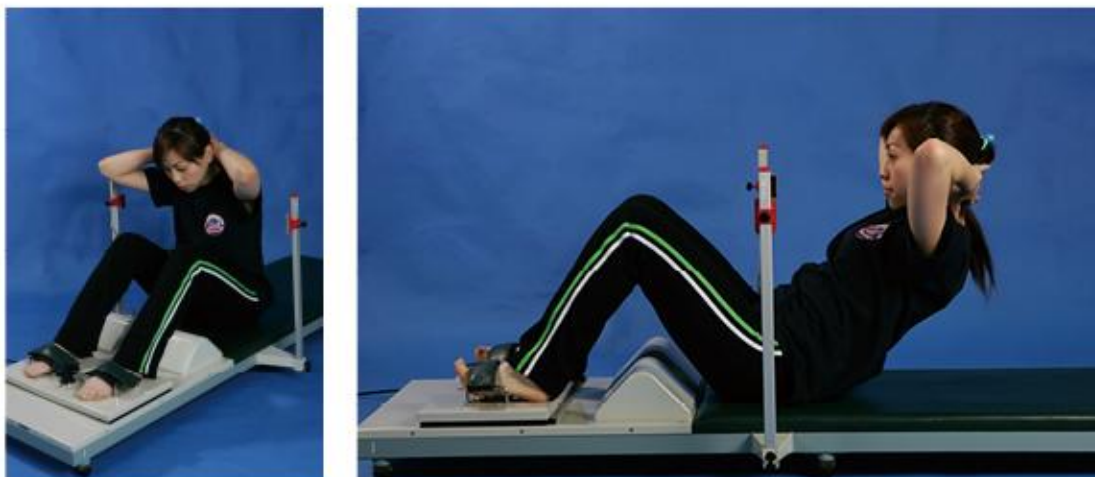

Figure 39 One-minute sit-ups

IV. Health Indicators

1. Dental Caries

Apparatus: Mirror, #5 probe needle

Methods: Examined the teeth one by one in a quadrant order. Pits, holes and easily decayed areas between the teeth should be thoroughly checked with a probe needle. Diagnosis could only be determined after the check-up.

Judgment Standard:

a)   No tooth decay: no existing fillings and no fillings needed.

b)   Tooth Decay: discoloration, "form" and "quality" changes between the teeth. Form and quality changes would be the main evidence of diagnosis. "Form" changes was indicated by destruction of the enamel forming holes. "Quality" change was indicated by softness encountered at the bottom of the hole when picking with the probe needle. If there were white spots or other color spots on the enamel and if there was no softening of a hole when picked with a probe needle, these would not be diagnosed as teeth decay. Decay of primary teeth was marked as "d", and decay of permanent teeth was marked as "D".

c)   Teeth loss due to decay: Loss of primary teeth not due to normal eruption of the permanent teeth was marked by "m". Permanent teeth taken out due to decay were marked by "M". During diagnosis, the examiner should pay attention to loss of teeth not due to decay but to physiological replacement.

d)   Filled teeth: For existing filled teeth with no additional primary caries or secondary caries, primary filled teeth were marked by "f", permanent filled teeth were marked by "F".

e)   Existing filled teeth with additional primary caries or with secondary caries were regarded as decayed teeth.

Recording methods: The teeth quadrant chart was filled after diagnosis by recording d, D, m, M, f, F in the relevant blanks.

(1) There were 16 blanks in the teeth quadrant chart representing "upper" and "lower" teeth respectively. For decayed teeth, the examiner was required to fill in respective letter into the blanks according to the teeth position and types of decay (i.e. primary teeth, permanent teeth etc).

(2) The blank after the teeth decay mark was for filling the total number of different types of teeth decayed. It should be recorded in Arabic numbers.

Note:

a)   Examination must be done by dental professionals.

b)   For filled teeth, attention must be paid to examinee whether there were new caries at the teeth surface and whether there was continuous decay below the filling and with neighbouring teeth.

c)   One probe needle could only be used for 60 examinees (times) maximum.

d)   After completion of examination with each examinee, all the tools used must be disinfected.

2. Eye Sight

Apparatus: Standard eye chart (figure 40). The height of eye chart was adjusted to make sure that line 5.0 of the eye chart was at the same height as the eyes of most of the examinees. Illuminance of the eye chart was about 500 lux.

Methods:

a) The examinee should stand 5 meters away from the eye chart and softly cover the left eye. The right eye was examined first, then the left eye. This was testing of the naked eye.

b) The examiner started from the optotypes at line 5.0. If the examinee could not identify correctly, the examiner continued with the lines above 5.0 one by one. If the examinee could identify line 5.0 correctly, the examiner continued with the lines below line 5.0 one by one. The examinee was required to identify the optotypes within 5 seconds. The examinee could not make mistakes from line 4.0 to line 4.5. The examinee could only make two mistakes from line 4.6 to line 5.0 and could only make three mistakes from line 5.1 line to line 5.3. If the examinee made more mistakes than the above requirements in one line, that line was the examinee's eyesight score.

c) If the examinee could not identify the first line of the visual chart from 5 meters away, the examinee should stand 2.5 meters away or 1 meter away; 0.3 and 0.7 were subtracted respectively from the score as the final eyesight score (figure 41).

For example: If the examinee could not identify the first line of the visual chart from 5 meters away, the examiner could ask the examinee to stand 2.5 meters away. At that distance, the score of the examinee was 4.2, thus the final score of the examinee was 4.2-0.3 = 3.9.

Another example: If the examinee still could not identify the first line of the eye chart from 2.5 meters away, the examiner could ask the examinee to stand 1 meter away. At this distance the score of the examinee was 4.2, thus the final score of the examinee was 4.2-0.7=3.5.

d) If the naked eyesight of the examinee was above or equal to 5.0, "Normal=0" was recorded into the blank which meant that the eyesight of the examinee was normal and there was no need to for further tests with diopteric lenses..

e) If the naked eyesight was below 5.0, it meant that the examinee had poor eyesight. If the range was above 4.8 to below 5.0, it was considered mild, 4.6 to 4.8 was moderate, and 4.5 to below 4.5 was severe. An array of diopteric lens is used in the refractive test for screening poor eyesight. A subject is considered nearsighted when the eyesight decreased by imposing plus lenses and increased with minus lenses; vice versa for farsighted. If no improvement was detected with diopteric lenses, it would be indicated as other reasons.

f) Recording methods: Filled the score for both left and right eyes of the examinee in relevant blanks.

For example, if the score of naked eyesight was 5.0 for left eye and 4.6 for right eye, then the examiner should fill in the left blank with 5 0 , and right blank with 4 6 .

g) g) Adjustment of string mirror and recording methods of refractive errors: ↓ represented decreased eyesight , ↑ represented improved eyesight and "0" represented no change in eyesight. Put the result on the corresponding places for left and right eyes. "0" represented normal, "1" represented near sighted, "2" represented far sighted, "3" represented others.

For example, poor eyesight was detected in subject A. After string mirror assessment, positive mirror eyesight of the right eye was decreased while negative mirror eyesight improved; the examiner had to put ↓ on the space for positive mirror and ↑ on the space for negative mirror. Since the left and right eyes were assessed as "near sighted", so "1" would be put on the spaces for the left and right refractive errors.

For example, poor eyesight was detected in subject B. After string mirror assessment, positive mirror eyesight of the left eye improved while negative mirror eyesight decreased, 'far sighted' of the left eye was then diagnosed. No change was detected in the positive and negative mirror eyesight of the right eye, "others" would be stated. Therefore, ↑ was put on the space for positive mirror and ↓ was put on the space for negative mirror of the string mirror adjustment part. On the right space, "0" was put on the space for both positive and negative mirror. "2" and "3" were put on the left and right space respectively of the refractive errors part.

Note:

a)   Before eyesight examination, the examiner should explain the purpose, significance, and methods of examination to the examinee to gain their cooperation and to examine their naked eye sight.

b)   If natural light was used for the examination, the examiner should choose a sunny day, a specific time and location for relative comparison in the future.

c)   Before examination, the examinee should not rub the eyes. During examination, the examinee should not squint the eyes or look from the sides. The examiner should be monitoring at all times.

d)   When using the eye cover, the examiner should remind the examinee not to press hard on the eye ball to prevent affecting the eyesight.

e)   The examination team would assign professionals to examine eyesight.

f)   It was not proper to examine the eye sight after tense work, strenuous exercise or heavy physical labour. At least 10 minutes rest was needed before the examination. If the examination was carried out indoor, the examinee should take 10 minutes to adapt to the environment after entering the room.

Figure 40 Standard eye chart

Figure 41 Eye sight

3. Color-Vision Deficiency Examination

Apparatus: Color Vision Examination Chart Second Edition (People Health Publishing House, edited by Wang Kechang, 2004) (figure 42).

Methods: The chart should be opened under bright natural light (Sunlight should not shine directly on the pictures) or under lamp light. The examinee should sit at a 40 to 80 centimeters distance between the eyes and the pictures. The examiner should pick picture 1 as an example to teach the examinee the correct way to do the examination, then the examiner would pick 3 pictures at random from picture 2 to picture 8 for the examination (figure 43). If the examinee passed the examination, the color vision of the examinee was normal; otherwise, it was abnormal. The examiner should also record "normal" or "abnormal" accordingly. The code was 1 for "normal" and 2 for "abnormal".

Note:

a)   Sunlight should not shine directly on the face of the examinee.

b)   After each examination, the examiner should close the chart immediately.

c)   When reading the pictures, the examinee should keep the chart clean.

d)   Both the examiner and the examinee should not touch the picture with hands to prevent damage to the pictures. If necessary, a small stick can be used.

e)   It was not proper to examine the eyesight after long work hours, strenuous exercise and heavy physical labour. At least 10 minutes rest was needed before examination. The examinee should also have 10 minutes to adapt to the environment after entering the room.

f)   Before examination, the examinee should not rub the eyes. During examination, the examinee should not squint the eyes or look from the sides. The examiner should be monitoring at all times.

Figure 42 Color Vision Examination

Figure43
Color-Vision Deficiency Examination

Appendix 4: Sampling Sites of 2015 Physical Fitness Study of Macao SAR Residents

Subjects	Kindergarten code number	Name of kindergarten	Parish of main campus
Young children (aged 3-6)	201	Keang Peng School (primary school)	Freguesia de Nossa Senhora de Fátima (North)
	202	Hou Kong Middle School (affiliated kindergarten and primary school)	
	203	Pui Ching Middle School	Freguesias de S. António e de São Lázaro (Central)
	204	Chan Sui Ki Perpetual Help College (subsidary school)	
	205	Pooi To Middle School (branch school of Praia Grande and Taipa branch school - kindergarten)	Freguesias da Sé e de São Lourenço (South)
	206	Estrela do Mar School	

Subjects	School/ university code number	Name of school/university	Parish of main campus
Children and Adolescents (Students aged 6-22)	221	Keang Peng School (including primary school and secondary school sections)	Freguesia de Nossa Senhora de Fátima (North)
	222	Hou Kong Middle School (including primary school)	
	223	Pui Ching Middle School	Freguesias de S. António e de São Lázaro (Central)
	321	Colegio Dom Bosco (Yuet Wah) Chinese Section	
	322	Yuet Wah College (Chinese Section)	
	323	Sacred Heart Canossian College	
	225	Pooi To Middle School (including Taipa Primary Branch, branch school of Praia Grande and primary school section)	Freguesias da Sé e de São Lourenço (south)
	226	Estrela do Mar School (including branch school)	
	227	University of Macau	—
	228	Macao University of Science and Technology	
	229	Macao Polytechnic Institute	
	230	Kiang Wu Nursing College of Macao	
	231	Institute for Tourism Studies	
	2121	Others	

Subject	Working unit code number	Name of working unit
	241	Health Bureau
	242	Education and Youth Affairs Bureau
	243	Macao Government Tourism Office
	244	Statistics and Census Bureau
	245	Macao Sport Development Board
	246	Civic and Municipal Affairs Bureau
	248	Marine and Water Bureau
	249	Social Welfare Bureau
	250	Land, Public Works and Transport Bureau
	252	Tai Fung Bank Limited
	253	Future Bright Group
	255	Caltex Oil (Macau) Ltd.
	256	Labour Affairs Bureau
	257	CEM-Companhia de Electricidade de Macau
	259	Macao Polytechnic Institute
	260	The Women's Association of Macau
	261	Macao New Chinese Youth Association
Adults (aged 20-59)	262	Galaxy Entertainment Group
	263	Kiang Wu Nursing College of Macao
	264	Others (individual)
	265	Venetian Macau, S.A.
	267	Sociedade de Beneficência Sun Tou Tong de Macau
	268	União Geral das Associasões dos Moradores de Macau
	270	Macao Federation of Trade Unions
	2141	Melco PBL Gaming (Macau)
	2142	Bank of China Macau Branch
	2144	Macau Red Cross
	2145	University of Macau
	341	Sheraton Grand Macao Hotel, Cotai Central
	342	SJM Holdings Limited
	343	Macau Gaming Industry Labourers Association
	344	Institute for Tourism Studies
	345	Macao University of Science and Technology
	346	Sacred Heart Canossian College
	347	Macao Clerical Staff Association
	348	Macau Sports Press Association

Subject	Senior center code number	Name of senior center	Parish
Seniors (aged 60-69)	273	Centro de Dia da Ilha Verde	Freguesia de Nossa Senhora de Fátima (North)
	282	Centro de Dia de Mong-Há	
		Federação das Associações dos Operários de Macau	
	2172	União Geral das Associações dos Moradores de Macau	
	371	Centro de Convívio da Associação de Mútuo Auxílio dos Moradores de Mong-Há	
	374	Centro de Convívio da Obra das Mães	
	375	Centro de Actividades para Idosos da Associação Beneficência Tung Sin Tong	
	372	Centro de Convívio da Associação de Mútuo Auxílio dos Moradores do Sam Pá Mun	Freguesias de S. António e de São Lázaro (Central)
	280	Centro de Convívio "Missão Luterana de Hong Kong e Macau / Centro de Terceira Idade Yan Kei"	Freguesias da Sé, de São Lourenço, e de Nossa Senhora do Carmo (South and outlying islands)
	281	Centro de Cuidados Especiais Longevidade (Serviço de Apoio Domiciliário)	
	282	Centro de Convívio da Associação dos Habitantes das Ilhas Kuan Iek	
	2177	Instituto Politécnico de Macau - Academia do Cidadão Sénior	
	2178	Associação Geral das Mulheres de Macau	
	373	Centro de Lazer e Recreação das Associações dos Moradores da Zona Sul de Macau	
	2180	Others (individuals aged over 60 years old working in the sampling institutions of adults)	—

Acknowledgement

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