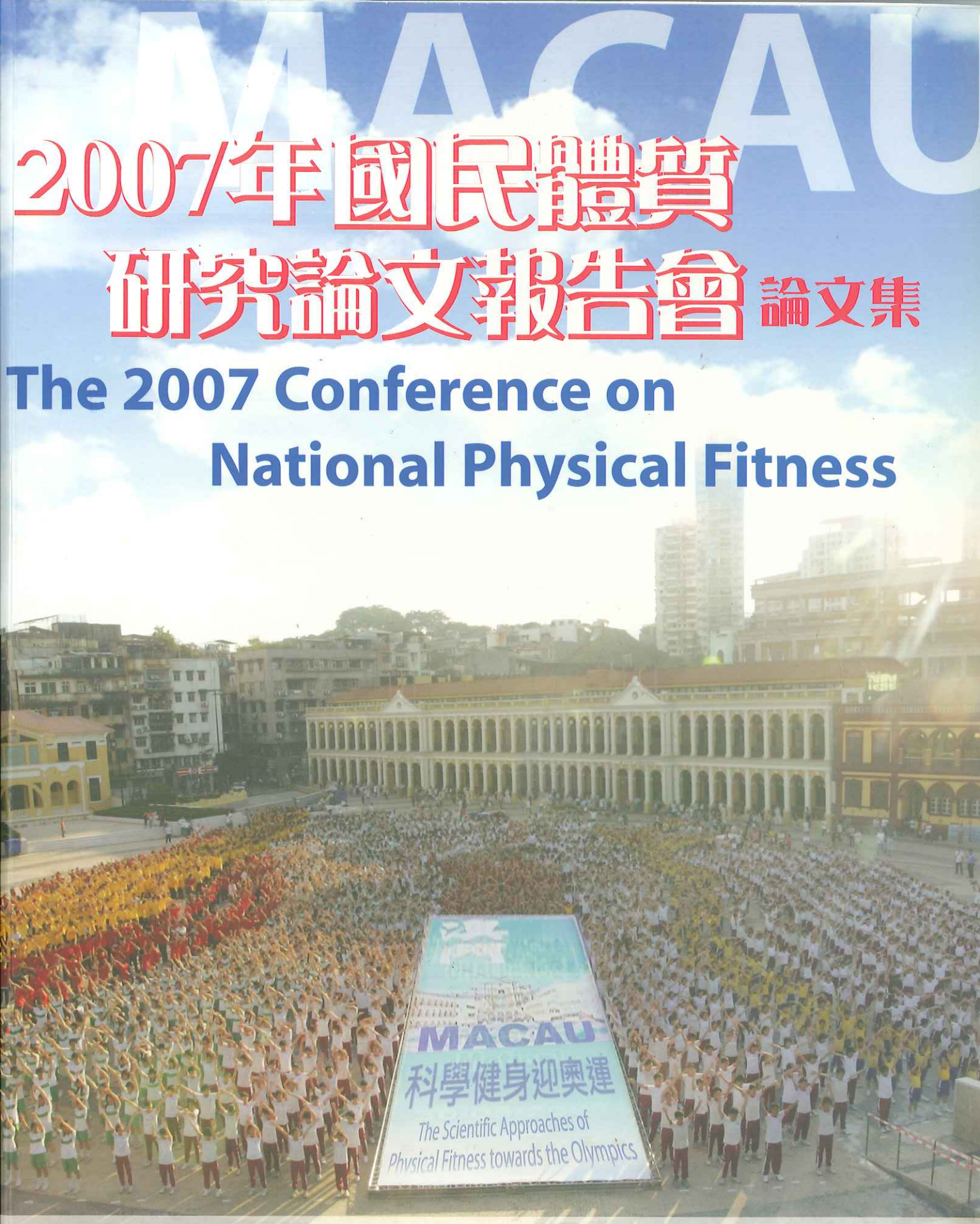
2007年國民體質研究論文報告會 論文集

The 2007 Conference on National Physical Fitness



體育 DESPORTO
澳門特別行政區政府體育發展局
Macau Sport Development Board

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前　言

隨著 2008 北京奧運會的到來，科學健身吸引了更多的國民開展體育健身活動。中國政府為了更好的宣傳奧林匹克的精神，提高國民對奧林匹克的認識，同時，充分展示第二次國民體質監測成果，加強體質研究的學術交流，發揮其社會效益，提高國民健身科學化水平，特舉辦以"科學健身迎奧運"為主題的"2007 年國民體質研究論文報告會"。

是次會議由國家體育總局主辦，澳門特別行政區政府體育發展局承辦，中國體育科學學會體質研究分會協辦，於 2007 年 7 月 3 日至 7 日在中國澳門舉行。

會議的主要議題包括國民體質現狀及變化趨勢；體質研究的理論與方法；運動處方的研究與應用；生活方式與慢性疾病防治等方面，將採用主題報告、專題報告及牆報展示等形式進行交流。

在徵收論文期間，得到了國內外專家學者的踴躍投稿，為這次論文報告會提供了一批質量較高的研究報告和論文。經過專家組的評審後，共評選出 16 篇主題報告、60 篇專題報告及 68 篇牆報交流的論文，分別邀請了來自全國內地各省市、香港、澳門、日本、葡國、希臘、芬蘭、伊朗及美國等地的學者在論文報告會上進行交流。此外，還特邀了國家體育總局群體司盛志國司長、體育科學研究所田野所長及來自韓國的國際大眾體育聯會主席 Shang-hi-Rhee 教授為大會作主題發言。

為深入開展研討交流，特將在本次論文報告會中發表的論文編印成集，以期能進一步為凝聚體質與健康促進發展的研究成果及促進研究的學術交流帶來正面和積極的影響。

編者

2007 年 7 月

Preface

As the Beijing Olympics 2008 is approaching, the notion of scientific fitness is increasingly attracting peoples of China to join physical fitness and sport programs. To better the propagation of the Games and the Olympic spirit, the Chinese government will convene a conference entitled "2007 Conference on National Physical Fitness" in July 2007, in the Macau Special Administrative Region. In addition, the conference also aims to demonstrate the fruitful findings of the "2nd Chinese National Physical Fitness Research" and develop its social values, encourage academic activities, and raise the scientific fitness level of the nationals.

This conference, which will be hold during the period of 3 July 2007 to 7 July 2007, is proudly organized by the General Administration of Sport of China, which is hosted by The Macau Sport Development Board and co-organized by The Physical Fitness Research Association, China Sport Science Society.

The topics covered in the conference will be included: Present and future trends of national physical fitness; Research theories and methodologies of physical fitness; Research and applications of exercise prescription; and Aspects on lifestyle and prevention of chronic diseases. All topics will be demonstrated either in the forms of keynote speech, symposium or in a poster session.

High qualities of articles were submitted enthusiastically by lots of people from the mainland and foreign countries. After all the submitted articles have gone through the evaluation process by our experts team, 16 of them have been chosen for the keynote speech, 60 for the symposium and 68 for the poster session. Participants of the accepted articles from all over the world, including participants from the mainland, Hong Kong, Macau, Japan, Portugal, Greece, Finland, Iran and the Untied States, were invited to join the 2007 Conference on National Physical Fitness. Moreover, special guest from China, Dr. Sheng Zhiguo, the Director of Sport for All Department of General Administration of Sport of China and Dr. Tian Ye, the Director of China Institute of Sport Science and also from Korea, Prof. Shang-hi-Rhee, the President of TAFISA to give a conference speech for this special event.

A "2007 Conference on National Physical Fitness" is published so as to extend the effect of the seminar, to concentrate the fruitful results of the development of physique and health and to encourage the positive side of research interflow.

July, 2007

大會報告
Conference Speech

地球與人體健康的狀況

Environment of Earth and human health

Shang-hi-Rhee , TAFISA

Recently a growing number of Koreans no longer drive. They are called 'B.M.W. class' which stands for Bus, Metro and Walking. They chose to walk to and from work by bus or metro instead of driving cars.

They are no longer stuck in traffic jams because they drive their cars in order to walk or ride on bicycles for work or appointments in search of health and comfort.
At first, losing weight motivated them to give up driving cars, but they end up getting more than health.
Office workers feel as if they are animals in confined cages because of their lifestyles. They spend almost a full day in offices or on driving seats.
But once they start walking on the streets, they feel physically light, keep their daily routine active and generous so that they can look at things in a new light.
Car-free lifestyle can save money in car maintenances, so people can afford investing funds or entertainments.
By getting out of private space of cars of course while walking, one can enjoy the pleasure of togetherness, too.

Once I heard "Earth is alive."
It may mean on the Planet. The environment itself is dynamic instead of moving as if it is a life form.
For example, on the globe there are constant change in atmosphere and crust movements.
In addition, most of natural phenomena still can't be predicted by highly-advanced scientific technology.

Millions of years have passed since human beings set foot on the Planet.
Industrial Revolution appeared as a turning point, societies became extremely commercialized.
But today, human beings didn't think enough about their future they experience serious consequences.
That's why after rapid industrialization an excessive exploitation of natural resources and environmental destruction happened.
As a result, now people think hard about 'environment for the sake of human beings.'

In addition, global warming, exhausted natural resources, water pollution, soil contamination and changing environment-induced virus, which are considered as big problems, challenging well-being of mankind.
As you know, air, water, earth (soil) and microorganism are clothes for human, and comparatively they have significant roles in creating adequate environment for all the living organs.

Among these, the gravest issue is global warming caused by air pollution.
Global warming is literally defined as average increase in temperature on Earth.
In fact, statistics show that over the last 100 years the global average temperature was up by roughly 0.5C to 0.6 C.
At a glance, you may wonder why people are making a big fuss out of increase in temperatures by less than 1C.
But Just as virus-causing change of 1C in average body temperature can lead to abnormalities in human body, so changes in temperature caused by global warming which can affect almost all organs as well as humans on the planet.

The World Health Organization declared 21st century as the era of epidemics.
It said, continued changes in temperature and irrational pollution of environment are complicated factors.
The Centers for Disease and Control in the U.S. issued a report that West Nile virus (mosquito-borne), SARS (mutated Corona virus) in China and Southeast Asia, Avian flu, Monkey Pox, AIDS and Ebola virus in Africa are infecting both animals and humans.
The agency expressed concerned about possibly repeated outbreak of so-called "Spain Flu", which claimed as many as more than 50 million lives in Europe in 1918.

The U.S. agency said the reasons for rapid spread of virus.
The reasons are free overseas travel, frequent travel into tropical forests, raising a variety of pet animals at homes all around the world, particularly extremely poor conditions of raising poultry such as chicken and ducks and excessive use of antibiotics.

The emergence of virus mutation is almost worrisome because it can make epidemic prevention systems, built on conventional vaccines helpless.
In this regard, developing new vaccines are urgently needed.
But do we simply do nothing until new vaccines are developed?

Most of all, combat capability of fighting against virus should be nurtured by all at individual levels.

While specific armed forces can foster combat capability thorough trainings before going to battlefields, human should strengthen self-immune system because war against virus require all humans to be soldiers on the front lines.

In order to strengthen immune system, we should improve resistance against virus through constant exercise.
When virus comes into the body, immune system can fight off virus with ease, and exercise is prerequisite for building up immunization.

For example, people in modern times go on a diet to lose their weight while destroying and losing immune system for themselves.
Simply put, keeping on a diet can lose not only several pounds of fat but also health beneficial components.
By contrast, working out at gyms can shed off your fat while increasing health beneficial components.

Let's say, you weigh 80 kg, and by cutting down on foods you lose 10 kg of weight.
In this case, a total of 10 kg loss comes from a drop of 6kg in body fat and 4 kg in health beneficial components, which usually tends to weaken the resistance power against virus.

In contrast, if you lose the same 10 kg of weight while doing exercise at gym, you will find a decline of 13 kg body fat and a jump of 3kg health beneficial components, which beefs up resistance power against virus.

	Diet	exercise
Reduction in fat	-6kg	-13kg
Drop in health beneficial components	-4kg	+3kg
Total reduction in weight	-10kg	-10kg

< table 3 > comparison of weight change after dietary treatment and exercise **(In case of a person weighing 80kg)**

And then you may wonder aloud what exercise is the most effective for the health of humans and Earth.

As I mentioned in the beginning, I think rather than cars you should take mass transit or more favorably ride on bicycles or walk.
That is ideally good for health of both people in modern times and Earth.

TAFISA established the Walking Day, emphasizing the importance of walking.
It recently applied science to walking by writing prescription of G-WALKING.

It made scientific analysis of Masai tribe walking

As you know well, the African tribe is famous for the unique walking.

They walk with their backbones straight, eat meat but with low cholesterol and suffer from no back or muscle pains.

And it also examined basic principles of 'magical space contraction' in the East.

In the East, people believed that a peace of mind and body as well as enhanced heart and lung made brisk walking possible.

The organization even studied that walking prescription can stimulate the activity in the brain of children and improve immune system and prevent dementia for the elderly.

I humbly think that we should turn to scientific walking or G-WALKING and make it a habit to exercise regularly as well as make moderate movements-such as exercise for joints, muscular strength, relaxation and strengthening of heart and lung.

Thereafter, I am sure we can prepare ourselves fully for "virus warfare in the 21st century" with our improved immune system.

主題報告

Keynote Speech

中日體質聯合研究項目—1986年和2006年間日本兒童青少年的身體素質比較研究

內藤久士，日本順天堂大學

Chino-Japanese cooperative study on physical fitness -Comparison of physical fitness in Japanese children and youth between 1986 and 2006

Hisashi Naito , Japan

Abstract

Background and Purpose

As a part of exchanging information program regarding the physical fitness tests among Chinese Research Institute of Sports Science and Japan Sports Association, this study was conducted for general population. Past several years, the issues on low-fitness level among adolescence and health promotion for the middle-aged and elderly population have been put forth as the main focus for the promotional strategy set forth to improve physical fitness and health for the general population between both countries. In this investigation, based on the recent research findings on national survey for the physical fitness in China and Japan, previous national survey conducted in 1986 among Chinese and Japanese adolescence were integrate to analyze the cross-sectional data for the last 20 years on Japanese adolescence.

Methods

In order to compare with the data collected in 1986, the basic research protocol for the current investigation conducted in Japan were similar to the previous national survey. Shortly, survey was conducted on male and female students from the age of 6 to 19 yrs, 100 to 150 subjects per age group with the total of approximately 3000, who reside in the metropolitan area of Tokyo. The basic assessment for the physique (stature, sitting height, upper limb length, body weight, abdominal circumference, hip circumference, arm circumference, calf girth, skinfold thickness) and physical fitness (grip strength, sit-ups, vertical jump, 10m shuttle-runs, 50m run, standing and sitting trunk flexion, 5min run) were performed. Questionnaires on the activity of daily living (daily living, physical environment, daily physical activity, awareness regarding the physical activity) were also conducted.

Results

Physique

In respect to the anthropometric growth based on the height and sitting height as well as body weight, growth rate for both genders were similar as compared to that of the result from the previous study.

Physical fitness

Grip strength and sit-ups (muscular strength and endurance): There were no significant differences in muscular strength and endurance as assessed by grip strength and sit-ups. Although in certain age groups (7、8、11、13yrs) of male, the parameters tended to be higher in the current study as compared to the previous study, the growth rate on these physical functions were not different for the previous study.

Vertical jump (muscular power): For both genders among all age groups, there was proximately 4 to 5cm decrease in vertical jump height. Furthermore, for the age group of 7 to 11 yrs in the current study, the average values of male students were significantly lower than those of female students in the same age category.

10m shuttle-runs (agility): Compared to the data from the previous study, there was a significant decrease for male students in the age group of 7 to 12 yrs. Additionally, for the age category of 7 to 11 yrs, those values were significantly lower than those of female students from the previous study.

50m run: There was no significant difference in 50m run performance between the current study and the previous study.

Standing trunk flexion and sitting trunk flexion (flexibility): It is not possible to directly compare the current results by using sitting trunk flexion test from the previous study by using standing trunk flexion test, the flexibility in the current study was less than that obtained form the previous study (even if considering the better performance generally obtained with the sitting trunk flexion test as compared to standing trunk flexion test).

5min run (cardiovascular endurance): There was a significant decrease in endurance among all age groups in both genders, as we observed in the vertical jump result. There were 100m decrease in all age groups of male students, 120m decrease for girls in elementary school, and 70m decrease for female junior high-school students.It was also observed that the result for the male students in the current study (age of 7 to 11yrs) was significantly less than that of female students from the previous study.

Discussion and Conclusion

To summarize the current results, although the anthropometric characteristics and static strength were maintained, the dynamic motor performance on the vertical jump, 10m shuttle-run, as well as 5min run were significantly less than those from the previous study. Furthermore, it should be noted that those three parameters for male students in the current study (age of 7 to 11yrs) were significantly less than those from female students in the previous study. Considering the current survey on the daily living as well as results from other national surveys in Japan all together, it can be postulated that the decrement in the physical fitness which involves basic physical activities (i.e. walking and stair climbing) may have led to current results. Especially, the decrement in performance of those students without the active life style tended to be significant. In other words, those students who and perform more physical activity by joining to some sort of sport clubs were expected to maintain the physical fitness The current results reaffirmed the importance of participating in the habitual physical activity in order to facilitate the healthy physical and functional growth for children who are exposed to inactive lifestyle.

Keywords: physical fitness test, health-related fitness, Tokyo, motor ability

2005 年中日體質聯合調查報告

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China-Japanese cooperative study on physical fitness in 2005

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1．前言

為增進中日兩國國民體質監測交流，進一步促進兩國國民體質水平的提高，中華全國體育總會與日本體育協會在共同協商定於 2004 年-2007 年開展兩國 6-74 歲國民的體質聯合調查。中日兩國是目前世界上系統開展國民體質監測的主要國家，20 餘年來有著廣泛的交流。兩國國民體質監測體系相似，但在體質監測的內容、週期、規模等方面也存在一些差異。為了彌補由於兩國國民體質監測內容的差異所帶來的局限，本次體質聯合調查採用了相同內容、方法同時取樣的方式。取樣城市為中國上海和日本東京，實際取樣 11473 人，其中上海 5799 人，東京 5674 人。中日雙方曾在 1986 年進行了 7-20 歲青少年體質研究聯合調查，對兩國青少年體質進行了全面的比較與分析，本次聯合調查將取樣對象擴展到 6-74 歲，將全面瞭解兩國青少年、成年、老年等不同年齡段人群的體質差異和變化以及產生的可能原因。調查內容涉及體質檢測、問卷調查以及與體質相關的其他信息收集。其中體質檢測的身體形態、身體素質指標 31 個；問卷調查表 5 種，包括受試者個人問卷調查表、被調查學校問卷調查表等，內容涉及被調查對象的個人身體活動、飲食、睡眠、家族基本情況，以及中小學校的體育課程設置、師資、體育場館等情況；本次體質聯合調查特別關注抽樣地的相關信息收集，包括社會、經濟、教育、自然環境、飲食習慣、公共衛生和健康等背景信息，以便分析兩國國民體質異同和變化的可能原因，為政府相關部門制定有關改善國民體質的決策提供依據。

本次兩國體質合作研究，不僅能夠通過聯合調查所獲得的直接數據，瞭解兩國國民體質特徵、差異等現狀，同時通過全程工作過程的合作交流，相互借鑒體質監測開展經驗，在更為廣闊的社會背景下（跨國比較），全面分析國民體質變化的可能原因，從而實現改善國民體質的最終目的。

我國社會經濟正處於一個快速增長時期，由此帶來人們生活方式的一系列的變化是巨大的，日本是我國的鄰國，自然環境相似，社會經濟發展起步早于我國，國民體質監測始於 1964 年，40 餘年來積累的國民體質變化信息、監測制度的完善以及相應的應對策略，值得我們借鑒；近年來，國際化程度的提高，使得人們的社會生活環境和生活方式面臨許多相似的問題，如：身體活動量減少等；人體

體質的變化趨勢也相似，如超重肥胖比例增加、青少年身體素質下降等。跨國比較研究是全面深入瞭解這些問題的重要途徑之一。

2．調查內容

本次聯合調查內容包括體質檢測、問卷調查和相關背景信息收集三部分內容。

2.1 問卷調查

問卷調查表分為三類五種，受試者問卷調查表、被調查學校問卷調查表和健康問詢表，其中受試者問卷調查表分為6 ～11 歲年齡組調查問卷、12～19 歲年齡組調查問卷和 20～74 歲年齡組調查問卷。

2.1.1 受試者詢問項目

6～11 歲青少年：共 26 項，其中家庭成員構成 1 項，作息時間 11 項，飲食習慣 3 項，課外活動 2 項，體育鍛煉 4 項，對體育鍛煉的認識 4 項，女性月經 1 項。

12～19 歲青少年：共 24 項，除作息時間 9 項，其他詢問項目與 6～11 歲相同。

20～74 歲成年人、老年人：共 20 項指標，其中家庭成員構成 1 項，作息時間 6 項，飲食及生活習慣 4 項，體育鍛煉 4 項，對體育鍛煉的認識 5 項。

2.1.2 被調查學校詢問項目

調查項目共計 16 項，學校基本情況 3 項，教師情況 5 項，體育課、保健課及專項訓練情況 4 項，運動會及郊遊活動 3 項，體育設施 1 項。

2.2 檢測內容

檢測指標共 21 項，詳見表 1，其中形態指標 12 項，機能指標 9 項。6～19 歲青少年 20 項；20～39 歲成年人 18 項；40～59 歲成年人 16 項；60～74 歲老年人 16 項。

2.3 相關背景信息內容

信息收集內容包括膳食營養、公共衛生和疾病、社會經濟和自然概況。

3．取樣對象

取樣對象：6 至 74 周歲中國上海市和日本東京都及附近地區居民，分為兒童青少年（學生）（6～19 歲）、成年人（20～59 歲）和老年人（60～74 歲）三個人群。共分為 50 個年齡、性別組，每組 100 人，中日各 5000 人，共計 10000 人。實際取樣 11473 人，比原計劃多 1473 人。

中國上海樣本來源於閔行區、浦東區、徐匯區等 3 個區共 30 個取樣點，其中小學 8 所，中學 10 所，大學 2 所，社區企事業單位 10 個。

日本東京樣本來源於東京都及附近地區共 31 個取樣點，其中小學 2 所，中學 4 所，大學 3 所，社區企事業單位 22 個。

4．結果與分析

有關本次體質聯合調查的基本狀況，將在研究報告中詳細報告，以下結果是從有關中日體質的歷史數據和本次兩合調查數據、東京與上海、日本與中國等多

角度綜合分析所得。

4.1 中國青少年生長發育水平處於快速發展期，生長發育水平高於日本。

歷史數據分析顯示：1957 年--1977 年的 20 年為日本青少年生長發育加速最明顯的時期，與日本戰後經濟騰飛時期相吻合；而中國青少年生長發育加速最明顯的時期為 1985-1995 年，並且目前仍處於生長發育長期加速期，與中國實行改革開放、經濟增長加速時期相一致。本次聯合調查的中日雙方的取樣城市上海與東京分別與本國的青少年生長發育長期變化的趨勢基本相似。

1985 年的中日青少年體質對比研究表明：中國兒童青少年身體長度指標多超過日本，而日本青少年身體充實度明顯高於中國。1985-2005 年日本青少年生長發育已趨於穩定，而中國青少年正處於長期加速期。隨著中國國民經濟、營養狀況的改善和生活方式的改變，目前（2005 年）中國青少年身體長度指標仍大於日本，身體充實度有了很大增長，且仍處於生長發育的長期加速期。青少年身體充實度變化及其後效應的研究應當成為今後青少年體質工作的一個關注點。

以身高為例，1975 年--2005 年中國青少年身高平均每 10 年增長幅度均超過 1.0cm，尤其 1985-2005 年 20 年中 7-17 歲男女青少年身高分別增長 5.2 cm 和 3.6cm，生長發育加速趨勢非常明顯；與日本 1957-1977 年的變化相似，但幅度比後者小。1957-1977 年的 20 年為日本青少年身高生長的長期加速期，20 年中 7-17 歲男女青少年身高平均增長值分別為 7.05 cm 和 5.89cm，而 1985-2005 年的 20 年日本 7-17 歲男女青少年身高平均增長值分別為 1.30 cm 和 0.71cm，身高生長發育水平已趨於穩定。月經初潮年齡的變化也顯示出同樣的趨勢，1950 年日本女青少年月經初潮年齡為 14.5 歲，隨著戰後 20 世紀 60-70 年代的經濟飛越發展，1980 年東京女孩的月經初潮年齡已提前到 12.4 歲。1985 年中日聯合調查：日本東京女青少年初潮平均年齡在 12.04-12.08 之間。北京、上海和武漢等大城市女青少年的月經初潮年齡從 1960 年的 14-15 歲，提前到 1990 年的 12-13 歲。2000 年城市女青少年月經初潮年齡為 12.7 歲。

4.2 近年來兩國青少年身體素質均呈下降趨勢。本次調查中國青少年總體身體素質水平高於日本，僅耐力素質水平低於日本。

1985 年--2005 年的 20 年間，我國青少年身體素質總體而言速度、耐力和柔韌素質有所下降，力量素質有所提高。而日本青少年身體素質整體上呈下降趨勢。本次聯合調查的取樣城市上海與東京與本國的基本趨勢相似。2005 年與 1985 年相比東京青少年部分身體素質自然增長高峰期年齡較上海提前。1985 年我國 7-18 歲青少年的速度素質的平均值均低於同年代日本的平均值，本次聯合調查，在所有測試的 9 項機能指標中，大多數項目指標上海好于東京，如速度、力量、柔韌等素質，只有閉眼單腳站立、5 分鐘跑等指標東京好於上海。

社會經濟的發展以及生活方式、對體育的認識和重視程度、體育設施等對體質水平均有一定的作用和影響。首先，1985 年--2005 年的 20 年間是我國社會經

濟的快速發展期，國民物質生活水平有較大提高，為身體素質的提高提供了物質基礎。而同期日本經濟發展已經達到了一個高水平的穩定期，國民的體質水平變化相對較小。其次，中日兩國在體育課程設置與考核形式等方面存在一定的差異，對青少年的體質水平的干預效果也會有所不同，如我國的升學體育考試等舉措，在一定程度上抑制了青少年身體素質下降的幅度，但是從終身體育的角度來看，良好的體育鍛煉習慣和掌握一定的體育技能，對體質的促進作用更大，日本在這些方面有許多值得借鑒的經驗。近年來，上海的社會經濟高速發展，極大的促進了群眾體育的發展，全市共建成健身苑 164 個，健身點 3630 個，體質監測站 40 個。全市現有經營性體育場所 4000 多家，經營管理比較規範；良好的體育政策、制度和基礎設施，為青少年的體育鍛煉提供了硬件和軟件的條件，在一定程度上促進了青少年體質水平的改善。

4.3 中國成年人身體素質水平低於日本，且男性差距更大，僅柔韌素質好於日本；同時身體素質的退行性變化速度高於日本。

4.4 中日超重肥胖率呈持續上升趨勢，中國成年人超重率高於日本。

無論發達國家還是發展中國家，超重和肥胖近幾十年來均呈上升趨勢。本研究結果表明中國、日本超重肥胖率呈持續上升趨勢，中國的增長幅度大於日本，但是兩國城市女性的超重肥胖率有下降趨勢。日本超重肥胖的增長期開始於二十世紀 60、70 年代，中國則是從 80 年代有明顯增長。儘管起步晚於日本，但中國增長速度快於日本。中日兩國超重肥胖率的變化趨勢特點在 2005 年中日體質聯合調研結果中進一步體現。上海和東京作為國際化大城市，經濟排名在本國位居首位。兩國 90 年代早期的營養調查顯示，上海城市人口超重肥胖率（BMI>25）28.3%，高於日本大城市平均水平。本次調查結果顯示，上海超重肥胖率依然顯著高於東京。由於上海超重基數大（超重肥胖比值上海 13，東京 9.5），預示著上海今後肥胖率的增長幅度大於東京。

由於兩國所處的社會經濟發展階段不同，超重肥胖人口特徵的變遷年代日本早於中國，日本將為中國超重肥胖發展趨勢的預測與研究工作提供經驗和借鑒。

雖然中日超重肥胖的人群特徵有一定的差異，但是兩國肥胖發生率迅速升高的主要原因相同——膳食結構改變和體力活動減少。隨著社會發展，中日的膳食結構、飲食行為以及體力活動在發生著深刻的變化。相關研究顯示，中日傳統的飲食文化開始丟失，飲食習慣日益西化，城市居民來自脂肪的能量攝入越來越高[11,12]。同時由於現代技術的進步，工作模式發生著巨變，工作勞動強度逐漸下降，看電視、玩電腦靜態娛樂時間逐漸增多，使得體力活動的能量消耗水平不斷降低。預防和控制超重肥胖已成為中日兩國刻不容緩的任務，如何採取綜合措施預防和控制肥胖，積極改變膳食、增加體力活動將是兩國共同探討的重大課題。

澳門市民體質現狀的研究

澳門特別行政區政府體育發展局

Investigation on Physical Fitness of Macao Citizen

Macao Sport Development Board, Macao SAR

摘要

目的 本文擬通過對 2005 年澳門市民體質監測數據進行分析比較，以期探討澳門市民體質的特徵，為政府及時瞭解市民體質現狀，制定社會發展的方針政策提供參考依據。**方法** 2005 年澳門市民體質監測的研究對象為 3 至 69 周歲的澳門市民，採用分層隨機整群的原則抽取樣本。嚴格遵守規定的測試細則對研究對象的身體形態、機能和素質等指標進行測試，利用 SPSS10.0 統計軟件對測試數據進行統計分析。**結果** 澳門 3~69 歲人群身體形態、機能和素質指標均隨年齡的增長表現出增長、穩定和衰退等明顯的階段性特徵，不同指標間表現出的階段性變化不同，在生長發育階段，基本上表現為先素質、再形態、後機能的發展次序。在生長發育達到成熟期後，則體質衰退下降的順序依次為：先素質、再機能、後形態。無論是形態還是機能或素質指標，女性的生長發育均早於男性，這體現了人體在生長發育過程中的性別差異。**結論** 本研究揭示了澳門市民的身體形態、機能與素質各指標在不同年齡的階段性，以及不同指標的階段性差異。其中，身體形態的生長長期變化處於加速過程中。可以預計未來澳門市民的身高還會繼續提高。身體機能指標在生長發育期均持續較短的階段，但平均變化幅度均大。身體素質在兒童青少年時期每一階段的持續時間較短，進入穩定期後保持時間較長。男女比較方面，男性的各項身體素質均強於女性，女性比男性早 2-3 年進入發育突增期，這與身體形態的變化規律相一致。

[關鍵詞] 澳門市民，體質監測，身體形態，身體機能，身體素質

Abstract

Objective This paper aims to investigate the characteristics, in terms of physical fitness, of Macao citizens by comparing and analyzing the results of the 2005 Physical Fitness Report of Macao SAR Citizens, which helps to give the Government a good understanding of the physical fitness of the citizens, this in turn helps the Government to determine the developmental strategies in the future.

Method Samples were taken randomly from the age of 3 to 69 years old for the monitoring of physical fitness which was held in 2005. During the tests on anthropometric measures, physiological functions and physical fitness, rules and

regulations were followed strictly to minimize errors. Statistical analysis of results is carried out by SPSS10.0.

Results The anthropometric measures, physiological functions and physical fitness of the examined group, aged from 3 to 69 years old, tend to increase and stabilize as they grow and is rather degenerative. Developmental changes vary at different level, for example, the developmental changes during puberty start with changes in physical fitness, then in anthropometric measures and physiological function. During the stage through puberty to maturity, physical degeneration occurs, in the order of physical fitness, physiological function and anthropometrics measures. In regardless of any kind of developmental changes, females tend to enter puberty earlier than males. This shows that developmental changes vary among sex.

Conclusion This study reveals that the indexes of anthropometric measures, physiological function and physical fitness for Macao citizens vary at different age and the indexes also vary among itself. Development in anthropometric measures shows the greatest growth, and is accelerating, among all parameters. This gives us an estimate on the average height of Macao citizens, showing that the average height will continue to grow in the future. Developmental changes, in terms of physiological function, shows a great increase while as the index on physiological function shown that the duration for this developmental change is short. The development in physical fitness only proceed for a short period of time among children and adolescents, however, the duration increases when they enter the period of stabilization. Overall, males show a better development in physical fitness than females, however, females enter the stage of puberty 2-3 years earlier than males and these conform to the development in anthropometric measures.

Keyword: Macao citizen; Physical fitness monitoring; Anthropometric measures; Physiological function; Physical fitness

1. 前言

長期以來，澳門特區政府積極推動市民的體育健身活動，旨在通過加大體育事業投入，增強澳門市民體質。而通過定期對澳門市民體質的科學監測，可以瞭解市民的體質狀況，據此制定相應的方針政策，以增強市民的體質。為此，於 2005 年，在國家體育總局體育科學研究所的技術支援下，澳門體育發展局進行總統籌，聯同衛生局、教育暨青年局、社會工作局、高等教育輔助辦公室和澳門理工學院，共同展開了澳門首次 3-69 歲人群的體質監測工作。

本文擬通過對 2005 年澳門市民體質監測數據進行分析比較，以期探討澳門市民體質的特徵。為市民更詳細瞭解自身體質狀況，從而能做到'有的放矢'地制定科學的鍛煉計劃，為政府及時瞭解市民體質現狀，制定社會發展的方針政策提供參考依據。

2. 研究對象與方法

2.1 研究對象

研究對象為 3 至 69 周歲的澳門市民，分為幼兒（3～6 歲）、兒童青少年（學生）（6～22 歲）、成年人（20～59 歲）和老年人（60～69 歲）4 個年齡段。其中，幼兒在澳門需要居住 3 年或以上，兒童青少年（學生）、成年人和老年人在澳門居住超過 5 年或以上，並排除各種急、慢性疾病患者。

2.1.1 抽樣原則

採用分層隨機整群的原則抽取樣本。即以生活在澳門的市民作為抽樣總體，然後根據各年齡段人群的年齡、性別和職業（成年人）等特徵分層整群抽取符合條件的樣本。

2.1.2 各年齡組實際樣本量

本次監測最終獲得有效樣本量 10477 例，在統計分組時，3～19 歲分男女性別，按 1 歲一組，其中 6 歲組由 6 歲幼兒和 6 歲學生兩部份人組成。20～69 歲，分男女性別，按 5 歲一組，其中 20～24 歲年齡組中含有 20 歲、21 歲和 22 歲的學生組(表 1)。

表 1　　男女各年齡組樣本量統計表

年齡組	男	女	合計
3	159	96	255
4	191	113	304
5	165	132	297
6	271	245	516
7	222	165	387
8	196	150	346
9	193	165	358
10	185	163	348
11	176	151	327
12	188	172	360
13	178	164	342
14	182	151	333
15	179	198	377
16	174	184	358
17	166	167	333
18	162	159	321
19	120	127	247
20～24	471	490	961
25～29	191	220	411

30～34	194	220	414
35～39	192	214	406
40～44	201	336	537
45～49	231	354	585
50～54	209	283	492
55～59	184	192	376
60～64	101	154	255
65～69	99	132	231
合計	**5180**	**5297**	**10477**

2.2 研究方法

2.2.1 研究內容

研究內容包括身體形態、機能和素質三部份指標，有關測試均嚴格遵守規定的測試細則：

身體形態：身高、坐高、體重、胸圍、腰圍、臀圍、皮褶厚度、肩寬、骨盆寬、足長。

身體機能：安靜脈搏(心率)、血壓、肺活量。

身體素質：

幼兒(3~6 歲)：10 米折返跑、立定跳遠、走平衡木、雙腳連續跳、網球擲遠、坐位體前屈。

学生(6～22 歲)：50 米跑、50 x 8 往返跑(6~12 歲男女)/800 米跑(13~22 歲女)/1000 米跑(13~22 歲男)、立定跳遠、斜身引體(6~12 歲男)/引體向上(13~22 歲男)/一分鐘仰卧起坐(6~22 歲女)、縱跳、握力、背力、坐位體前屈、閉眼單腳站立、選擇反應時。

成年(20~39 歲)：縱跳、握力、背力、坐位體前屈、閉眼單腳站立、選擇反應時、俯卧撐(男)/一分鐘仰卧起坐(女)。

成年及老年(40~69 歲)：握力、坐位體前屈、閉眼單腳站立、選擇反應時。

2.2.2 數據處理

為保證數據品質，在統計分析前對已錄入數據庫的數據進行邏輯篩查和核查訂正。

2.2.3 統計分析

使用 SPSS10.0 統計軟件對數據進行統計分析，採用獨立樣本 t 檢驗或單因素方差分析，檢驗不同年齡組之間各計算指標間差異的顯著性。

3. 結果與分析

3.1 身體形態的基本特徵

3.1.1 生長水平的階段性特徵

澳門 3~69 歲人群身體形態生長水平表現出明顯的階段性特徵，身體形態的生長可出現勻速增長、快速增長、緩慢增長、穩定和衰退等幾個時期。然而，各形態指標間在生長水平中出現的時期及各時期出現的年齡特徵不完全一致。

如身高方面，男性在 3~11 歲階段保持勻速增長；12~14 歲出現快速增長期；

15~24 歲為緩慢增長期，此時期身高增長到最高水平；25 歲後相對穩定，到 40 歲後則出現小幅下降的趨勢。女性在 3~5 歲間快速增長；6~8 歲勻速增長；9~11 歲出現第二個快速增長期；12~15 歲為緩慢增長期，此時期身高增長到最高水平；16~34 歲間相對穩定，到 35 歲後開始有微弱下降的趨勢(圖 1)。

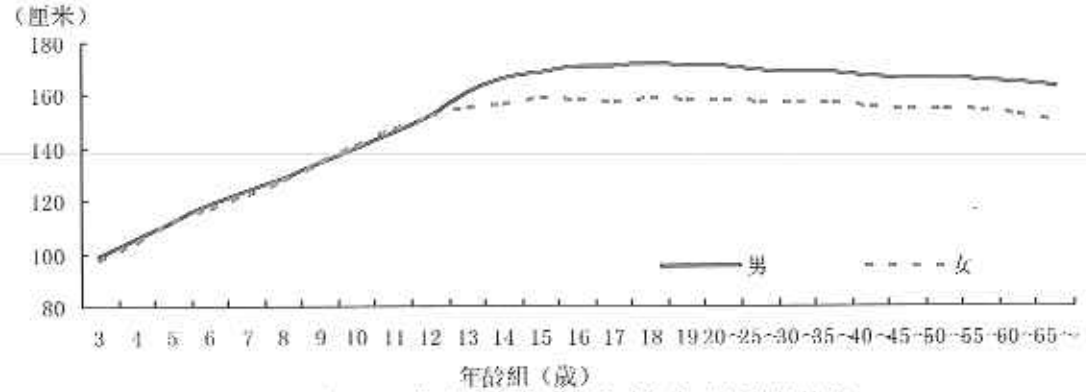

圖 1　澳門3~69歲市民身高生長水平和速度的年齡特徵

體重方面，男性從 3 開始呈勻速增長趨勢，11 歲進入快速增長期，延續到 14 歲，15~39 歲為緩慢增長期，其中 35~39 歲是體重增長到最高水平的年齡段，40 歲後保持相對穩定，60 歲以後呈下降趨勢。女性從 3 歲開始勻速增長，9 歲進入快速增長期，延續到 13 歲，14~17 歲為緩慢增長期，18~24 歲保持相對穩定，但是在 25～59 歲間，女性體重繼續表現出勻速增長的趨勢，其中 55~59 歲是體重增長到最高水平的年齡段；60 歲以後呈下降趨勢(圖 2)。

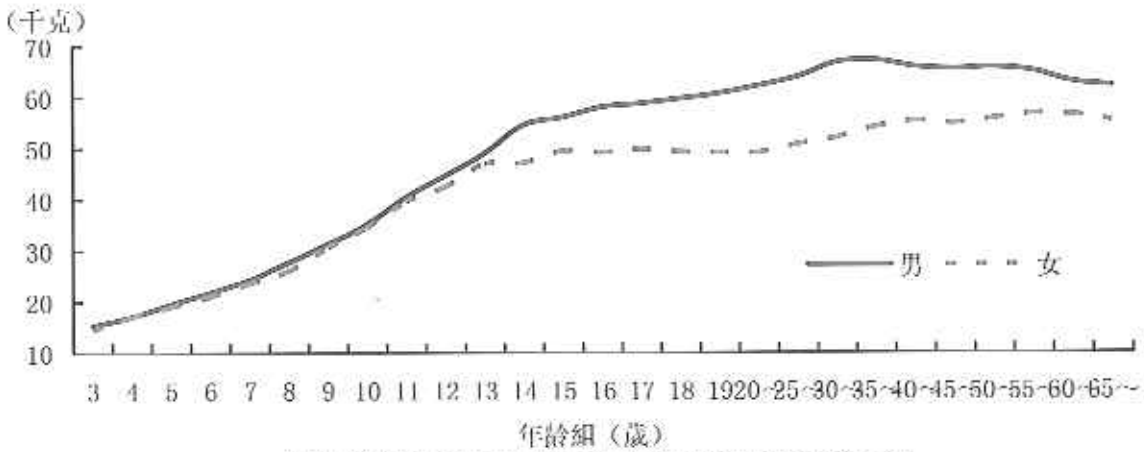

圖 2 澳門3~69歲市民體重生長水平和速度的年齡特徵

3.1.2 身體形態生長速度的非等比性特徵

澳門 3～69 歲人群身體形態生長速度表現出非等比性特徵，長度、體重、圍度和寬度等指標的生長速度不完全一致。

其中男性最早發育完成的是足長，在 15 歲已經進入穩定期，其余依次是骨盆寬、身高及坐高、肩寬，而體重及圍度則緩慢增長到幾乎 40 歲後才進入穩定期。女性最早發育完成的是足長，在 12 歲已經進入穩定期，而骨盆寬到 14 歲左

右也進入了穩定期、其次是肩寬、身高及坐高，體重及圍度則幾乎持續增長，到60歲以後才略趨於平穩(表2)。

表2　澳門3~69歲人群身體形態各指標生長發育進入穩定期的年齡段

	身高	坐高	足長	體重	胸圍	腰圍	臀圍	肩寬	骨盆寬
男	*25～59	*25～59	15～69	*40～59	40～69	35～69	35～69	30～69	20～69
女	*16～59	*16～59	12～69	18～24 60～69	14～19 #	40～49 #	18～24 60～69	16～69	14～69

註：*者表示該指標在其後的年齡出現衰退期。
#女性胸圍在20～69期間、腰圍在50～69繼續呈增長趨勢。

3.1.3 性別差異

澳門男女性身體形態指標的生長水平和速度存在明顯的性別差異，尤其體現在青春期的"二次交叉"現象。

以身高為例，男性在12～14歲，女性在9~11歲進入快速增長期，顯示澳門女性身高比男性早3年進入快速增長期。但是，女性約在16歲時身高就進入穩定期，男性卻一直增長到24歲，可見女性的身高增長期結束比男性早，而且，在增長期的平均年增長值也明顯小於男性。另外，澳門男女性間身高在青春期間的增長表現出典型的"二次交叉"現象，其中，在10歲和11歲時，女生身高大於男生，出現了第一次交叉，到12歲女生和男生身高平均數基本一致，13歲後男生身高又超過同齡女生，出現了第二次交叉(圖1，表3)。

體重方面，無論男女，均從3歲開始進入勻速增長期，隨後，男性體重的快速增長期為11～14歲，女性為9～13歲，顯示澳門女性體重比男性早3年進入快速增長期。但是，男性在15歲以後體重已進入緩慢增長期和穩定期，女性卻在25～59歲間體重繼續表現出勻速增長的趨勢，18～24歲和60～69歲間，體重保持穩定，可見，女性體重總增長期的時間比男性長，不過，體重的增長速度不如男性(表3)。

表3　身高和體重生長發育期和平均年增長值的性別差異　單位：身高(厘米)、體重(千克)

指標		勻速增長期		快速增長期		緩慢增長期		穩定期	衰退期	
		年齡段（歲）	平均年增長值	年齡段（歲）	平均年增長值	年齡段（歲）	平均年增長值	年齡段（歲）	年齡段（歲）	平均年增長值
身高	男	3～6 7～11	6.3 5.5	12～14	6.8	15～24	1.3	25～59	60～69	-1.4
	女	3～5 6～8	7.3 5.3	9～11	6.7	12～15	2.7	16～59	60～69	-1.9
體重	男	3～7 8～10	2.3 3.6	11～14	4.9	15～39	1.4	40～59	60～69	-2.2
	女	3～8 25～59	2.2 1.1	9～13	3.9	14～17	0.7	18～24 60～69	—	—

3.2 身體機能的基本特徵

3.2.1 身體機能隨年齡增長的階段性變化特徵

不同身體機能指標隨年齡增長均表現出階段性變化特徵，但不同指標的階段性不一致。

以肺活量為例，無論男女，肺活量隨年齡的增長均呈現上升、保持平穩和逐步下降三個階段，其中男性在 6～16 歲為增長階段；16～29 歲為穩定階段，肺活量基本保持在 3900～4300 毫升之間；30-69 歲為下降階段。女性的三個階段則分別出現在 6～15 歲、16～44 歲及 45～69 歲，其中在穩定階段肺活量基本保持在 2533～2855 毫升之間(圖 3)。

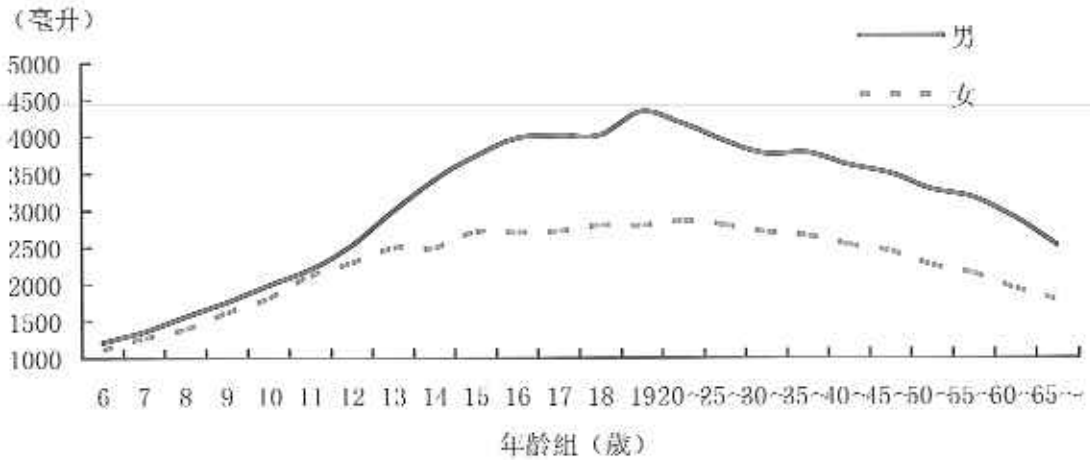

圖 3　澳門3~69歲市民肺活量隨年齡的變化趨勢

安靜脈搏方面，隨年齡的增長則表現出階段性下降的特徵。無論男女，安靜脈搏在 3~6 歲呈快速下降，7~20 歲平穩下降，20 歲以後基本上處於平穩階段，約保持在 74-80 次/分(圖 4)。

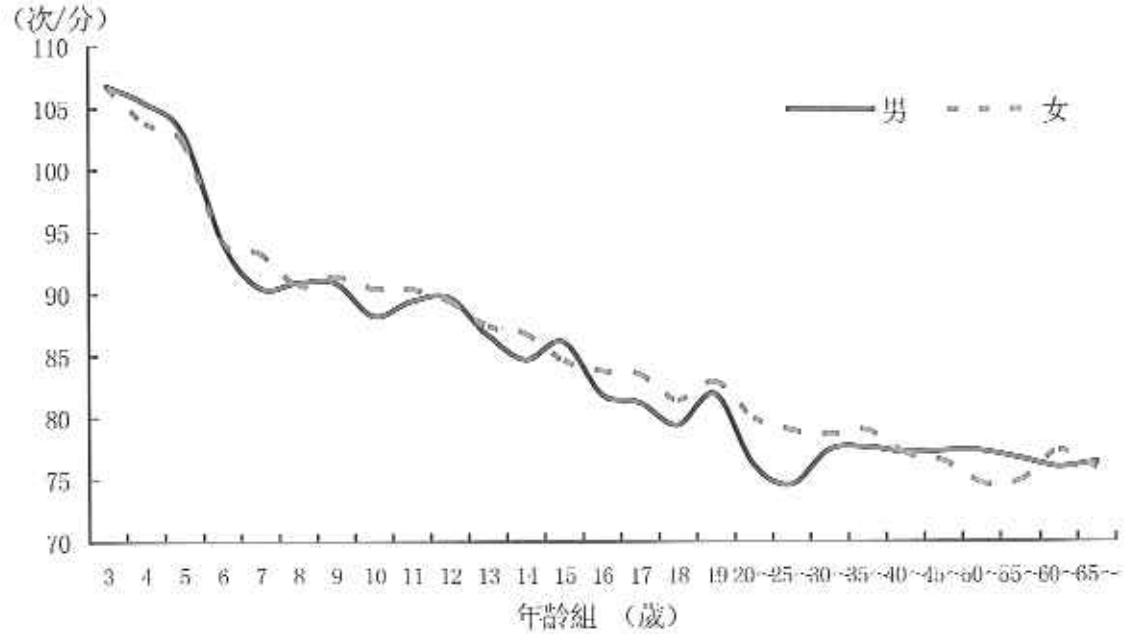

圖4　澳門3~69歲市民安靜脈搏(心率)隨年齡增長的變化趨勢

血壓隨年齡增長的變化為：收縮壓男性在 6-15 歲呈持續增長，16-29 歲穩定在 114-116 毫米汞柱之間，30 歲後呈繼續上升趨勢；女性在 6-13 歲上升，14-34 歲平穩下降，35-69 歲後則快速上升。舒張壓則無論男女，除 60-69 歲，其餘年齡段均呈持續上升趨勢(圖 5)。

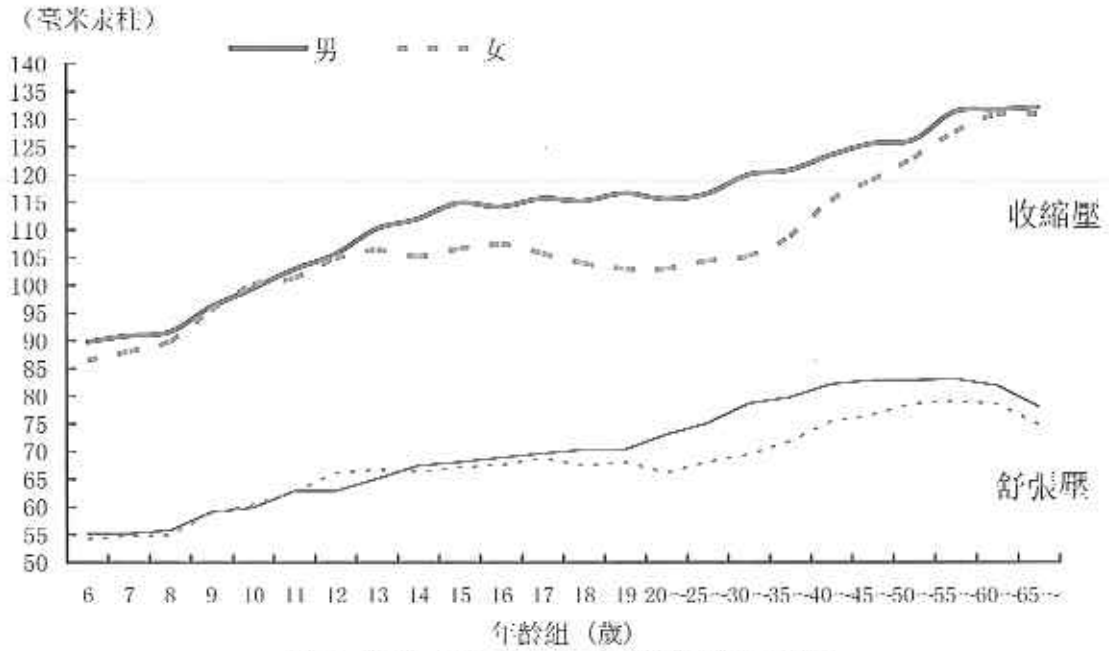

圖 5 澳門3~69歲市民血壓隨年齡的變化趨勢

3.2.2 身體機能不同指標間階段性變化的不一致性

不同機能指標隨年齡的階段性變化特徵不一樣，肺活量呈現的是隨年齡增長顯示單調上升，達到峰值後，在單調下降。安靜脈搏（心率）隨年齡增長呈單調下降。收縮壓和舒張壓則均隨年齡增長呈上升趨勢，但本研究注意到一個問題，在 60-69 歲年齡階段，舒張壓有下降趨勢，但由於所研究對象年齡組的局限尚難講是規律性問題。該現象可以在以後的研究中進一步分析。

3.2.3 性別差異

男女比較，男性的肺活量均大於女性，血壓除個別年齡組外，也表現為男性大於女性，安靜脈搏則男女間基本上沒有顯著性差異。身體機能指標在隨年齡增長的變化方面，雖然男女間的階段性變化趨勢基本相同，但每個階段出現的年齡不同，增長幅度不同，持續的年限也不同(圖 3~5)。

3.3 身體素質的基本特徵

3.3.1 身體素質生長發育的階段性特徵

本次監測的身體素質主要包括速度、力量、耐力、柔韌性、平衡能力和反應能力。監測結果顯示，大部份身體素質均表現出從幼兒、青少年時期不斷提高，其後過渡到平穩發展期及下降期的階段性變化。

例如：速度男性在 6~16 歲、女性在 6~11 歲間隨年齡增長，之後保持平穩(圖 6)。

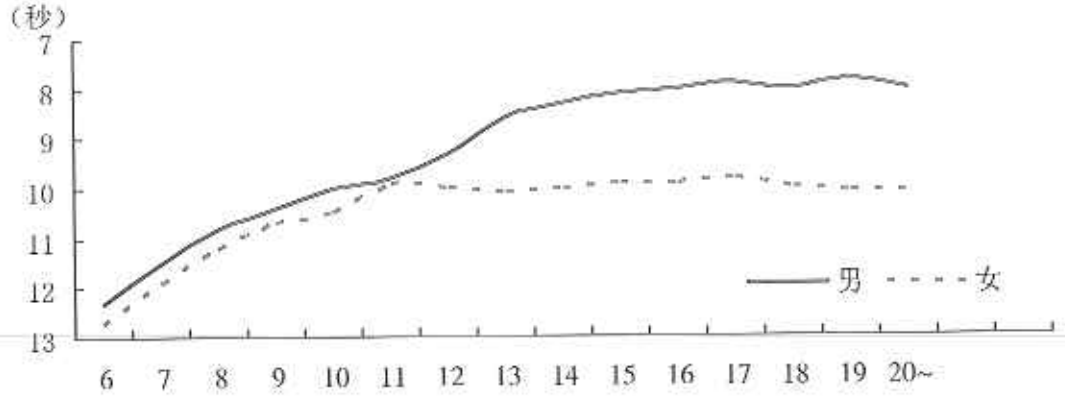

圖 6　反映速度素質—50米跑

肌肉爆發力男性在 6~19 歲、女性在 6~11 歲間增齡增長，其後增長變緩並逐漸下降(圖 7)。

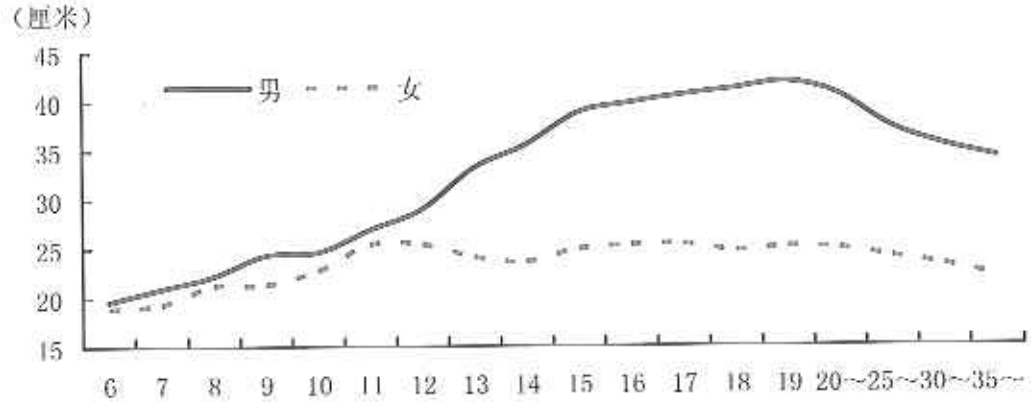

圖 7　反映肌肉爆發力--縱跳

肌肉力量男性在 12~16 歲、女性在 10~12 歲出現突增期，男女均在 35 歲左右達最大值，保持約 10 歲左右後開始下降(圖 8)。

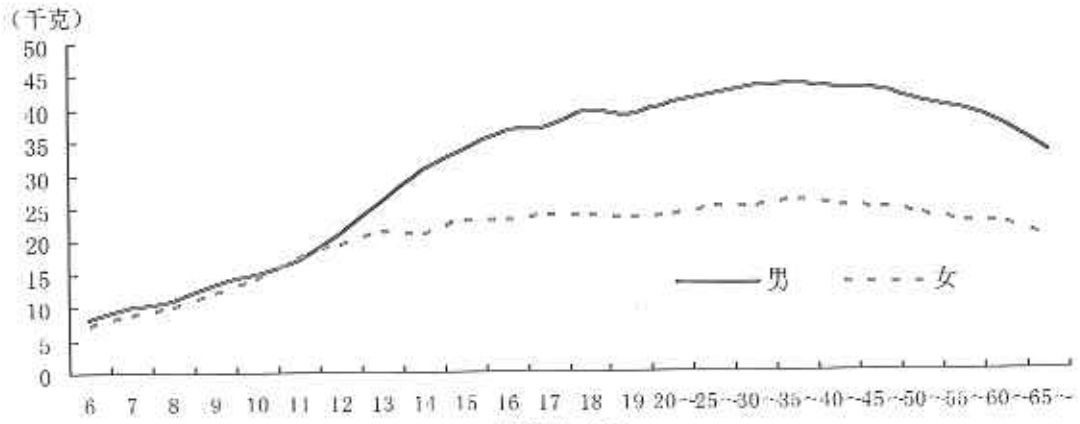

圖 8　反映肌肉力量　握力

耐力方面，男性 19 歲前，女性在 16 歲前隨年齡增長逐步提高，其後成績便開始下降(圖 9)。

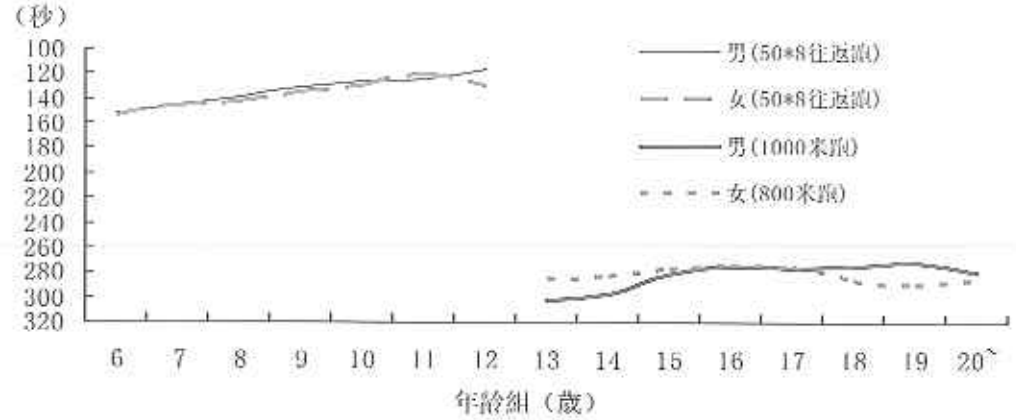

圖 9　耐力跑

平衡能力男性同樣在 19 歲前，女性在 17 歲前增齡提高，其後均開始下降(圖 10)。

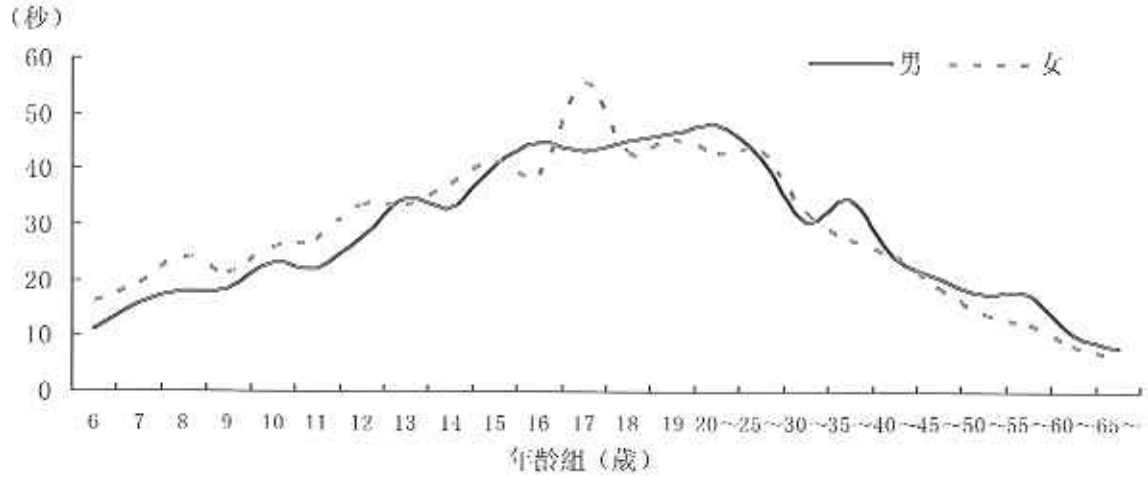

圖 10　反映平衡能力　閉眼單腳站立

反應能力變化呈“倒 u”型，隨增齡表現出提高、保持和下降的變化趨勢，即男女基本上均在 6~12 歲反應能力提高，13~39 歲平穩，40 歲後開始下降(圖 11)。

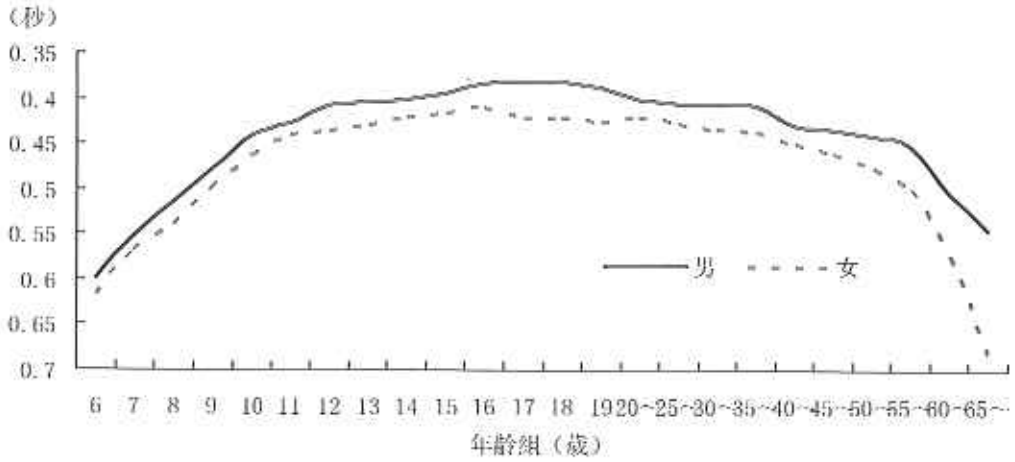

圖 11　反映反應能力　選擇反應時

值得注意的是柔韌素質的階段性變化比較特別，其中男女均在 3~12 歲增齡下降、但男性在 13~19 歲卻上升保持，到 20 歲後才繼續下降，女性則在 20 歲後較平穩地保持在 5~7 厘米之間(圖 12)。

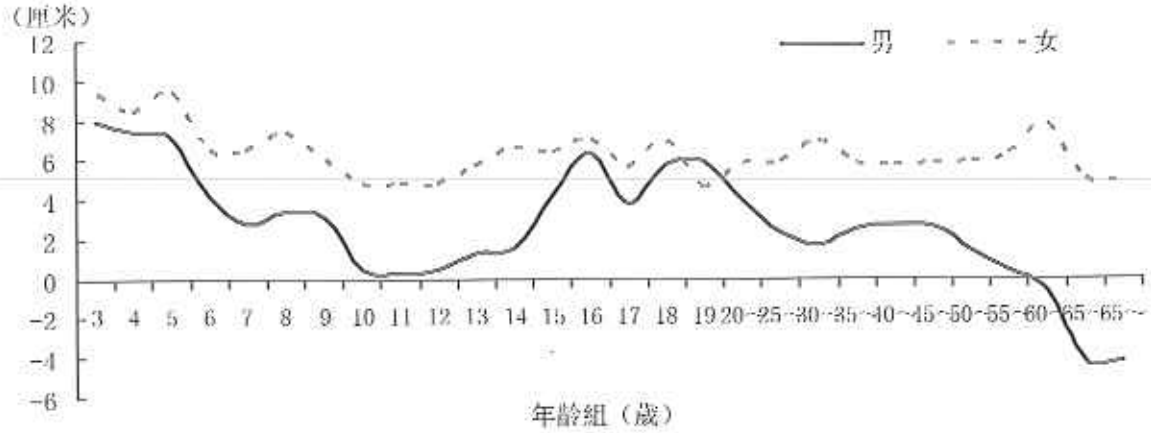

圖 12　反映柔韌素質　坐位體前屈

3.3.2 身體素質不同指標間的階段性變化曲線不同

大部份身體素質隨年齡增長均表現出提高、平穩、下降的過程，但柔韌素質卻表現出下降、上升及再下降的過程。而且，各項身體素質增長的速度有快有慢，出現峰值、進入平穩階段的時間有早有晚。正是由於這種隨年齡的變化不同，形成了各項身體素質增長的順序不同。

3.3.3 性別差異

男女比較，除了平衡能力男女間基本上無顯著性差異、女性柔韌素質好於男性外，其他身體素質男性均強於女性。另外，女性比男性要早 2~3 年進入身體素質發育的突增期。

如力量素質在隨年齡增長而變化時，男性的上升和下降幅度均比較明顯，女性的變化幅度較為平緩，正是這種增幅上的差異，最終使男性表現出比女性有較好的力量素質；速度素質方面，男性在 16 歲前隨年齡增長而增長，女性則增長到 11 歲後則基本保持平穩，因此，從 12 歲開始，男性速度與女性比較的差值明顯隨年齡增長而增大；耐力素質及平衡能力方面，男性均在 19 歲、女性則分別在 16 及 17 歲時達峰值，可見，女性達峰值的時間比男性早 2~3 年。而柔韌素質隨年齡的變化中，男女間的差異主要表現為女性在青春發育期後保持平穩，而男性則從 20 歲開始便隨年齡增長快速下降(圖 6~12)。

4. 討論

人體在生命過程經歷的各個時期，可以歸納為生長發育、成熟和衰老三個階段。從胚胎期到青春期各時期可以歸為生長發育階段，成年期可視為成熟階段，更年期後可歸為衰退階段。生長發育階段人體的形態、機能和素質處於最活躍的

變化階段，一些生物學特徵在較短的時間內都會產生變化。進入成熟階段人體的各種生物學特徵的變化呈現出停滯或緩慢的變化狀態。在衰退階段各種生物學特徵的變化又進入了活躍狀態。

（1）本研究揭示了澳門市民的身體形態、機能與素質各指標在不同年齡的階段性，以及不同指標的階段性差異。這種生長發育階段表現出的一些特徵，與前人的研究結果相一致。但本研究還發現，澳門市民身體形態生長發育的"長期趨勢"明顯。以身高為例，澳門男性在 18 歲時身高達到峰值為 171.3 釐米，40-44 歲時，為 167.2 釐米，65-69 歲時為 163.1 釐米。峰值與 65-69 歲年齡組的身高均值差 8.2 釐米。表明在過去的 40 年裏澳門市民的身高在不斷的增高，其增長速度較快。反映出澳門市民身體形態生長長期變化還處於加速階段。當然，就身高單一指標的這種變化有可能是以下的原因所致：一是澳門市民身體形態生長的長期增長趨勢加速的原因。二是隨年齡的增長身高衰退速度加快的原因。三是移民導致的人口融會效果的表現。至於是那方面原因在其主導作用，需進一步研究。

（2）人類的生長發育過程，不僅表現為體細胞的增值、分化和凋亡，而且還表現出伴隨組織、器官形態的改變，其內部結構和功能也會產生適應性變化，逐漸達到成熟。澳門市民的身體形態、機能、素質各指標生長發育表現出的階段性，總的趨勢體現了人體生長的一般規律。

隨年齡的增長，身體形態、機能與素質等隨著增長。但增長次序則有先後，在生長發育階段，基本上表現為先素質、再形態、後機能的發展次序。如，大部分形態指標，身高、體重、圍度男性在 12-14 歲，女性在 9-11 歲快速增長；耐力素質，男女均在 6-16 歲期間；力量素質及速度素質，男性在 6-16 歲、女性在 6-13 歲；平衡能力，男性均在 6-19 歲，女性在 6-17 歲期間，呈現快速增長期，且持續時間長，快速發育期早於形態開始而晚於形態結束。但機能指標，如肺活量男女性均在 11-16 歲之間快速增長，基本上是在大部份形態指標快速增長完成後，才出現快速增長的完成。

但在生長發育達到成熟期後，人體的形態、機能和素質水平都會伴隨著年齡的增長出現退行性變化。從本次澳門市民的監測結果來看，下降的順序依次為：先素質、再機能、後形態。澳門市民的身體素質除力量素質出現退行性變化較晚（40 歲左右開始）外，均在 20 歲左右達到峰值以後開始下降。身體機能指標，如肺活量：男女均為 30 歲呈現隨年齡增加而單調下降趨勢，表明肺功能下降；血壓（收縮壓和舒張壓）：也均在 35 歲後呈持續上升趨勢，表明心血管機能呈下降趨勢。

（3）無論是形態還是機能、素質指標，女性的生長發育均早於男性。如女性 6-7 歲、10-11 歲時的握力年增長率分別為 21.8%、21.3%；而男性則在 12-13 歲時才達到 23.8%。女性速度素質在 6-7 歲時年增長率為 6.3%，而男性在 12-13 歲的年增長率才為 7.8%。這主要體現了人體在生長發育過程中的性別差異，應

該與男女在生長發育過程中青春發育期的發動有關係。

5. 結論

（1）澳門市民身體形態的生長長期變化還處於加速過程中。可以預計未來澳門市民的身高還會繼續提高。澳門市民身體形態生長水平表現出明顯的階段性特徵，且身體形態指標的生長水平和速度存在明顯的性別差異。

（2）澳門市民的身體機能指標隨年齡增長均表現出階段性變化特徵，不同指標的階段性不一致。但在生長發育期，持續的年限都短，平均數變化幅度均大。

（3）澳門市民身體素質隨年齡增長都呈現階段性，在兒童青少年時期每一階段的持續時間較短，進入穩定期後保持時間較長。

（4）不同身體素質隨年齡增長形成的變化曲線不同。有持續下降的，有先下降再提高在下降的，還有基本上不變的。正是由於這種隨年齡的變化不同，形成了身體素質增長的順序不同。表現為各項身體素質增長的速度有快有慢；出現峰值、進入穩定階段的時間有早有晚。

（5）男性的各項身體素質均強於女性，這種差異在本研究的各年齡組均有體現。身體素質的突增期，女性比男性早 2-3 年。由於突增期的存在，使男女間的一些身體素質的差異加大。主要體現在力量素質、速度素質和柔韌素質方面。這與身體形態的變化規律相一致。

中國城鎮居民身體脂肪分佈特徵和體脂率推算方法的研究

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The distribution and calculation of body fat percentage in Chinese town residents: A population-based study

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摘要

人體主要由肌肉、脂肪、骨骼和水分等成分構成，不同性別和年齡者身體成分的含量是不同的；隨著生長發育和體力活動的進行，身體成分會發生不同程度的改變。其中，脂肪含量的變化一致倍受關注。

脂肪含量的測量一直是醫生、體質學家和教練員們共同關注的問題，且對其的評價也是個體體質、健康評價的重要內容。有研究表明，超重（overweight）和肥胖（obesity）會降低生活品質，造成骨骼、肌肉系統的損傷和運動成績的明顯下降等；甚至引發許多健康問題，如促使慢性心血管疾病（Coronary heart disease, CHD）、高血壓、II型糖尿病、阻塞性肺疾病、骨質疏鬆和腫瘤等疾病發病危險性的增加。相反，身體脂肪含量過低，也會造成健康危險性增加，因為人體需要一定的體脂肪量來維持正常生理功能，如“基礎”脂肪（如磷脂等）是維持細胞膜結構完整性的關鍵，而“非基礎”脂肪（如甘油三脂）則具有提供和釋放熱量，以及能量貯備（如自由脂肪酸等）的功能。此外，脂肪還涉及到脂溶性維生素（A、D、E和K）的轉運和貯備，以及維持神經系統功能、月經週期的穩定和生長發育過程順利完成的功效。所以，如果個體飲食脂肪攝入量不足（如厭食症）、運動成癮（exercise addiction）和疾病（如膽囊纖維化等）等因素，均會導致嚴重的生理功能障礙。

從研究現狀看，各國學者的研究領域主要集中在體脂堆積的原因，體脂分佈特徵，體脂含量與生長發育、體育活動（或鍛煉）、以及競技運動之間的關係，尤其是對體脂含量（或體脂率）和去脂體重推測及評價方法的研究更是受到學者們的重視，分別建立了適用於不同種族、性別和年齡段人群評價的方法和手段。綜合各國學者的研究發現，對身體成分評估的技術和方法較多，它不僅涉及到不同人群的流行病學調查和大規模體質測試，而且還設立了許多實驗室方法。具有

代表性的評估方法主要包括人體形態測量法（如 BMI、圍度法、身高標準體重法）、水下稱重法、皮褶厚度法、電阻抗法（BIA）和雙能量 X 光吸收法（DEXA）等。

研究目的

本文擬在全國部分城市抽取具有代表性的樣本，在充分分析和瞭解我國鎮居民的體脂含量和體脂分佈特徵的基礎上，通過統計學處理，以期尋找適合我國城鎮居民使用的體脂率推測方法，並為最終建立適合我國國民使用的皮褶厚度推算體脂率的公式和相應的評價體系奠定堅實的理論和實踐基礎。

研究方法

本文選擇濟南、廣州、成都和西安的 3-69 歲年齡正常健康人群為研究對象；採用以 DEXA 測量身體成分，同時對研究對象 8 個部位的皮褶厚度進行測量。以 DEXA 測試的結果作為脂肪含量的“效標”，探討我國城鎮居民不同年齡人群身體脂肪的分佈特徵，並對皮褶厚度與脂肪含量的關係進行探討，在此基礎上嘗試建立推算身體體脂率公式的可能性。數據處理採用均值比較，並對結果進行方差和 T 檢驗。對皮褶厚度與身體脂肪含量的關係採用相關分析和多元回歸分析。

結論

1．我國城鎮居民的體脂含量隨年齡的增長而增大，並呈現出明顯的階段性，即身體脂肪含量在一個相對長的時間裏保持在一個水平上。男性大致分成三個階段，3-6 歲階段，7-29 歲階段，30-69 歲階段。女性分成四個階段，即 3-6 歲階段，7-12 歲階段，13-39 歲階段和 40-69 歲階段。在前兩個階段中居民的脂肪含量快速增長，接近人一生最大脂肪含量 2/3。

2．進入成年後，我國城鎮居民體重還在繼續增長但絕大部分是脂肪，男性約在 88%；女性約在 95%，而肌肉含量和骨礦物質保持平穩並略有下降。

3.我國城鎮居民身體脂肪的分佈具有明顯的增齡性規律，男性增齡性變化主要是向心性聚集，50-60%的全身脂肪含量聚集在身體軀幹部分，四肢的體脂率隨年齡增長呈下降趨勢。女性的脂肪隨年齡的增長主要向軀幹和大腿部聚集。

4．通過對現有推算體脂率公式的分析發現，直接引用國外公式存在較大誤差，在實踐中使用時應注意。在建立推算公式時，適宜的年齡分組和測試部位的選擇十分重要。並且通過研究分析看到，肱三頭肌、腹部和肩胛下角在推算方程中經常被選入，但是，僅用這三個部位建立方程來推算體脂率並不適用每一個年齡組。在實踐中應予重視。

5．本研究通過對多個年齡組的多個測試部位的回歸分析建立的推算體脂率的公式具有較好的擬和度，可以在以後的實踐中推廣使用，但對 40-50 歲的人群在使用時應慎重。

關鍵詞： 城鎮居民， 身體脂肪， 體脂率， 推算方法， 分佈特徵

Abstract

Background and objectives

Human body compositions, including muscle, skeleton, water and so on, were largely varied in different gender and age, and changed with maturation and physical activity. A large number of studies have been focused on the body fat composition.

Evaluation on the percentage of body fat was an important item in physical fitness and health evaluation. Overweight and obesity might lead to the skeleton and muscle trauma, and with responsibility for many health issues. The risks of hypertension, diabetes and cardiovascular disease increased in obesity population. On the contrary, very low percentage of body fat might contribute to health impairment.

The preponderance of previous studies has focused on the etiology of obesity, the fat distribution and association to growth and development and physical activity, but less research has been conducted with establishment of body fat evaluation system fitting for Chinese town population. Therefore, the objectives of present study were to explore an approach to calculate body fat ratio for Chinese population, and establish theoretical and practical basis for Chinese population body fat evaluation system.

Methods

The study population constitutes of subjects aged 3 through 69 years from Ji-nan, Guang-zhou, Cheng-du and Xi-an. The body composition were assayed by DEXA and 8-points thickness of skinfold were measured at the same time. The data of DXEA was criterion, the characteristics of body fat distribution in Chinese and the correlation of skinfold thickness and body fat mass were analyzed.

Results and conclusions

(1) The percentage of body fat increased with growth of age in Chinese town residents. According to the characteristics of body fat distribution, three stages for male (3-6, 7-29 and 30-69 –y-old) and four stages (3-6, 7-12, 13-39 and 40-69-y-old) for female were made. The body fat mass increased fast in first two stages and account for about 2/3 of lifelong fat mass.

(2) The body weight still increased in adult Chinese town population, but the most of weight gain were fat mass(88% and 95% in male and female respectively).

(3) There is age-related change in body fat distribution for Chinese town population. The body fat accumulated in the body center in male and in the trunck and thigh in female.

(4) There is moderate bias in calculation of Chinese body fat ratio in foreign formula. The proper age class and measure-sites were very important. The three-sites measurement is not fit for all age-class population.

(5) The formulation build in this study by multiple sites measurement and wide age population has an excellent goodness of fit. But it should be careful in practice for 40-50-y-old population.

Keywords: Town residents, Body fat mass, The percentage of body fat, Calculation, Distribution characteristics

青少年不參加體育運動的研究

SPORTS DROPOUT IN ADOLESCENCE: AN OVERVIEW

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Abstract

Sports dropout occurs when an individual decides to quit a sportive practice by his own will. Sports dropout is of two different kinds: (1) abandoning physical activity and quitting organized sports, and (2) shifting between sports. Although these two options share some motives, they don't have the same negative impact in adolescent's lifestyles. Abandoning physical activity has a deep negative effect in posterior periods of life, namely health problems; shifting between activities is an acceptable experience with limited impacts, namely in specific sports performance.

The study of sports dropout is a recent trend in the understanding of sports participation. Although it may be considered as the reverse side of motivation, there is a consistent lack of data and knowledge in this area. While the knowledge about the reasons that lead someone to sports practice are well known in different ages, social groups and countries, the motives for dropout are far from being clarified.

Investigations about sports dropout were mainly oriented to specific sports and followed a sport oriented approach – "why is someone quitting this specific sport ? ". This approach, though very interesting to provide better policies within a sports domain, has no impact on general policies, and provides no information about the dynamics of adolescent's options and lifestyles.

In our research we have investigated the reasons that were associated with sports dropout, by asking about subject's participation in sports during adolescence. An inventory of dropout motives, adapted to sports, and sports participation description (sport activity, duration and sequence of sports) were applied. A questionnaire that explored motives of dropout in 51 items, grouped by 6 major categories was used. For

each indicated activity, and dropout occurrence, information about Motive, Years of Practice and Age of dropout was inquired. A final sample of 1000 subjects that have experienced at least one shift between sports or a total abandon of sport between 12 and 20 years of age was statistically analyzed.

The results indicated that social reasons (sport/school conflict, for example) were among the most referred motives for dropping out sports. Specific sports injuries and other training related variables have a limited contribution to sports dropout. One major finding was that the number of experienced activities is increasing, that is, today's adolescents tend to involve themselves in more activities than in the past. Training related aspects and motivation play different roles in dropout, according to the extension of sports engagement. Developing changes did not seem to play a major role in dropout dynamics. At the end of adolescence, lack of time for sport (for different reasons) was the most referred motive for dropping out sports. The mean duration of sport experiences was shorter and the changes between activities were more frequent before 14 years of age. Before 15 years of age the number of reasons to dropout is higher than in older adolescents. By the end of adolescence, dropout is more influenced by the effects of social activity (influences of family and friends) and motivation.

Some gender differences were observed in what concerns the most referred reasons for dropout. The girls referred more often motivational reasons, and boys seemed more influenced by competition related aspects. The number of activities mentioned by girls was smaller than the one referred by boys, showing a more conservative approach to sports or more stability of practice.

The reasons for dropout in different activities are quite similar.

In Portugal, sports participation during adolescence, at least in formal environments, is decreasing and quitting sports is becoming more frequent in the middle adolescence. This trend has important implications in political, financial, educational and health domains. Two strategies may be considered: (1) the promotion of sports related benefits consistent with an offer of a broader diversity of practice opportunities, and (2) the reduction of sport/school conflicts.

These effects that we have observed demand a multidimensional approach to sports dropout, in which social effects and training specific variables may play an important

role in a complex dynamic phenomenon. The main motives change across time and circumstances, and single factor theories for sports dropout cannot fully explain the dynamics of dropout.

Introduction

In modern societies sport has become an area of growing interest. People of all ages spend considerable amount of time in physical activities, with a significant economic impact.

In most developed societies sport is a matter of political, social and health interest. In the twentieth century, the impact of the world championships, olympic games, and international competitions has transformed a common leisure and pleasure activity into a first importance phenomenon.

Political and economic investment in sport has also significantly grown up to unexpected values. A very important part of this investment concerns the promotion and development of sports participation in adolescence. As societies become more and more aware of the positive effects of sport, the amount of money invested in youth sports increases.

There are good reasons to support that investment: social benefits in socialization processes and learning of social rules, behavior modification in a positive way, impact on health (physical and psychological), development of competence in specific sports and some expectancy of long life engagement in physical activity with its' inherent health and well being consequences. Modern societies have agreed to consider investment in sport, and especially during childhood and adolescence, a necessary investment.

However, it is precisely during adolescence that sport dropout is most likely to occur, and that represents investment loss. Sport dropout takes many forms: sudden and definite abandon, activity fluctuations that may last for years, and shifts between sports. Gould (1987) sustained that sports dropout is a sort of continuum, ranging from the shift between activities to the total abandon of sports. As a matter of fact, adolescence has been consistently identified as the segment of life in which sport dropout is most evident (Gould, 1987; Guillet, 1999; Weiss et. al., 1999). Recent trends in adolescent behavior, like the nutritional changes and the prevalence of sedentarism, contribute to an increasing concern about sports dropout. A major cause

of the adolescent obesity is the reduction of the physical activity levels in infancy and adolescence, and sport dropout may play an important role in the critical low activity patterns.

The motives for dropout are difficult to identify. Some athletes have a precise idea about the motives for dropping out and some don't. In some cases one single cause can be identified and in many cases a complex interaction of variables leads to sport dropout for no specific motive.

Early observations about sports dropout started thirty years ago, probably when the social and economical dimension of this phenomenon was suspected. According to Gould (1987) 20 percent dropout rate occurs after the age of 13. However, this only a minor problem considering dropout rates of about 80 percent at the age of 17.

Ibsen and Otteses (1996) have observed that abandon peak values occurred between 13 and 15 years of age in the Danish population. In Denmark, swimming and gymnastics share the higher abandon rates, but this may be a local effect. In a study with a sample of 7,000 subjects that had practiced at least one activity during adolescence, Kremer, Trew and Ogle (1997) came to the conclusion that around 20% had quit all physical engagement. In a Portuguese study in sailing, peak dropout values were observed at 12-13 years of age (Silva et al, 2005), suggesting that sudden morphological changes can be a motive for dropout.

Some theoretical frameworks have been called to explain sports dropout. Ewing (1981), Roberts (1984), Machr and Nicholls (1980) have explored the suggestion that individuals anticipate success criteria about performance. Dropout occurs when objectives are repeatedly failed and the satisfaction about performance is low. According to this perspective, the motivations to participate in sports must be well understood in order to anticipate expectations and to adequate the degree of satisfaction.

Another approach explains the sports dropout as a problem of perception of competence (Harter, 1978). Successful participation reinforces motivation and this works as a positive feedback that leads to high levels of engagement in sports. On the other hand, poor performance reduces the self-competence perception and the motivation. According to this approach, the physical, social and representational aspects of competence are integrated in positive or negative feedback loops.

A third perspective refers to the equilibrium of positive and negative gains in sports participation. If the balance is negative, that is, if the costs are higher than the benefits, the dropout is more likely to occur (Smith, 1986).

A common observation is that activity levels usually reduce with aging (Mota & Sallis, 2002). However, the age-related decay in physical activity is mostly applied to the last half of live and not to childhood or adolescence stages. In the context of the recently detected obesity problem in many world populations, the reduction of physical activity in early development phases is a matter of great concern. Sports participation became a problem of public health. Sport dropout is a social, economic and health problem.

The rationale of the present investigation has delimited the adolescence as the most important development phase in what concerns sports dropout. A broad definition of adolescence requires the identification of hormonal changes, physical growth, changing body proportions, and also the emergence of conflicting new feelings about the self, family and peers (Gallahue & Ozmon, 2005). There are no clear and universal boundaries for the adolescence period, as it is not only a matter of biological indicators. The social dimensions of adolescence and the specificity of regions and countries, demands a re-definition of starting-ending points for this period.

In many developed countries the biological adolescence was updated to ages that were part of adulthood phase. In fact this is a matter of conflicting tendencies: the secular trend that has anticipated the biological scheduling of adolescence events, and the expanded period of formal education has prolonged adolescence far beyond biological transformations.

In the present investigation we have questioned the motive for sports dropout during adolescence. The objectives of this investigation were: (1) to characterize the dropout in sport, (2) to detect any trends according to the period in which the subjects lived their adolescence, (3) to analyze shifts between activities, (4) to detect the motives for dropout according to age, gender, and patterns of practice.

Methods

To fulfill that purpose we have developed and validated an inventory of motives for sports dropout. The inventory includes the most referred motives in the literature (cf.

Gould, 1987; Freigley, 1984; Orlick, 1973; Pooley, 1981) and was organized in six major categories and included a total of 51 motives. The six major categories were: (1) Social related effects, (2) family and friends, (3) Competition related aspects, (4) coaching related effects, (5) Motivation aspects, and (6) Developmental changes.

In a second part of the questionnaire, the subjects were asked about their participation in sports, in what respects the following items: (1) beginning age and ending age for the participation in a specific sport, (2) the motives for dropping out all mentioned activities (up to 5 motives). They also had to indicate their birth date and gender.

The sample included subjects older than 20 years old and the questionnaire referred specifically to sports participation between 12 and 20 years of age. A final sample of 1000 subjects (497 male and 503 female subjects) that have experienced at least one shift between sports or a total abandon of sport between 12 and 20 years of age was statistically analyzed.

Subjects were divided into 3 groups according to their birth year: (1) subjects that were born between 1931 and 1975 (N=244), (2) subjects that were born between 1976 and 1982, that is, just after the Portuguese revolution of 1974 (N=303), and subjects that were born between 1983 and 1986 (N=453), that is, subjects in the beginning of adulthood. Gender, age of dropout (12-14 years, 15-17 years and 18-20 years), total engagement time in each sport (1-2 years, 3-4 years and more than 5 years) were also analyzed.

Results and discussion.

Higher dropout rates took place between 18 and 20 years of age, and nearly 40% of all abandons occurred in this period. Dropout at the begging of adolescence is less frequent (24% between 12-14 years).

The results indicated that social reasons (sport/school conflict, for example) were amongst the most referred motives for dropping out sports. Together, social related motives account for 40 % of all dropout motives. Specific sports injuries and other training related variables have a limited contribution to sports dropout. The motives for dropout seem to be extrinsic to sport. The most referred motive was the sport/school conflict. The second and the third main reasons for dropping out were the engagement in another activity and changes in family dynamics. In fourth place

comes the reduction of pleasure, and it was the most referred sport-related reason. Competition related motives and developmental changes didn't play an important role in dropout during adolescence.

Training related aspects and motivation play different roles in dropout, according to the extension of sports engagement. Developing changes did not seem to play a major role in dropout dynamics. At the end of adolescence, lack of time for sport (for different reasons) was the most referred motive for dropping out sports. The mean duration of sport experiences was shorter and the changes between activities were more frequent before 14 years of age. Before 15 years of age the number of reasons to dropout is higher than in older adolescents. By the end of adolescence, dropout is more influenced by the effects of social activity (influences of family and friends) and motivation.

The reasons for dropout in different activities are quite similar. In Portugal, sports participation during adolescence, at least in formal environments, is decreasing and abandoning sports is becoming more frequent in the middle adolescence. One major finding was that the number of experienced activities during adolescence is increasing, that is, today's adolescents tend to involve themselves in more activities than in the past. The experience of more than three sports is more and more frequent. The "old" pattern of one or two sports during adolescence is out of fashion.

Adolescents that have participated in sports for shorter periods tend to abandon all sport activities sooner. On the contrary, participants that kept involvement in one sport for prolonged periods tend to abandon later in life.

Some gender effects were observed. Boys were, generally, engaged in sports for longer periods than girls. Girls referred social motives more often than boys and seemed more sensitive to developmental changes. On the other hand, boys seemed more affected by motives directly connected to training and competition. Some categories (family influences, peers influence, motivation) were not significantly different between male and female groups.

Patterns of shift between sports indicated that, despite some fluctuations, individuals that first practiced an individual sport tend to keep engaged in individual activities. The same tendency, but with a smaller expression, happened with subjects that have reported practice of collective sports. The shift from individual to collective activities

is twice more frequent than the opposite.

Some gender differences were observed in what concerns the most referred reasons for dropout. The girls referred more often motivational reasons, and boys seemed more influenced by competition related aspects. The number of activities mentioned by girls was smaller than the one referred by boys, showing a more conservative approach to sports or more stability of practice.

These trends have important implications in political, financial, educational and health domains. Two strategies may be considered: (1) the promotion of sports related benefits consistent with an offer of a broader diversity of practice opportunities, and (2) the reduction of sport/school conflicts.

The observed effects demand a multidimensional approach to sports dropout, in which social effects and training specific variables may play an important role in a complex dynamic phenomenon. The main motives change across time and circumstances, and single factor theories for sports dropout cannot fully explain the dynamics of dropout.

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香港青年體育文化發展的研究

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The Development of a Sports Culture for Hong Kong Youth

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Abstract

The promotion and development of sports culture for Hong Kong youth received Government's attention some 30 years ago but its importance was only realized recently. The perception of health-related physical fitness, sports, physical activity and lifestyle, and the prevalence of coronary heart disease risk factors would be discussed in light of future challenges and trends.

Introduction

The development of sports culture among youth has always been limited by the emphasis on academic success and the aspiration for a good life and career. Hong Kong is a metropolitan and business centre where the service industry is our major strength, requiring an education system that provides a holistic development of the person. It is encouraging to note that in recent years, local tertiary institutions were also considering evidence of active participation in extracurricular activities in the admission exercise.

Recent studies has suggested that our youth lives a sedentary lifestyle – most of them (over 67%) do not participate in physical activities even for 30 minutes a week, they spend 4-6 hours per day playing TV games, listening to music, or talking over the telephone. (Fu, 1993, 1998 & 2001). Most alarming of all, 16% of them are overweight and their fitness has deteriorated during the past five years (Fu, 2002 & 2003, Department of Health, 2005).

With coronary heart disease (CHD) being the number 2 killer in Hong Kong since 1962, it is therefore timely for us to assess the development of youth sports in the territory and then plan future strategies accordingly.

Health-related Physical Fitness Programmes

Surveys conducted with Hong Kong public indicated that good health remains as the top priority for the population and they want good and easily accessible sports facilities at reasonably low cost (Fu, 1993). People want to enjoy good health so that they can live longer and be free from disease at the same time. Thus, they wish to have not only physical fitness but also health in order to enjoy quality of life. The components of health fitness include: cardiovascular endurance, muscular strength and endurance, flexibility, body composition, stress management and bone density. Norm tables for the six areas have been developed and they are also age and gender specific for youth and adults. An example of a health-related fitness test is as follows:
Cardiovascular endurance – resting heart rate, 1 mi run (boys), 0.5 mi run (girls)

Muscular strength -Pull-ups, grip strength
Muscular endurance –Sit-ups, push-ups
Flexibility – sit-and-reach
Body Composition – Body mass index (BMI), percent body fat
Stress – Perceived stress from a self-reported rating scale
Bone density – Bone density of ankle

Besides being physically fit, one must also learn how to manage stress, maintain normal body weight through a combination of diet and exercise, and to have a balanced diet so that bone density and growth is normal. Health fitness is life-long and is therefore important to cultivate and develop its value among youth.

Sports Programmes

Once the basic health-related physical fitness is achieved, it is important for youth to engage in sports activities. Different sports have specific requirements in terms of motor skills but there are common components as well such as speed, agility, power, coordination and reflex. Some of the common tests are as follows:

Speed – 40m run
Agility - shuttle run
Power - standing vertical jump or bench press
Coordination - hand-eye in a tracking test
Reflex - response to stimulus of arm or leg
Balance - Balancing platform

Most coaches are aware that most sports require good motor skills as indicated above. Good instructions are also imperative in the learning of basic techniques and game strategy. Thus, not all youth needs to participate in competitive sports since recreation and leisure physical activities are equally beneficial.

Physical Activity and Lifestyle

When the US Government discovered that their children were not as fit as their European counterparts in 1958, the President Council on Physical Fitness was founded to promote physical fitness among US population in general and in school children in particular (Clark, 1976). Despite some claims that with growth, physical fitness is naturally maintained by children, it was found that physical activity and physical fitness were significantly related (Naul et al., 1998). After 40 years, the 2002 US Surgeon General Report (US Health Dept., 2002) indicated that most Americans are sedentary and overweight, and they recommended that everyone should walk 30 min a day to keep fit. Pate et al. (1998) indicated that a survey in 1995 suggested that 64% of American youth participated in sports for two hours per day at 12 years of age but as they grew older from 12- 18 years, the participation rate dropped significantly to 30%, especially with the girls. Similar results were also observed in Hong Kong – physical inactivity ranked highest (15%) among all CHD risk factors in youth with the lowest participation rate found in 18 year old girls (Fu & Xao, 2003). It appears that we need to focus on how to encourage our youth to participate more in physical activity, in the form of recreation and/or sports. Another important factor is to have a healthy and balance diet.

Attitude and Value

A study with over 25,000 subjects revealed that Hong Kong public has a positive attitude towards physical activity. Primary school students were more positive than secondary school students and male students were more positive as they grew older. It was interesting to note that the elderly population was also very positive towards physical activity, suggesting that they were not the barrier for their grandchildren to engage in sports (Fu, 1993). Although in his 2002 Policy Address, Mr. Tung Chee-Wah, the Chief Executive of the SAR Government of Hong Kong, has reiterated the importance of physical education in schools and allocated 5% of the school curriculum towards PE class, we need to have more fundamental changes in the

attitude of youth towards sports and physical activity. Morgan (2001) suggested that we should make physical activity in school more purposeful and fun to the students. It is believed that in order for this to be implemented successfully, we must change the attitudes of our fellow teachers and parents first. Without their support and active participation, the value system and thus the attitude of our children would remain difficult to be modified. Once this battle is won, the next step will be to narrow the gap between attitude and behaviour – we can focus on the barriers (perceived limitations) and facilitate the transformation of attitude into behaviour.

Prevalence of Coronary Heart Disease Risk Factors

The major CHD risk factors are: hypertension, cigarette smoking, high blood cholesterol, low high density lipoprotein (HDL), high blood lipids, drinking alcohol, diabetes, family history of CHD, obesity, age, gender and sedentary lifestyle (Beyers et al., 1998; Fu et al, 2003). These risk factors can be classified into three groups: Personal-related. (such as age, gender, family history of CHD), Behaviour-related (such as cigarette smoking, drinking, stress, sedentary lifestyle), and Health-related (hypertension, high blood cholesterol, high blood lipids, low HDL, diabetes, obesity). Since CHD risk factors increase with age and are interactive, it is desirable to assess their prevalence and plan primary prevention programmes. For youth with family history of CHD, every effort must be made to limit the numbers of risk factors through behavioral modification such as cessation of smoking, cut down the numbers of drinks to two or less per day, learn to manage stress, maintain a balanced diet and exercise regularly (Mensink et al., 1997; Naul et al., 1998; US Dept of Health and Human Service, 1998; Wannamethee & Shaper, 2001).

Research conducted during the past 10 years suggested that football, basketball, swimming, and badminton were the four most popular sports among youth in Hong Kong, with girls favouring the non-contact sports such as swimming and badminton (Cheung, 2002; Fu, 1993; Lindner & Sit, 1999). It was also found that jogging was very popular and walking became the most common form of physical activity (Fu, 1993; Fu et al., 2003).

In a recent study in Europe, it was found that correlations between physical activity and fitness of youth revealed significant relationships (Telama et al., 2002). Others studies have shown that the correlations between physical fitness and physical activity

were significant but low and children were generally fit (Naul et al., 1998; Pate et al., 1990). The major leisure activities of European youth were listening to music (66.7%), watching TV/video (60.3%), hanging around with friend (48.8%) helping with housework (48.3%) and recreation sports (40.5%). Participating in recreation sports was ranked 3rd (75.1%) behind listening to music and reading (Telama et al., 2002). Similar findings were reported from local research in youth's interest and preoccupation with TV games and listening to music, but not in physical and recreation activity (Fu, 1993; Fu et al., 2003). Thus, we should pay more attention to major motives in sports participation which include the attractiveness of the social environment, the opportunity to socialize, the reward of being fit and healthy, the pursuit of fun and enjoyment, and the opportunity to relax (Beyers et al., 1998; Fu, 1993; Lindner & Sit, 2001; Naul et al., 1998; Telama et al., 2002).

The influence of the parents was also found to be significant, especially in the development of an active lifestyle and in body weight control (Ishee, 2002). Children are affected by their parents and very often, they participate in sports because their parents want to live the "sports" experience through them. The motto in sports should be "trying your best to win and respecting those who lose". If you have tried your best and lost, it is because your opponent is better. You should accept defeat gracefully and learn from the loss and go back to train again so that you can be better next time. The perception of the coach and parents on winning and losing is also important because they are role models for the youngsters. The process of competition is as important as the product of competition – it is important that our youth learns from the opportunity to participate in sports from both perspectives (Hochstetler, 2003).

Challenges ahead

The onset of puberty at the age of 12 years signifies the beginning phase of youth that lasts until the emergence of adulthood at around the age of 18-20 years (Tanner, 1962). Youth is thus a transitional period in growth whereby different organs mature at different rates but at the same time might affect the final development of the person, both physiological and psychological. It is therefore imperative to ensure that during this transitional and critical period of growth, the person is given the opportunity to develop to its full potential such as in heart and lung capacity and motor skills.

Youth sports has been an area of neglect in the Chinese culture because of tradition

and the political climate in Hong Kong during the past 50 years (Fu, 1993). Recent efforts by the SAR Government of Hong Kong have brought more attention to youth sports and the quality of life of the local population. Fundamental changes in the objectives to promote the development of an active lifestyle through sports and physical activities among our youth are essential and should include the following objectives:

1. Ability to handle daily activity without undue fatigue
2. Ability to enjoy good health
3. Ability to cope with stress
4. Ability to relax and enjoy sports and physical activities
5. Ability to maintain the body weight (composition) within normal range
6. Ability to participate in sports and enjoy the process (healthy competition)
7. Ability to pursue an active lifestyle
8. Ability to participate and have fun in purposeful sports and physical activities

Since the amount of time allocated to sports and physical activities in school is inadequate, the role of different agencies is important (see Figure 1). The promotion of sports for health in schools must have the cooperation of the various agencies and from different perspectives (see Figures 2 and 3). Welk (1999) suggested that the implicit goal of youth fitness promotion was to increase the probability that youth will adopt an active lifestyle and maintain a regular habit of physical activity into adulthood. Leenders et al. (2003) suggested that it was important to provide interventions to increase physical activity and improve health awareness and behaviors even during late adolescence and young adulthood in order to prevent serious acute and chronic health problems.

The value system of any society is affected by the five major social institutions namely, Education, Religion, Economics, Family and Sports. Government should establish policies to better integrate them so that the ultimate result is a happy workforce who enjoys quality of life in the territory. Sports for the Family remain an area that is under-developed and should be incorporated in future city planning not only for local residents but also for the tourist industry.

To be successful in sports competition, one has to undergo training that requires discipline, hard work, dedication, perseverance, team work, sacrifice, commitment, task-oriented, and self-esteem. Since the sporting world is also a microism of the real world, youth sports can be a training ground for them to prepare for adulthood.

However, since participation in elite sports is only for a few gifted athletes, sports for the masses through physical and recreation activities remain an important part of youth sports with the objectives to have fun, socialization, self-realization, acquire life-long sports, and become fit and healthy. The inspiration provided by parents, teachers and coaches is imperative to success (Butler & Anderson, 2002).With the prevailing challenges in facing health problems associated with obesity, sedentary lifestyle and rising CHD risk, the development of sports culture for youth must be emphasized to provide primary prevention programmes and quality of life for our next generation. The task of making the existing physical education curriculum in school more attractive and purposeful, and our youth fit and healthy through active lifestyle (such as sports, physical activity and a balance diet) remain our challenges ahead.

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Figure 1. The Role of Different Agencies

Objectives	Home	School	After School Activities	Government/ Private Agencies	National Sports Bodies
Learning basic concepts of health & active lifestyle	x	x	x		
Learning the basic motor skills		x	x		
Refining of motor skills		x	x	x	
Performing of motor skills through sports & physical activities		x	x	x	x
Active lifestyle through participation in sport & physical activities	x	x	x	x	x
Good health	x	x	x	x	x

Figure 2. Promoting Sports for Health in Schools

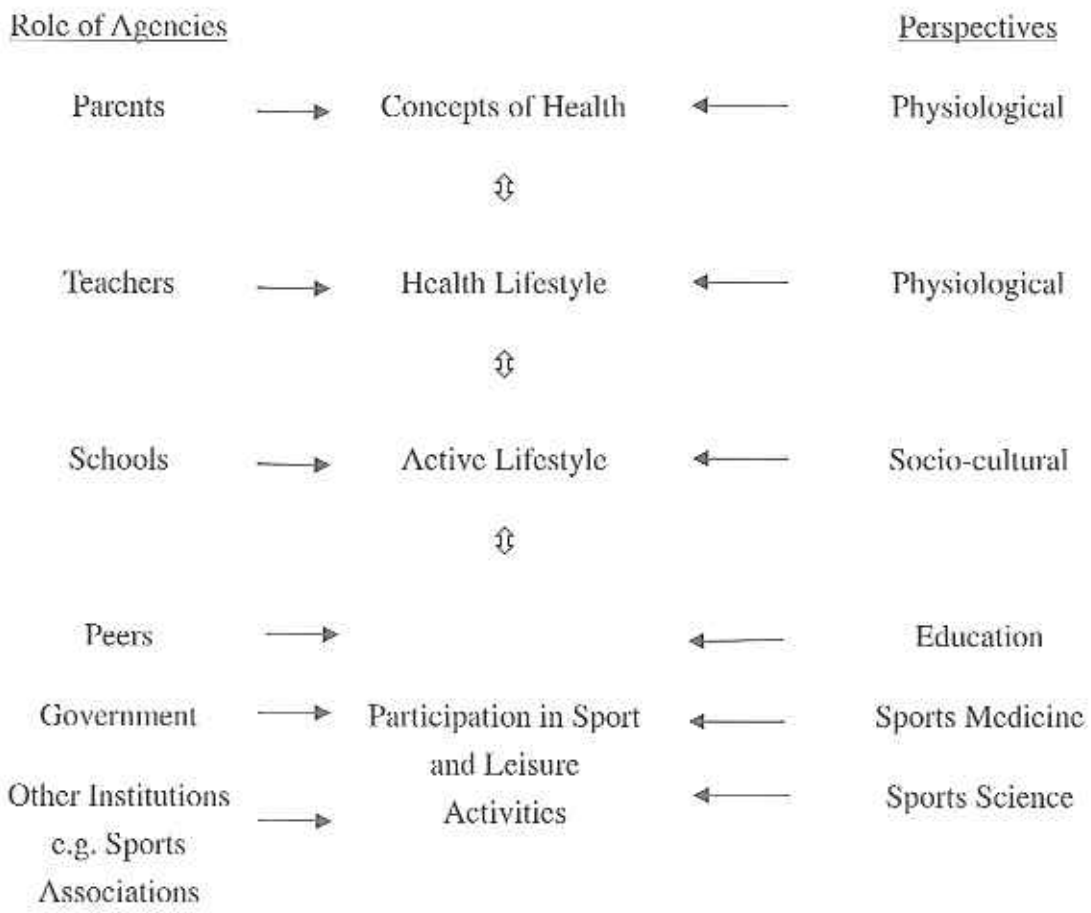
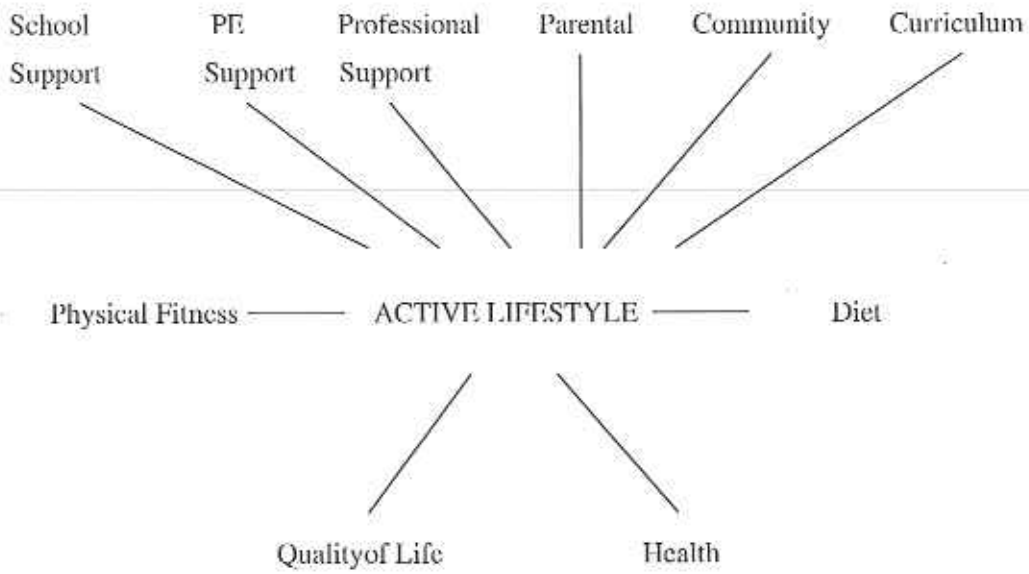


Figure 3. The Development of An Active Lifestyle in School Children



國民體質綜合指數

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Physical fitness complex index of Chinese citizen

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國民體質綜合指數是反映人口總體體質水平變化的無量綱動態相對數。本文依據國民體質綜合指數的功能需求及特性，通過文獻分析、演算法分析、測度分析、構成指標的屬性分類及對應演算法等方法，建立了國民體質綜合指數的數學模型；同時討論了國民體質綜合指數的應用解析。

該指數的指標體系由二級指標體系組成，一級指標是：身體形態指標、身體機能指標和身體素質指標，這 3 類指標基本上涵蓋了體質的主要構成要素。二級指標共 20 項，依據不同年齡段（幼兒、學生、成年人、老年人）人群體質特點，各選用 6～9 個指標。指數採用加權合成指數的計算方法，其中加權包括指標加權和人口數加權（各省（區、市）人口、各分組年齡全國人口）。以 2000 年第 1 次國民體質監測相應指標的平均數為基期數據，固定基期同度量水平，將這個水平定位在數值 100 上，即第一次國民體質綜合指數為 100。指數的數值將會在 100 上下波動，指數的數值越大表明體質水平越高。指數的計算公式為：

國民體質綜合指數 $100\times\sum B_m\sum P_j\sum K_i\left(x_{ij}/x_i\right)$

其中 i 為第 i 個指標，j 為第 j 個人群分組，m 為第 m 個省市；Bm 為地域人口數結構權重，Pj 為人口數年齡結構權重，Ki 為各指標權重；xi 為基期單指標測試平均值，xij 為報告期單指標測試平均值。國民體質綜合指數數據來源於每 5 年一次的國民體質監測。國民體質綜合指數報告年為每次國民體質監測年的第 2 年，2006 年為第 1 次國民體質綜合指數報告年，下一個國民體質綜合指數報告年為 2011 年。

國民體質綜合指數反映的是國民體質總體水平及其變化情況，根據需求可以拆分為多個綜合指數。主要可分為以下幾種：

（1）城鄉國民體質綜合指數：城鎮國民體質綜合指數，鄉村國民體質綜合指數。

（2）不同年齡組國民體質綜合指數：幼兒體質綜合指數、兒童青少年（學生）體質綜合指數、成年人體質綜合指數、老年人體質綜合指數。

（3）分類國民體質綜合指數：身體形態綜合指數、身體機能綜合指數、身體素質綜合指數。

（4）省（區、市）國民體質綜合指數：31 個省（區、市）國民體質綜合指

數。

（5）自定義分類體質綜合指數：依據研究目的，解析不同分組人群的體質綜合指數。如：經常參加體育鍛煉人群的體質綜合指數，不參加體育鍛煉人群的體質綜合指數等等。

希臘健康相關的體育標準

PHYSICAL EDUCATION STANDARDS FOR HEALTH-RELATED FITNESS IN GREECE: A PILOT IMPLEMENTATION IN FIRST GRADE

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Abstract

Physical education is considered an important curriculum subject area in terms of developing the child as a whole by integrating with a unique manner motor, cognitive, emotional, and social learning parameters. Based on that, specific physical education standards were determined for the elementary school (Derri, 2007). These were: (1) Enhancement of motor skills and satisfactory performance in many of them, (2) Sport science knowledge acquisition and application for an effective participation in physical activity in the present and in the future, (3) Knowledge for and development of a level of health-related fitness, (4) Acquisition of positive experiences from the physical activity and enhancement of self-expression and sociability, (5) Comprehension, respect of individual differences, and cooperation with all, (6) Demonstration of a responsible sport and social behaviour as a result of participating in physical activity. Based on the above standards, specific goals and objectives were set for each one of the elementary school grades (Derri, 2007), and indicative daily lesson plans with emphasis in each one of the goals and objectives were created (Vassiliadou, Pahta & Derri, 2007). The current research was conducted in an attempt to evaluate the achievement of the objectives related with the 3rd standard of this new physical education program in first grade students. Specifically, in 12 out of 60 lessons the objectives were related primarily with health-related physical fitness enhancement and respective knowledge development. Forty-five students, ages 6 to 7 were randomly divided into two groups. Group A followed the daily lesson plans that were developed for the achievement of the health-related fitness objectives in this grade while group B followed the typical physical education program. The Health related Prudential Fitnessgram Test (Cooper Institute for Aerobics Research, 1992)

was used for the evaluation of health-related fitness elements. For the respective cognitive understanding, a paper and pencil test was created. Multivariate analysis of variance {2 groups (experimental-control) X 2 measurements (pre-post)} with repeated measurements in the last factor was applied. Results showed a significant group X measure interaction for abdominal strength/endurance ($p<.001$), upper body strength ($p<.05$), trunk extensor and hamstring flexibility ($p<.001$), body composition ($p<.001$), and cognitive understanding of the health-related fitness elements ($p<.001$). Post hoc analysis showed that after treatment students in group A improved significantly abdominal strength/endurance, upper body strength, trunk extensor and hamstring flexibility, and cognitive understanding of fitness elements. Students in group B improved significantly abdominal strength/endurance and upper body strength, although less than those in group A. Also, group B exhibited significantly higher scores in body composition, and no improvement in trunk extensor and hamstring flexibility and in cognitive understanding. Although both groups improved cardiovascular endurance, none of the programs contributed in a significant improvement. In short, it seems that when certain goals and objectives are placed for each grade, students acquire better health-related fitness gains both physically and cognitively. Given the nowadays children's sedentary lifestyle and the insufficient amount of time allotted for the physical education lesson in the school curriculum, these findings can be considered important in terms of providing students with knowledge and skills related to their health.

Keywords: standards, physical education, physical fitness, elementary school.

Undesirable lifestyle, such as less participation in physical activity, bad nutritional habits, longer television viewing is likely associated with poor quality of life in terms of physical fitness, feelings, and overall health, independently of the child sex, body mass index, social background, and somatic symptoms (Chen et al, 2005). The elements of sedentary lifestyle, as for example television viewing not only contribute to poor fitness and obesity, but also encourage poor dietary habits, violent behavior, and substance abuse (American Academy of Pediatrics, Committee on Public Education, 2001).

In the study of Borra, Kelly, Shirreffs, Neville and Geiger (2003), although 8 to 12 year old children are concerned about their physical appearance, performance and good health, most of them recognize neither the immediate nor the long-term importance of physical activity, and are unable to stay physically active. Their parents,

on the other hand, believe that weight is an issue only when it prevents children's physical development and social interaction, while at the same time teachers associate negatively weight with children's regular participation in sports, confidence, popularity, and optimism about life. Concerning fitness, children and parents tend to be concerned more about dietary habits than for exercise and physical activity. However, research has shown that physical activity is an important contributor to long-term weight control (i.e. Steinbeck, 2001; Webber et al. 1996). Longitudinal studies have also suggested that low cardiorespiratory fitness during childhood and adolescence is associated with later cardiovascular risk factors, such as hyperlipidemia, hypertension and obesity (i.e. Ferreira et al. 2005; Twisk et al. 2002). On the other hand, high cardiorespiratory fitness has been associated with a healthier cardiovascular profile from childhood to adulthood (Twisk et al., 2002).

The decrease of physical activity and consequently of fitness levels and the poor dietary habits even in young children (Pica, 1999), along with their association with health, underline the need for a change both for children and adults. Some interesting view points to promote physical activity in children are the following: a) sustain children's interest with a variety of fun activities (Borra et al. 2003), b) integrate physical activity into children's daily life, rather than in regimented exercise programs (Goran, Reynolds & Lindquist, 1999).

The vast majority of programs which contributed to health-related fitness enhancement were extra-curricular (i.e. Derri, Aggeloussis & Petraki, 2004; Sallis, Mckenzie, Alcaraz, Kolody, Faucette & Hovell, 1997). Specialists in physical education, and health emphasized the importance of getting children accustomed to regular and intense physical activity in the school curriculum because of the long-term impact it has on physical fitness components (i.e. Ross & Pate, 1987), on health and well-being, but also on the academic achievement of children (i.e. Bennett, 1986). It seems, however, that physical education has to become more health-related because the existing/traditional programs have little to no health orientation. The study of Barnett, van Beurden, Zask, Brooks and Dietrich (2002) revealed that children spend 36.7% of a physical education lesson in moderate to vigorous and 12.9% in vigorous activity. The highest level of moderate to vigorous activity was observed in the fitness lesson context (61.9%), followed by skill (46.4%), games (42.6%) and management/instruction (17.1%).

Contemporary school physical education aims to develop the child as a whole, integrating psychomotor, cognitive and affective learning. As fit movers students obtain and maintain personal health-related fitness standards, but also as movers

develop a fitness knowledge base which assists them to exercise independently, and to adopt active lifestyles during adulthood. Therefore, it is necessary for the physical education teacher not only to develop new and innovative strategies to assist today's children in becoming more active, skilful, healthy, and happy but also to understand that their efforts should carry over into their everyday life. Children's fitness education rather than simple training is the key to success. As children gain knowledge and value the outcomes of physical fitness, they have the tools to become independent and motivated exercisers (Gallahue & Cleland, 2003).

Prerequisite to that is the existence of written goals and objectives based on the integrated physical education model, and the collaboration with administrators, and parents to enable them see the link between physical education, everyday life and disease prevention (Kuntzleman, 1993). Moreover, the teacher has to increase class time spent on actual physical activity and specifically on vigorous activity, to improve the nutritional habits of the children, and to connect their activity in class with that out of school.

Training and physiological principles, anatomical terms, and nutrition information are fitness concepts included among others in concept learning through physical education. In many written physical education objectives (i.e. NASPE, 2004) children are educated to acquire the skills to assess their own fitness, interpret their performance, develop personal fitness programs, and be fit for a lifetime (Gallahue & Cleland, 2003).

Unfortunately, there is no sufficient evidence to support the enhancement of health-related fitness components through the physical education program in school (Simons-Morton, Taylor, Snider & Huang, 1993). The current research was conducted in an attempt to evaluate the achievement of the health-related fitness objectives of a new integrated physical education program in Greece with first grade students. It was hypothesized that students in the experimental group would have better knowledge and skill on fitness after the intervention than those in the control group.

Method

Participants

Forty-five students, ages 6 to 7 were randomly divided into two groups. Group A followed the daily lesson plans that were developed for the achievement of the objectives of the new physical education program in this grade while group B

followed the typical physical education program. All students participated in a total of sixty physical education lessons during the year (30 weeks X 2 forty-five minute lessons per week). None of the participants was engaged in any organized extra-curricular activity.

Measures

For the evaluation of the fitness components the health-related Prudential Fitnessgram test battery (Cooper Institute, 1992) was used before and after the intervention. The tests (Safrit, 1995) applied were the following:

Abdominal strength and endurance was assessed with the curl-ups test. The child laid down with knees bent and feet flat on a floor mat. The arms and hands were held straight at the sides and the palms were in contact with the floor mat. The child's fingertips touched the proximal edge of a paper strip 30 inches long and 3 inches wide. The strip was placed under the child's knees and another child stood with both feet on its ends to avoid the movement of the strip. A third child placed his hands under the head of the subject. The child being tested performed a curl up until the fingertips touched the far edge of the strip and then lowered the upper body until the head touched the assistant's hands. The child performed as many repetitions as possible to a cadence of one curl-up every 3 sec. The score of the test was the number of curl-ups performed correctly.

Trunk extensor flexibility was measured with the trunk lift (extension) test. The child laid with the face down on a floor mat, the hands under the thighs, and the toes pointed. Then, the child lifted the head and upper body as high as possible, retaining briefly this position in order to be measured. The examiner used a 12-inch long ruler to measure the distance from the floor to the chin. This distance in the nearest inch was the score of the test. The child was not encouraged to lift the chin higher than the ruler's height. Two trials were allowed and the highest score was recorded.

Hamstring flexibility was measured with the back saver sit and reach test, a variation of the standard sit-and-reach test. The measuring stick was positioned on the top of a standard sit and reach box so that the 9-inch mark was on the near edge of the box and the zero point was closest to the child. The child without shoes sat down with one leg straight out and the foot flat against the front surface of the box. The other leg was bent and the foot was placed on the floor, 2-3 inches apart from the inside of the opposite leg. Hips were parallel to the box. The child then placed one hand on the top of the other with palms down and reached as far as possible, moving the hands along the measuring stick. On the fourth trial the position was held for at least 1 sec. Then,

the child performed the test with the other leg. Two scores were recorded in the nearest inch, one for each leg.

Upper body strength and endurance was measured by the 90-degree push-ups test, an alternative to pull-ups. The child laid with the face down on a floor mat, having the standard push-up position. From that position the child straightened the arms keeping the back and the knees straight and lowered the arms at a 90-degree angle at the elbows. The child performed as many push-ups as possible, maintaining a cadence of 20 repetitions per minute. The number of correctly performed push-ups was recorded.

Cardiovascular endurance was measured with the 1/4 mile walk/run test. The child stood behind a starting line and on the examiner's signal started to run. Although walking was allowed, the child was encouraged to finish the course as quickly as possible. The score of the test was the time needed to run the 1/4 mile course in the nearest second.

Body composition was measured with the skinfold thickness of the tricep and the calf on the right side of the body. The examiner pinched the child's skinfold slightly above the midpoint of each site (triceps and calf), placed a specific caliper (Harpenden Co.) at the midpoint, and held it in position for 3 seconds. Then, the measurement was recorded. Each site was measured three times. The highest and lowest measurements were discarded and the middle score was recorded. The total score was the sum of the tricep's and calf's skinfold scores.

Cognitive understanding was assessed with a four-theme paper and pencil test which contained a total of 14 items, based on those developed by Hopple (1995) and Schiemer (2000) for these ages. Specifically, the test assesses student ability to recognize main parts of the body, parts of the human skeleton, to identify activities that enhance muscular strength/endurance, flexibility, cardiovascular endurance as well as the physiological changes during exercise. The highest score was 20 points. The test has logical validity and its reliability index is ICC= .87.

The program

The experimental group participated in a new physical education program which contained specific goals and objectives for this grade (Derri, 2007). The emphasis for each one of the six standards was placed as following: 12 lessons for Standard 1 (Enhancement of motor skills and satisfactory performance in many of them), 10 lessons for Standard 2 (Sport science knowledge acquisition and application for an effective participation in physical activity in the present and in the future), 12 lessons

for Standard 3 (Knowledge for and development of a level of health-related fitness), 8 lessons for Standard 4 (Acquisition of positive experiences from the physical activity and enhancement of self-expression and socialization), 8 lessons for Standard 5 (Comprehension, respect of individual differences, and cooperation with all), and 8 lessons for Standard 6 (Demonstration of a responsible sport and social behaviour as a result of participating in physical activity). It has to be stressed, however, that apart from the standard emphasized in each lesson, sub-objectives from other standards were simultaneously set and practiced.

The goals and objectives for the heath-related fitness Standard in this grade are depicted in Table 1. Lesson plans were created (Vassiliadou, Pahta & Derri, 2007) and implemented for the achievement of the above purpose. Each lesson plan contains a) a 5-6 min introductory part in which the teacher informs the students about the subject to be taught, and introduces a relative activity, b) a 35 min main part, which includes specific and analytically presented activities that encourage children to enjoy and try to achieve the main as well as the secondary objectives of the lesson, and c) a 5-6 min closure, which includes either a relative activity or a discussion among the students and the teacher, along with a brief student assessment in each lesson. Apart from the above information, in the lesson plans the teacher can find guidelines for class organization, ideas for lesson implementation and modification, assessment ideas, and scientific sources. The activities are game-type, developmentally appropriate and challenging. Students most of the time are encouraged to think, decide and act rather than simply follow the teacher's directions.

Although the typical physical education program in which the control group was enrolled included physical fitness in its standards, neither specific goals or objectives have been set for each grade, nor guidelines or lesson plans have been written to assist instruction and student learning. Specifically, the written goals of this program were related with balance, coordination, space and time awareness, music and movement, lateral movement, body stance, traditional dance and creativity.

Table 1. Standards, goals and objectives for health-related fitness in first grade.

Standard 3	Knowledge for and enhancement of health-related fitness	Objectives *At the end of the school year the student will*
Goal 1	***Understands the structure and the function of the body***	*Objective 1*: recognize the main body parts, the heart, the lungs, parts of the human skeleton and describes their shape and size.
Goal 2	Understands the health-related fitness components, and demonstrates adequate levels	*Objective 1*: acquire adequate levels of flexibility, strength, cardiovascular endurance and body composition.
Goal 3	Knows how to perform the activities related to health promotion and recognizes the physiological changes during exercise	*Objective 1*: recognize activities which improve muscular strength/endurance, and flexibility, know the basic cues for their performance, and demonstrate 2-3 of these activities. *Objective 2*: identify the physiological changes due to exercise (e.g., heart rate increase, hard breathing and sweating), and counts the pulse rate before, during and after physical activity.
Goal 4	Improves the physical activity level and knows the factors that promote health	*Objective 1*: participate in anaerobic exercise, and in exercise with muscular strength/endurance demands with pleasure. Participate in at least one out of school physical activity which enhances cardiovascular endurance.

Results

Table 2 depicts means and standard deviations in pre- and post-test measures on fitness components for both groups. Results showed a significant interaction between "group" and "measure" for abdominal strength/endurance ($F_{1,43}$=9.65, p<.001), upper body strength ($F_{1,43}$=6.29, p<.05), trunk extensor flexibility ($F_{1,43}$=14.62, p<.001), hamstring flexibility [(right leg) ($F_{1,43}$=19.80, p<.001), left leg ($F_{1,43}$=14.37, p<.001)], and body composition ($F_{1,43}$=15.14, p<.001). For cardiovascular endurance a significant main effect of "measure" was found ($F_{1,43}$=51.13, p<.001) meaning that all children showed similar progress. With regard to cognitive understanding of fitness elements, the group X measure interaction was significant ($F_{1,43}$=26.94, p<.001). Post hoc analysis showed that after attending the new physical education program students in group A showed a significant improvement in abdominal strength/endurance, in upper body strength, in trunk extensor and hamstring flexibility, and in cognitive understanding of fitness elements. Students in group B improved significantly abdominal strength/endurance and upper body strength, although less than those in

group A. In addition, group B exhibited significantly higher scores in body composition, and no improvement neither in trunk extensor and hamstring flexibility nor in cognitive understanding.

Table 2. Means and standard deviations in all pre- and post-treatment measures of the experimental (A) and the control group (B).

Fitness components	Group	Pre-test		Post-test	
		M	*SD*	*M*	*SD*
Abdominal strength and endurance, *repetitions*	A	6.03	4.34	14.69	6.50
	B	6.84	5.68	8.52	6.41
Upper body strength and endurance, *repetitions*	A	.84	2.01	4.61	4.71
	B	1.05	1.92	2.21	3.37
Trunk extensor flexibility, *cm*	A	21.34	4.75	31.88	5.42
	B	20.68	4.62	24.10	6.56
Hamstring flexibility (right leg), *cm*	A	16.53	7.22	23.30	6.60
	B	17.89	4.73	19.21	4.41
Hamstring flexibility (left leg), *cm*	A	16.84	7.02	22.65	7.00
	B	17.00	4.53	18.73	4.68
Cardiovascular endurance, *min*	A	3.13	.38	2.56	.30
	B	3.30	.62	2.81	.67
Body composition, *mm*	A	22.07	9.78	21.65	9.53
	B	24.26	9.89	25.15	10.82
Cognitive understanding, *grade*	A	15.50	1.81	19.92	.39
	B	15.47	2.75	16.36	3.40

Discussion

There is general agreement that children need to participate in physical activity to prevent diseases related to the sedentary lifestyle. The current research was conducted in an attempt to evaluate the achievement of the health-related fitness objectives of a new integrated physical education program in Greece with first grade students. If physical education achieves its goals, is more likely for children to become more active during the class, and to adopt healthy lifestyles in the present and in the future.

However, their participation in moderate to vigorous physical activity in the physical education lesson ranges from 10% (Simons-Morton et al., 1993) to 36% (Barnett et al., 2002). Therefore, the role of the physical education teacher is to arrange appropriately the learning environment in order to increase the activity time of the children, to motivate and educate them by providing knowledge and skill to achieve fitness objectives in each grade. One way to achieve that is to apply the integrated physical education model which focuses a) on learning to move, and b) on learning through movement (cognitively, emotionally, socially).

The findings of the current study revealed that children who were enrolled in the new integrated physical education program improved almost all the examined variables. Specifically, they improved significantly abdominal strength/endurance, upper body strength, trunk extensor and hamstring flexibility, as well as cognitive understanding of fitness components. This group also showed an improvement in body composition although non significant. It would be essential to report that children were content with this new physical education program as it encouraged and motivated even those who were less motivated, to participate and achieve goals. Parents also expressed their satisfaction about their children engagement and multifaceted learning. On the other hand, children in the control group improved significantly only abdominal strength/endurance and upper body strength although less than those in the experimental group, they showed no significant improvement in trunk and hamstring flexibility, in cognitive understanding, while they deteriorated significantly their scores in body composition. Cardiovascular endurance was improved for all children.

These results suggest an opportunity to enhance health-related fitness components in first grade through a more active physical education with clear objectives. Although the findings can not be compared directly with those of studies in which extra curricular programs were implemented, it is obvious that they verify the notion that quality physical education can promote health-related fitness. It would seem logical that educated individuals who experience playful movement from childhood through adolescence would maintain movement and exercise throughout their adulthood.

Given that physical education is likely a unique curriculum subject for the overall development of the child and that there has to be continuity in the learning process among grades, scheduling and implementing developmentally appropriate physical education programs which include specific goals and objectives for each class is a necessity. This allows children to getting fit through positive, realistic approaches, such as answers about healthful lifestyles, ideas for physical games and activities, attainable goals and motivation for getting active. Through this approach, the moving,

thinking, and feeling child will be able to proceed smoothly in the next grades, acquiring skill and knowledge for a healthy lifestyle. Also, the above information will help parents who need to work with their children in addressing the overweight prevention issue with effective tools (Borra et al., 2003). In addition to family, complementary programs in schools and in other environments could also contribute to success. Recent evidence supports the notion that 60 minutes of activity both within and outside of the physical education class can be accumulated over the course of a day, so that children can receive a number of health benefits (Corbin & Pangrazi, 1998).

In order to support the physical educator's mission with regard to health-related fitness, it is suggested a) to encourage children to be involved in 30 minutes of moderate to vigorous exercise or at least 30-60 minute of light to moderate exercise a day, b) to assess children and to provide feedback to them, to their parents, and to administrators, c) to evaluate the physical education program to verify that it will instill lifelong habits toward decreasing disease risk and ensure healthy lifestyles, and d) to collaborate with universities, community and parents (Kuntzleman, 1993). Taking steps both personally and collectively will lead us all toward a healthier future. Further research is needed to examine the long term effects of contemporary physical education on health-related fitness as well as the effect of a more collective effort on children's health.

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膳食、身體活動與慢性病

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Diet,physical activity and chronic disease

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近20年來，在經濟迅速發展，物質供應不斷豐富，人民生活水平極大提高的同時，食物消費行為和膳食結構的改變，身體活動水平的減少，煙草使用流行率的迅速增加，被動吸煙暴露越加嚴重，加之其他因素的影響，導致與膳食及生活方式相關的慢性病和健康問題已成為我國重要的公共衛生問題和社會問題。本文利用我國近年開展的有關大型調查和研究信息，對膳食、身體活動與慢性病的關係進行了分析。

1、膳食結構與慢性病的患病危險密切相關

隨著我國經濟迅速發展、城市化和對外開放，人們偏離“平衡膳食”的消費行為也日益突出。據國家營養與健康調查，在1982-2002年期間，我國城鄉居民的肉類和油脂消費的增加導致膳食的脂肪供能比快速上升，以及穀類食物消費的相應下降，同時，食鹽攝入居高不下。世界衛生組織推薦的脂肪功能比的適宜區間值是20-30%，日食鹽攝入量是6克。在我國，根據有關調查推算和分析，1995年城市居民膳食的脂肪供能比首先突破國際推薦的適宜值高限，2005年農村開始突破30%，2006年城鄉居民膳食的脂肪功能比分別在38.0%和31.0%以上。另外，過去20多年我國居民的食鹽日攝入量很可能一直維持在12-14克，高於國際推薦值一倍以上。我國的研究證實，脂肪供能比突破30%以後的持續增加已經導致我國城鄉居民超重及肥胖、血脂異常、高血壓和糖尿病的風險顯著加大。居高不下的食鹽攝入量進一步加劇了我國居民的高血壓問題。

2、身體活動與慢性病的患病危險密切相關

身體活動有著獨立於營養和飲食的額外健康效益。身體活動的減少將使能量的攝入超出消耗而失去平衡，造成身體脂肪積累，導致肥胖、糖尿病、高血壓的危險加重。在快速工業化和城市化的過程中，新型生活和生產方式導致體力活動的減少，但是，我國居民自主鍛煉身體的替代性活動並未隨之增加，因此，我國居民的身體活動不足問題日益突出。一方面，農村的家庭手工經營迅速被專業化的機械作業所取代，城市的自行車等傳統交通工具日益被汽車、摩托車和電動車所取代，越來越多的家務勞動被機器和雇工所取代。另一方面，2000年國民體質監測及體育鍛煉調查和2002年中國居民營養與健康狀況調查結果一致表明，我國20-59歲成年人經常性參加體育鍛煉的比例平均不到1/3，其中，30-49歲中

年人的鍛煉最少，只有 1/5 的人經常參加鍛煉。

3、身體活動和膳食結構對上述慢性病患病的危險性具有協同作用

對膳食營養和身體活動與慢性病關係的聯合分析表明，二者與慢性病之間存在協同作用。脂肪供能比最高且業餘靜態生活時間最長的人，各種相關慢性病的危險最高，反之亦然。隨著高能量、高脂肪、高鹽膳食和靜態生活方式的同時增加，我國居民的超重及肥胖和高血壓等慢性病的前兆問題日趨嚴重。1992 年至 2002 年 10 年間，我國居民超重及肥胖和高血壓的患病人數分別增加了 1 億和 0.7 億，其中成年人超重率、肥胖率和高血壓患病率分別上升 40.7%、97.2%和 31.0%，有近 3 億人超重及肥胖，超重率為 22.2%；有高血壓患者 1.65 億，患病率為 18.5%，其中，18-59 歲的勞動年齡人口中有 1.1 億高血壓患者。並且，2002 年我國 30 歲及以上婦女的超重率已達 30%，年均上升 1.6 個百分點，這一增速是全球最快的。另外，2000 年全國學生體質健康調查結果也表明，與 1985 年相比，男女學生的超重和肥胖檢出率均成倍上升。

小結：絕大部分的慢性病都有可行的預防和干預措施，控制的關鍵在於要將其全面轉換為公共衛生的整體行動。世界衛生組織於 2004 年 5 月通過並頒佈了《飲食、身體活動與健康全球戰略》。過去 10 年，我國政府、專業防治機構及學術團體在慢性病預防和控制方面也開展了大量工作，制定了相關慢性病的預防控制指南及規劃等，取得了許多成功的經驗，為我國慢性病防治工作奠定了良好堅實的基礎。針對慢性病控制，衛生部組織制定並頒佈實施了多項針對慢性病和危險因素的指南，指導人們的行為，包括：中國居民膳食指南及平衡膳食寶塔、中國成人超重和肥胖症預防控制指南，中國高血壓防治指南，中國糖尿病防治指南，中國腦血管病防治指南。但是，慢性病控制是一場長期的戰役，應進一步引起政府和有關部門的高度重視，也需要社會各界的廣泛參與和大力支持，更需要從每個人做起，培養和堅持平衡膳食和充足身體活動等健康的生活方式。

中日體質聯合研究項目—兒童青少年的生活條件研究

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Chino-Japanese Cooperative study on living condition of children and youth

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Abstract

PURPOSE:

The purpose of this study is to compare in living condition of children and youth between Japan and China.

METHODS:

The subjects participated in this study were 7 through 19 years old who belonged to typical primary, junior and senior high and college, and abut 150 boys and 150 girls participated in for each age in each country, respectively. Japanese subject were extracted from those who lived in Tokyo or near Tokyo, and the Chinese from those living in Shanghai. Thus, the total sample sizes were 2237 boys and 2146 girls for the Japanese, and 2099 boys and 2099 girls for the Chinese. Grand total was 8582.

They responded to questionnaire which has 15 following living condition items were interviewed: sleeping hours, time spent to go to school, time for study, time for sports, and etc. Survey was actually worked out in September 2005 through April 2006 in both countries.

The data were exchanged among Japan and China, and the mean the standard deviation were computed for each item, each age, and each sex, respectively. Then, the differences of means between both countries were tested statistically by t-test for each age and each sex, respectively.

RASULTS:

1. In daily living condition items, significant differences were found between both countries.

(1) The Chinese got up and went to bed significantly earlier and also slept longer than the Japanese.

(2) The Chinese studied longer at home than the Japanese but more percentage of children and youth went to the side-class for in Japan than China.
(3) Higher percentage of children and youth participated in physical exercises and/or sports and spent much more time for them in Japan than in China.
(4) The Japanese used computer and watching TV longer than the Chinese.

2. Compare to 1986 data, about Japanese difference were found in those items.
(1) The 1986 students studied longer than 2005 students. Older students showed a marked declining tendency.
(2) The 2006 female students watched TV longer than 2005 students.
(3) There were no differences between 1986 and 2005 about time of waking up and going to bed.
(4) The percentage of participated in physical exercises and sports were declined in 2005.
There were marked declining tendency in junior high school and high school students.

DISCUSSION:

Significant differences were found between both countries in 2005. But the differences of living conditions between both countries, especially urban area, got narrow in this twenty years.. It was confirmed that, including further analysis of the data obtained in this study, more studies of this type should be done hereafter.

1995-2005 年山東省城市兒童少年生長發育變化趨勢研究

遲榮國

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Research on the change trend of growth and development in urban children in Shandong province from 1995 to 2005

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摘要

運用山東省 1995 年、2000 年、2005 年學生體質測試數據，探討近十年山東省城市兒童少年生長發育變化規律。結果顯示：經過十年的時間，山東省城市兒童少年生長發育突增期有提前的趨勢，其中，女性的提前更加明顯。建議全社會對兒童少年生長發育的變化趨勢給予更多的關注。

[關鍵詞]：兒童少年；生長發育；變化趨勢

Abstract

Objective

This paper to explore the change rule of growth and development of urban children in Shandong province using the data which come from Shandong student physiques test in 1995,2000 and 2005. It suggested that the whole society should give children more attention in diet, sleeping, exercise and psychology when the growth and development suddenly increasing period of children advanced.

[Key words]：children; growth and development; the change trend

Methods

Calculate and use statistic methods to conduct each age stage's height average and standard deviation.

Results

The change characteristic of the young boy's growth

Analysis of dynamic trend of surveying outcome during lately ten years, the sensitive

period was moved up from 13 or 14 years old to 12 or 13 years old between 1995 and 2000.But this change was not significant. In the article, all the objects were grouped by a year. When they were grouped by half of year there was a trend of moving up from 2000 to 2005.(testing outcome of swimmers in Shan Dong province) The three surveying outcomes during ten years(from 1995 to 2005) indicated that the peak of growth and development of the young boys from cities in Shan Dong province was moved up from 13 or 14 years old to 12 or 13 years old and the sensitive period was moved up by one year. The outcomes also indicated that the age of the highest stature was 17 years old averagely, which showed the change of slow development process was not significant following the fast development.

The change characteristic of the young girl's growth

The analysis of three times monitors result of dynamic change trend in this ten years showed that: in five years from 1995 to 2000, the sensitive age of rapidest height growth has advanced from between 11 and 12 years to between 10 and 11years ,in five years it advance one year. In 2000 to 2005, the sensitive period of rapidest height growth has advanced from between 10 and 11years to between 9 and 10 years, in five years it advanced one year too. The three times monitors result of dynamic change in this ten years showed that: the advanced scope of the sensitive stage of rapidest height growth in Shandong urban female children was two years. The three times monitors result also dedicate that: the age stage of the highest value of height was 16 years in 1995, 17 years in 2000, 15 years in 2005,this showed that the age from the late period of growth to premature has a advanced trend

Conclusion and suggestion

The research result of this thesis shows that: the suddenly increasing period of the growth of the urban children's height has advanced obviously in recent ten years in our country ,of which the women's advanced scope was higher than men's, this relate to the society question of all of the families and primary schools and middle schools，this should be concerned by the whole society. The external circumstance to children in their sensitive period of the height's rapid growth has a directly influence to the ultimate height in further .Children in this age stage need parents, teachers and all of the society's cherish not only in physiology but also in psychology. Of which, the nutrition construction, the sleeping time and the physical exercises are special important in this age stage.

1、前言

身高增長規律是評價兒童少年從生長到發育再到成熟的主要手段之一，兒童少年的生長發育規律受遺傳、環境、飲食、睡眠等多方面的影響。近十年是我國國民經濟快速增長的時期，兒童少年的生活水平、營養結構、睡眠時間、教育和社會環境都發生了巨大的變化，從 1995 年、2000 年、2005 年三次大規模的城市學生體質測試結果的動態變化規律分析，男女在生長發育的突增期和完成生長發育的結束期都有不同程度的變化，調查的人群是教育部規定的代表山東省總體水平的濟南市、煙臺市、濟寧市的城市兒童少年。通過結果分析，找出生長發育的變化規律，為社會提供有價值的參考數據，同時也可以為競技體育不同項目的運動員選材提供有效的基礎信息。

2、研究對象與方法

2.1 研究對象

1995 年、2000 年、2005 年以教育部牽頭，山東省教育廳組織測試的濟南市、煙臺市、濟寧市的城市 7－18 歲男女兒童青少年，按整群隨機抽樣原則，一歲一分組，樣本量每一年齡段男女分別不少於 150 人，測試器材和測試方法均按教育部統一規定執行。

2.2 研究方法

按國家規定的測試方法採集 7－18 歲城市學生的身高指標，運用統計學方法篩選出有效數據，計算出每一個年齡段的身高平均數和標準差，以每一個年齡段身高均值方差分析結果為依據，找出身高突增期和發育成熟期的動態變化規律。

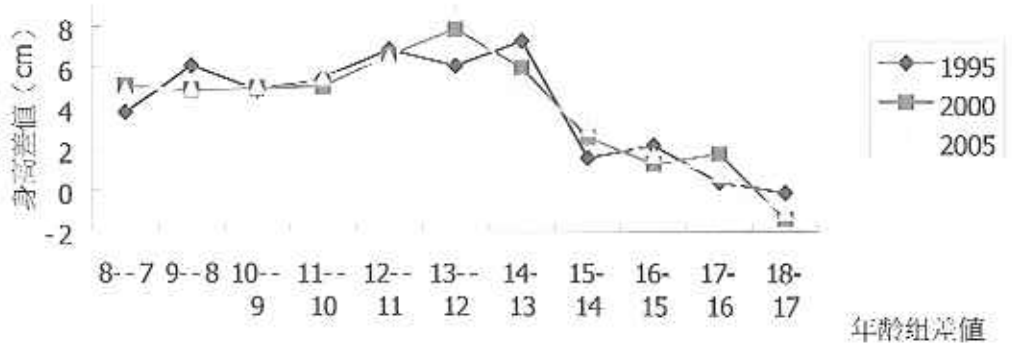
3、結果及分析

人體從出生到長大成人都要經過生長、發育和成熟三個階段，所謂生長是指細胞的繁殖、增大及細胞間質的增加，表現為身體各部分、各器官、各組織的大小和重量的增長；發育是指身體各系統、器官和組織在功能方面的改變，即質的變化；成熟是指生長和發育過程達到一個比較完善的階段，標誌著個體發育在形態、生理、心理上全面達到成人階段。詳細瞭解兒童少年的身高突增期即青春發育的最高峰期有助於社會和家長在營養結構、睡眠時間、環境因素等多方面給予特殊撫養和教育。通過追蹤測試和成年人國民體質監測結果顯示，一旦在青春發育期失去良好的發育環境，所造成的危害將終生難以彌補。根據 2000 年國民體質監測結果，我國在 1960—1962 年自然災害處於青春發育期的人群平均身高低於上下幾個年齡段，所以通過兒童少年身高突增期年齡變化確定青春發育期的變化對孩子的生長發育具有重要的意義。

山東省兒童少年不同年代城市男子身高均值、標準差

年齡（歲）	1995年			2000年			2005年		
	N	X	S	N	X	S	N	X	S
7	150	127.9	5.0	158	128.7	4.7	177	129.9	5.7
8	150	131.7	6.1	176	133.8	5.7	184	134.8	5.3
9	150	137.8	5.6	166	138.7	6.6	170	139.8	5.6
10	150	142.7	6.2	211	143.7	6.9	200	144.9	6.6
11	150	148.2	6.6	198	148.8	6.9	179	150.4	7.1
12	150	155.1	8.1	157	155.4	7.9	176	156.9	8.3
13	150	161.2	8.1	172	163.3	7.8	180	165.6	7.4
14	150	168.5	6.8	155	169.3	6.6	170	170.9	7.4
15	150	170.1	5.9	182	171.9	6.2	181	173.9	5.7
16	150	172.3	5.4	179	173.2	6.1	189	175.6	5.8
17	150	172.7	5.8	175	175.0	5.2	196	176.4	5.8
18	150	172.6	6.0	176	173.6	5.9	166	175.3	6.1

图1 青少年不同年代身高均值差值的比较（男）



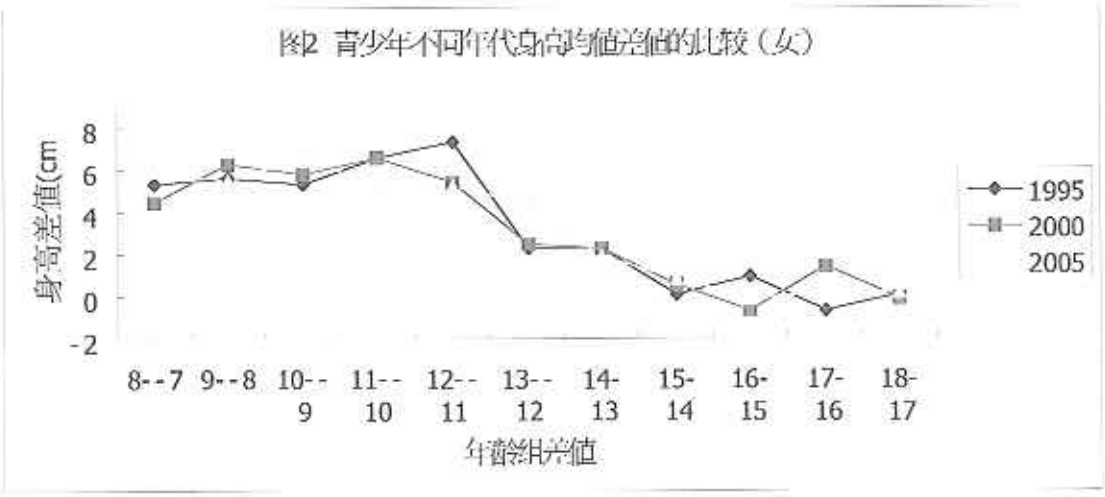
3.1 少年男性生長發育的變化特徵

從城市男性身高均值表和年齡段之間身高差的動態圖分析，1995年身高增長幅度最大的年齡段是的13—14歲之間，從11—12歲年齡段開始進入快速增長期，整個快速增長過程是從11—12歲年齡段開始到13—14歲年齡段，在13—14歲年齡段之間達到最大增幅，在後面的年齡段裏，身高增幅明顯下降；2000年和2005年年齡段之間身高差的動態變化趨勢基本一致，從10—11歲年齡段開始進入快速增長期，整個快速增長過程是從10—11歲年齡段開始到12—13歲年

齡段，在 12—13 歲年齡段之間達到最大增幅，在後面的年齡段裏，身高增幅明顯下降。用統計學對三個年代所有年齡段身高均值作差異性檢驗，具有非常顯著性差異，這種非常顯著性的差異主要是由快速增長的年齡段也就是青春發育期過程最大增幅的貢獻所帶來的結果。從身高均值表上可以看出，1995 年、2000 年、2005 身高最高值的年齡段均是 17 歲，分別是 172.7 釐米、175.0 釐米、176.4 釐米。

山東省兒童少年不同年代城市女子身高均值、標準差

年齡		1995			2000			2005	
（歲）	N	X	S	N	X	S	N	X	S
7	150	125.3	5.3	178	127.0	5.6	168	127.6	5.5
8	150	130.7	5.9	186	131.5	5.5	175	133.5	5.7
9	150	136.4	6.6	166	137.8	5.9	182	139.1	6.7
10	150	141.8	7.3	197	143.6	6.6	198	145.8	7.1
11	150	148.4	7.0	202	150.2	7.5	185	151.1	7.0
12	150	155.8	5.6	156	155.7	6.4	170	156.4	6.1
13	150	158.1	5.9	175	158.2	6.2	177	160.8	5.7
14	150	160.4	5.3	159	160.5	5.0	157	162.7	5.2
15	150	160.5	5.4	189	161.1	5.7	169	163.6	5.6
16	150	161.5	4.9	164	160.4	5.9	181	163.5	5.5
17	150	160.8	4.7	158	161.8	5.8	181	163.3	5.5
18	150	160.9	4.7	175	161.7	5.4	156	163.1	5.5



3.2 少年女性生長發育的變化特徵

從城市女性身高均值表和年齡段之間身高差的動態圖分析，1995 年身高增

長幅度最大的年齡段是的 11—12 歲之間，從 9—10 歲年齡段開始進入快速增長期，整個快速增長過程是從 9—10 歲年齡段開始到 11—12 歲，在 11—12 歲年齡段之間達到最大增幅，在後面的年齡段裏，身高增幅明顯下降；2000 年身高增長幅度最大的年齡段是 10—11 歲之間，整個快速增長過程是從 8—9 歲年齡段開始到 10—11 歲，但整個快速增長過程不是很明顯，在 10—11 歲年齡段之間達到最大增幅，在後面的年齡段裏，身高增幅明顯下降；2005 年身高增長幅度最大的年齡段是 9—10 歲之間，整個快速增長過程是從 7—8 歲年齡段開始到 9—10 歲，整個快速增長過程也不是很明顯，在 9—10 歲年齡段之間達到最大增幅，在後面的年齡段裏，身高增幅明顯下降；用統計學對三個年代所有年齡段身高均值作差異性檢驗，具有非常顯著性差異，這種非常顯著性的差異主要是由快速增長的年齡段也就是青春發育期過程最大增幅的貢獻所帶來的結果。從身高均值表上可以看出，1995 年身高最高值的年齡段是 16 歲，2000 年身高最高值的年齡段是 17 歲，2005 年身高最高值的年齡段是 15 歲，身高分別是 161.5 釐米、161.8 釐米、163.6 釐米。

4、結論及建議

4.1 少年男性生長發育規律的變化

山東省城市兒童少年男性 1995 年身高增長幅度最大的年齡段是 13 歲和 14 歲之間，這一年齡段是身高自然增長最快速的敏感期，2000 年身高增長幅度最大的年齡段是 12 歲和 13 歲之間，2005 年身高增長幅度最大的年齡段也是 12 歲和 13 歲之間。從近十年三次監測結果的動態變化趨勢分析，1995 年和 2000 年五年的時間身高快速增長的敏感期從 13 歲和 14 歲之間提前到了 12 歲和 13 歲之間，這種變化五年的時間提前了一年，2000 年-2005 年五年的時間身高快速增長的敏感期沒有明顯變化，本文所涉及的所有測試都是一歲一分組，年齡跨度較大，按半歲一分組小樣本測試結果顯示，2005 年比 2000 年也有提前的趨(山東省游泳運動員選材測試結果)。十年三次監測結果動態變化表明，山東省城市兒童少年男性從 1995 年到 2005 年十年時間，身高發育最高峰期由 1995 年的 13-14 歲年齡段提前到了 12-13 歲年齡段，身高發育最快速敏感期年齡段提前的幅度是一年。三次監測結果還顯示，發育成熟時的身高最高值年齡段均是 17 歲，說明快速增長期之後的緩慢增長過程沒有明顯變化，發育後期到成熟的年齡沒有提前。

4.2 少年女性生長發育規律的變化

山東省城市兒童少年女性 1995 年身高增長幅度最大的年齡段是 11 歲和 12 歲之間，這一年齡段是女性身高自然增長最快速的敏感期，2000 年身高增長幅度最大的年齡段是 10 歲和 11 歲之間，2005 年身高增長幅度最大的年齡段是 9 歲和 10 歲之間。從近十年三次監測結果的動態變化趨勢分析，1995 年和 2000 年五年的時間身高快速增長的敏感期從 11 歲和 12 歲之間提前到了 10 歲和 11 歲之間，五年的時間提前了一年，2000 年和 2005 年五年的時間身高快速增長的敏

感期從 10 歲和 11 歲之間提前到了 9 歲和 10 歲之間，五年的時間又提前了一年。通過十年三次監測結果動態變化表明，山東省城市兒童少年女性從 1995 年到 2005 年十年時間，身高發育最高峰期由 1995 年 11-12 歲年齡段提前到了 2005 年 9-10 歲年齡段，身高發育最快速敏感期年齡段提前的幅度是二年。三次監測結果還顯示，發育成熟身高最高值的年齡段分別是 1995 年 16 歲，2000 年 17 歲，2005 年 15 歲，說明快速增長期之後的緩慢增長過程三個年代有一定的變化，發育後期到成熟的年齡有提前的趨勢。

4.3 建議

本文的研究結果表明，我國城市兒童少年身高發育的快速增長期年齡在近十年的時間已經有明顯的提前，其中，女性的提前幅度大於男性，這是關係到所有家庭和所有中小學校的社會問題，應該引起全社會的關注。兒童少年身高快速增長敏感期的所有外部環境對將來最終身高都有直接的影響，這一年齡段的孩子無論在生理上還是在心理上都需要家長、老師和全社會的愛護，其中，此年齡段的營養結構、睡眠時間和體育鍛煉尤為重要。

營養結構：此年齡段的發育需要充足的蛋白質補充，在蛋白質保障的前提下要注意飲食的多樣化，蔬菜、水果要大量攝入，以保證體內維生素和礦物質的需求，儘量少吃一些油炸食品。

睡眠時間：生長激素是人體生長發育的動力來源，而生長激素主要是在睡眠過程中分泌，身高快速增長期的提前要求家長和學校在身高的快速增長期要讓孩子保證充足的睡眠，一般在此過程每天的睡眠時間不能少於九個小時。

體育鍛煉：此年齡段的孩子正處於小學高年級和初中低年級時期，我國現行教育體制決定了在校學生體育鍛煉時間嚴重不足，中小學應該瞭解孩子的身高發育期提前，在這一時期多給孩子一些體育鍛煉時間，但此年齡段孩子的內臟器官、肌肉系統、關節韌帶、骨質結構還沒有發育成熟，所以運動強度不宜過大。

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上海市民體質發展的社會經濟因素探討

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Discussion of social and economic factors on physical fitness development of Shanghai residents

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1 前言

根據國家體育總局《第二次國民體質監測公報》公佈的結果，國民體質水平呈“東高西低”狀態，上海市國民體質綜合指數位居全國首位。這與我國社會經濟發展“東高西低”的趨勢相吻合，與上海多年以來持續、穩定、健康的社會經濟發展分不開。

國民體質綜合指數是以2000年為100計算，2005年的數值越大表明體質水平越高。上海市國民體質綜合指數位居全國首位，說明第二次（2005年）國民體質監測與第一次（2000年）相比較，上海市相對全國其他省市而言，上海市民體質水平提高的幅度居全國首位。那麼2000年至2004年期間，上海市民體質發展的社會經濟因素是如何直接或間接地影響上海市民的體質發展，這將是本文所要探討的問題。

由於國家國民體質監測中心制定的“2005年國民體質監測工作手冊”中明文規定，第二次國民體質監測中“社會經濟”統計數據以2004年數據為統計源，因此，本文重點探討2005年以前上海市社會經濟發展狀況。

進入21世紀以後，上海以建設“四個中心”（國際經濟、金融、貿易和航運中心）為目標，進一步擴大內外開放，加快科技和體制創新，使國民經濟保持快速健康發展的良好態勢，經濟增長的內在動力不斷增強。1992年以來，上海經濟已連續13年保持兩位數增長。2004年實現上海市生產總值7450.27億元，按可比價格計算，比上年增長13.6%，增幅為1996年以來的最高水平；比1990年增長3.9倍，平均每年增長12%。

“十五”期間（2001~2005），上海市綜合經濟實力再上新臺階，城市建設和管理取得新突破，城市管理和環境保護力度進一步加大，改革開放取得新進展，社會事業取得新進步。加大了社會事業投入，集中建設了一大批功能性項目和公益性設施，教育、文化、衛生等領域的改革不斷推進，人民生活水平有了新的提高。

已有研究表明，社會經濟因素是決定一個人健康問題的類型和程度的主要因素，而“體質”是體育界研究健康問題的獨特視角，同時體質又是健康的物質基

礎。社會經濟的發展直接或間接地影響市民體質，市民體質又反作用於社會經濟的發展。關注和促進健康、增強體質的一個重要方式是深入研究當代社會中可能影響健康水平、體質強弱的重要因素。本文試圖通過研究上海市民體質與上海社會經濟發展的關係，探討上海市民體質與地區經濟發展之間的聯繫，分析上海市民體質發展的社會經濟因素，從而為政府有關決策提供參考。

2 社會經濟與健康、體質

2.1 社會經濟與健康

“經濟”一詞在中國古代就有“經國濟民”之意。它既是人類社會發展的主體形式，又是人類賴以生存和保持健康的基本條件，社會經濟並非經濟水平的代名詞，這還包括人類衣、食、住、行及社會、醫療保障等諸方面。社會經濟的發展是提高人類健康水平的根本保證，社會經濟的發展也必須以人類健康水平的提高為先決條件。

在“可行能力”視角中，健康被認為是一種具有重要內在價值的人類“可行能力”（Capability），以及一種非常基本的自由；在另一方面，健康又對整個社會的發展有著強大的工具性價值。基於此，聯合國發展署（UNDP）在其每年發行的《人類發展報告》中始終將健康明確為人類發展的首要目的之一（UNDP，1990-）。健康水平應該成為評價社會發展的一個重要維度，促進健康應該為整個社會普遍關注並追求。

社會經濟發展從根本上說是生產力發展的結果。生產力諸要素中最重要的要素是具有一定體力、智力和勞動技能的人。人的健康與智慧對生產力的發展起著決定性的作用。人群健康水平的提高有利於延長勞動力的工作時間，創造更多的社會財富，促進社會經濟的發展。

另一方面，社會經濟發展在促進人類健康水平提高的同時，也給人類帶來了新的健康問題，主要表現在環境污染和破壞、生活方式的改變、大量合成化學物質進入人類生活、心理健康問題、社會流動人口增加等等。人類健康受到極大威脅，健康成為世界各國關注的焦點。

2.2 社會經濟與體質

社會發展以人為本，人的素質決定未來社會的發展，而人的素質又離不開人的體質。“體質”是體育界研究健康問題的獨特視角。有關體質的概念，不同國家有不同的理解。中國則在 1982 年的泰安會議中對體質作了明確的界定，認為體質是指人體的品質，它是在遺傳性與獲得性基礎上所表現出來的形態結構、生理功能、心理因素、身體素質、運動能力等方面綜合的、相對穩定的特徵。

影響體質的因素包括先天因素和後天環境。先天因素、遺傳性狀對體質的發展提供了可能性，而體質強弱的現實性，則有賴於後天環境、營養和身體鍛煉等。後天是指人從出生到死亡之前的生命歷程。後天因素是人出生之後賴以生存的各

種因素的總和。後天因素可分為機體內在因素和外界環境因素兩方面。機體內在因素包括性別、年齡、心理因素，外界因素實際上就是環境因素。環境指自然環境和社會環境。環境與健康的問題是生命科學中的重大課題，已經受到全球的關注。人從胚胎到生命終結之前，始終生活在一定的自然環境和社會環境之中：自然環境是與社會環境相對而言的，它涉及生活環境、生產環境和食物鏈環境等一切客觀環境。社會環境則涉及政治、經濟、文化等環境要素。由於現代工業的興起和發展，環境污染日益嚴重，它正在威脅著人類的健康，影響著居民的體質。各國都很重視這一問題，並尋求解決的辦法，以圖保護人的體質，提高人類健康水平。此外，不同的社會制度，及其經濟發展水平、人民生活條件、衛生設施等的不同，也是影響人的體質的重要因素。

根據國家體育總局《第二次國民體質監測公報》公佈的結果，國民體質水平呈“東高西低”的狀態，這與我國社會經濟發展“東高西低”的趨勢相吻合，這進一步論證社會經濟發展狀況影響市民體質的強弱。

2.3 健康與體質

研究表明，體質與健康的關係表現為：

體質是健康的物質基礎，健康是體質的外在表現；

體質是一種“特質”，健康是一種“狀態”；

體質是人體維持良好健康狀態的能力。

體質作為衡量健康的重要內容，日益成為熱點，許多國家都想通過重視體質研究來解決國民健康問題，通過提高國民體質為社會經濟發展提供或儲備充足的、高品質的勞動力資源。

3 上海社會經濟發展對市民體質的影響

上海社會經濟發展對市民體質的影響表現在兩個方面：其一，社會經濟發展對市民體質的促進作用；其二，社會經濟發展給市民體質帶來新的問題。

3.1 上海社會經濟發展對市民體質的促進作用

影響體質的主要因素有遺傳、環境和體育鍛煉。市民體質不僅受生物學因素、自然環境和生態因素的影響，而且與社會經濟因素息息相關，在社會環境這個總體中，包括物質生活水平、營養狀況、文化教育和醫療衛生條件等。上海社會經濟發展對市民體質的促進作用，主要通過改善影響體質的後天環境條件和促使廣大市民參加體育鍛煉來實現。

在經濟方面，上海是已頗具國際影響力的發展中城市。近十年來，上海經濟飛速發展，經濟實力日益增強，人均 GDP 在 2003 年 3 月就超過 4500 美元。在綜合實力方面，上海雖然遠不及東京、紐約、倫敦，但在亞洲，它的經濟總量已接近 1990 年的新加坡和香港。在 2004 年度全球城市綜合競爭力排行榜中，上海在 53 個城市中排名第 25 位，名列亞洲第 6 位，在宏觀經濟環境指數、公共機關

指數、城市經濟增長競爭力指數等指標上，上海都給世界留下了一個生機勃勃的城市形象。

從文化特點來看，海派文化和現代文化相得益彰。上海的文化一方面傳統文化底蘊深厚，另一方面，又比中國其他城市更接受西方文明的影響。在西方文化輸入後，形成集雅俗共賞、東西交匯，傳統與現代為一身的海派文化。同時，現代社會使上海人尋找新的價值觀，創建現代及傳統為一體的生活方式，創建新型的中西方文化結合的綜合體。

從發展方向看，上海將建成世界經濟、金融、貿易和航運四大中心。上海是中國與世界溝通的視窗，代表全中國的發展速度和方向。上海的城市定位是發展為全球性、綜合性的國際化都市。

上海這個頗具國際影響力的發展中城市，依靠城市形象吸引大量的旅遊者，依靠城市實力為市民體育鍛煉營造良好的社會氛圍。

3.1.1 廣大市民積極參加體育健身活動

第二次上海市體質監測結果顯示：有 39.3%的成年人和老年人每週至少參加 1 次體育鍛煉。也就是說，每 10 個上海人就有 4 個是經常健身的。在這些人群裏，青年人一般每週鍛煉 1 至 2 次，而老年人每週鍛煉 5 次以上的超過了 40%，超過 50%的老年鍛煉者已持續鍛煉了 5 年以上。上海市各類人群體質綜合指數分別為：男性人群 104.76，女性人群 107.30，城鎮人群 107.21，鄉村人群 104.62，除男性人群指數列全國第二位外，其他分類指數均列全國首位。

體育運動是增強市民體質重要而又基本的手段，早已在世界範圍內達成共識。進行適當的身體活動而帶來的軀體、心理、社會等方面的有益效果，成為推廣和促進體育鍛煉的理由。中國體育史上最早的運動會，於光緒二十四年（1898 年）春天在南洋公學（上海交大前身）舉行，比舊中國第一屆全運會還早了整整 10 年。這次運動會提出了“強國強身、崇尚文化、注重體育、健康向上”的體育思想，這種體育思想貫穿了上海一個多世紀。上海體育作為中國現代體育的登錄口，其城市體育文化的積沉，在上海群眾體育發展歷程中所起的作用不可磨滅。

近 10 年來，1995 年全民健身計畫綱要頒佈後，伴隨上海社會經濟快速發展，市政府確定了“十五”期間上海建設成為亞洲一流體育中心城市的目標，著力促進上海健康城市的建設。2003 年 6 月，上海市政府通過建設健康城市的“三年行動計畫”，成為我國第一個提出建設健康城市的特大型城市。為配合“健康城市”活動，上海市體育局提出在上海推行“人人運動計畫”，切實提高人群健康水平。

作為向世界級城市邁進的城市，2003 年上海以建設“健康城市”為動力，制定《全民健身服務保障體系建設綱要》，組織“人人運動示範”活動；2004 年上海全面開展全民健身“人人運動競賽”活動；2005 年實施全民健身“體質監測服務”工程。在建設“健康城市”的框架下，上海市構築日常、雙休日、長假三個體育生活圈，居民出門 500 米左右有普及型健身設施，市民利用交通工具 15 分鐘可到達綜合性體育設施，30 分鐘可到達環城林帶或體育主題公園等自然體育設施。

運動設施、團隊組織、體質監測、健身指導、體育活動、信息諮詢等六大體育生活服務網路滿足市民日益增長的體育和健康需求。

“人人運動”計畫在這幾年深入人心。由於在全市範圍大力宣導“體育生活化”的新理念，體育鍛煉的門檻被大大降低。生活化體育項目與群眾的日常生活和居住環境貼近，讓群眾更方便地參與。2005 年上海市國民體質監測顯示，步行、騎自行車等鍛煉項目普遍被市民採用，在鍛煉人群中分別占到了 47.6%和 30.3%。

上海社區現有健身團隊 8000 多個，開展 100 多個健身內容，這些社會區健身團隊的存在，在一定程度上促進了成年人的體質。

健身環境的改善也是上海市民參與體育健身的重要外部條件。2000 年~2004 年上海市群眾體育健身活動場所情況如下。

表 1 群眾體育健身活動場所情況（2000 年~2004 年）

指　　標	2000 年	2001 年	2002 年	2003 年	2004 年
社區體育健身設施數（個）	1354	1827	2318	2895	3436
健身點	1271	1701	2161	2724	3232
社區健身場地面積（萬平方米）	65	109.5	148.7	185.7	225.7

經過近 10 年建設，上海的人均體育場地面積已達 1.88 平方米，社區健身苑點已覆蓋了市區 100%的居委、郊區 80%的村委。上海市從 2000 年起以青少年為主要對象、以體育彩票公益金為主要投入的社區公共運動場地建設，到 2010 年將達 300 處，各類球場近 900 片。

體彩公益金為全民健身活動的開展提供了強大的資金支援，也收到良好的社會效益，體育彩票已經成為全民健身蓬勃興起的強力支柱。近幾年來，按照“全面建設小康社會構建和諧社會”的總體要求，上海市體育局以實施全民健身為切入點，利用體彩公益金全面開展群眾性體育活動。建社區健身苑點、各類球場、市民體質監測站以及上海市民體質研究中心，2004 年底，全市有市級體質研究中心 1 個、體質監測指導中心 1 個，社區市民健康體質監測站服務中心 1 個，有區級市民體質監測指導中心 7 個、市民健康體質監測站 80 個，為廣大市民的健身活動提供了極大的便利。彩票發展與經濟發展同步，經濟發展為彩票的發展提供了廣闊的空間，體彩的發行使更多的人開始關注體育、參與體育、享受體育。

上海市堅持開展豐富多彩的體育健身活動，激發廣大市民的鍛煉熱情。2004 年舉辦運動會（比賽）和全民健身活動情況見表 2。

表 2 舉辦運動會（比賽）和全民健身活動情況（2004）

地區	運動會和比賽次數（次）	其中舉辦全民健身活動情況			其中	參加活動
		綜合運動會	單項比賽	活動次數（次）	千人以上	人次（萬人）
總計	1528	38	1490	4474	518	700.00
市直屬	252	4	248	288	96	315.00
區縣級	638	17	621	2093	211	192.50

市民鍛煉，政府買單。針對體育場地設施開放可能帶來的居民人身安全問題，上海市通過兩種方式購買商業保險，解除相關單位的後顧之憂。一是由街道（鄉鎮）為參加文體活動人員辦理商業保險；二是由承擔活動管理和指導的管理組織，用會費收入為會員集體購買意外傷害保險。此外，體育設施向居民開放後，會有一定的物耗損失，也會產生一定的管理費用，政府將給予補貼。比如，上海市楊浦區殷行街道為市民健身提供便捷、安全的鍛煉場所。組織市民到公園、學校健身，為市民購買保險，減少公園和學校管理部門對市民鍛煉時發生人生意外的擔憂。

從上海的城市要求出發，樹立"大體育觀"，不斷提高創新能力，辦好大型國際賽事，例如網球"大師杯賽"、F1 賽等，既擴大國際間體育交流的空間和層面，又受到廣大市民的廣泛歡迎，並通過特殊的組織方式，使廣大市民不僅踴躍觀看，而且能積極參與到賽事中來，豐富閒暇生活、陶冶文明情操和推動體育運動發展。

上海市政府加強體質研究，推進全民健身科學化進程，並通過網路推動全民健身的蓬勃開展。在市政府的領導和支持下，上海市民體質研究中心研製《上海市民體質簡易測評指南》和《上海市民體育健身項目鍛煉指南》，並在上海市體育局網站發佈，最近在社會推廣後引起積極反響。老人們請子女幫助輸入數據，瞭解體質情況；年輕人在父輩的帶動下，從鍛煉指南中挑選適合自己的項目，自覺地加入健身行列。市民實現了即時體質測評，即時瞭解個體當前的體質水平，即時選擇適宜的體育健身項目，即時接受科學健身指導，即時評估健身鍛煉的效果。市民們感到科學健身的門檻降低了，科學鍛煉的方式更加直觀，體育健身的效果更加明顯。

在上海社會經濟發展的大好形勢下，上海全民健身工作從廣泛發動、全面推進，進入到了理念創新、注重機制、科學推動和信息服務階段，上海市政府將為廣大市民的體育健身活動提供更多更好的服務，廣大市民的體育健身活動讓城市更有活力。

3.1.2 更多市民享受到良好的醫療衛生保健服務

20 世紀中期以後，疾病譜和死亡譜的新變化，使第一次防治疾病的衛生革

命向著第二次保障健康的衛生革命發展，從疾病主導走向健康主導，從病人為核心走向普通人群為核心，從立足醫院到向社區發展，從疾病診治到預防與健康促進，由醫院轉向全社會。衛生保健服務設施是衛生保健服務的基礎，是保證人民群眾健康的重要條件，衛生保健服務利用是指衛生資源為人民群眾預防疾病和促進健康的客觀實際需要量而使用的程度及其合理性，它受衛生資源和客觀實際需要量雙方所制約，而利用的程度（利用率）也是影響體質健康的重要因素。隨著上海市社會經濟發展，上海市衛生保健服務設施的品質和服務能力迅速提高，衛生資源更加充足，客觀實際需要量日益增加，從使提高了市民健康水平。

體質是健康的物質基礎，健康是體質的外在表現。社會經濟決定著與體質健康密切相關的衣、食、住、行和醫療衛生保健服務系統。社會經濟水平與平均期望壽命、死亡率密切相關，發達國家與發達中國家死亡率的差別是 1:5，全球每年出生的低體重新生兒約有 2200 萬，95%出生於發展中國家。我國 1982 年的第 3 次全國人口普查結果之一的平均期望壽命，上海是全國最高，為 73.13 歲，貴州省最低，為 62.01 歲，反映了當時兩地的社會經濟與衛生條件較明顯的差別。上海市嬰兒死亡率從 1990 年的 10.95‰下降至 2004 年 3.78‰，新生兒死亡率從 7.17‰降到 2.50‰，孕產婦死亡率從 23.76/10 萬降到 10.79/10 萬。上海市今年出臺意見，51 萬大學生醫療保障全覆蓋。

從上海市第二次國民體質監測公報來看，上海市的市、郊人群體質水平存在一定差異，市區市民體質水平總體高於郊區。造成市、郊人群體質水平差異的原因有遺傳、營養、體育鍛煉、工作及生活環境，包括市、郊地區的醫療衛生保健服務水平。比如，由於對疾病的治療不及時，導致機體功能受到影響，進而使身體機能、身體素質下降。郊區人群體質將是今後應該關注的問題。

世界衛生組織官員表示，如果不採取措施，在未來十年中，全球將有 3.88 億人死於慢性病，其中約 8 千萬發生在中國。在此期間，僅心臟病、中風和糖尿病就將給中國帶來至少 5500 億美元的經濟損失。上海市社區衛生服務點的主要職責之一就是慢性病干預，在全市大範圍內實施運動干預。

更多市民在享受到良好的醫療衛生保健服務的過程中，提高健康水平，增強市民體質。

3.1.3 市民整體文化教育水平不斷提高

有研究表明，受教育程度越高，越能形成良好的體育健身意識。1997 年成年人體質監測結果顯示，在 5 個職業群中，農民體質最差，科教人員和管理人員的體質狀況比其他人群的體質狀況要好一些。該研究指出，這是由於生活環境和教育環境的差別，使城鄉居民的健身意識和體育健身知識有較大差別。科教人員和管理人員受教育的程度最高，所接受的體育健身知識和技能的訓練最多，體育健身意識最強。日益增強的體育健身意識，使市民生活方式更加科學。2000 年國民體質研究報告顯示，我國參加體育鍛煉的人群中，70%以上的人將“增強體質”作為參加體育健身活動的目的。這表明人們已充分認識到體育健身在促進身

體健康中的積極作用，同時也表明人們嚮往健康生活方式的願望。此外，2005年上海市體質監測數據的統計分析結果也證實，受教育程度高的人群，其體質狀況好於同年齡同性別中的較低受教育程度者。

3.1.4 市民消費水平和消費結構正在發生變化

隨著經濟的發展，人們的消費水平和結構正在發生變化，恩格爾係數不斷降低，並且用於體育的消費有所提高。許勇剛對廣東省成年人體育消費與體質狀況關係的研究中表明，發達地區在體育消費上的支出增加較多，並且發達地區成年人的體質優於發展地區成年人的體質。恩格爾係數是世界上比較通用的衡量國民生活品質的一個指標。它是指用於購買食品的支出占整個支出的比例。通用的標準為：恩格爾係數高於60%為貧困，60%~50%之間為溫飽，50%~40%為小康，40%~30%為富裕，30%以下為最富裕。將這一標準與2005年上海市統計年鑒中不同年份的恩格爾係數相結合，衡量上海市居民生活水平狀況（表3）。

表3 上海市不同年份的恩格爾係數變化趨勢

年份		1980年~1998年	1999年~2001年	2002年~2004年	
恩格爾係數	60%	60%~50%	50%~40%	40%~30%	30%以下
生活水平	貧困	溫飽	小康	富裕	最富裕

上表顯示，1980年到1998年期間上海市居民生活水平處在溫飽狀況，接下來上海市用了僅3年的時間就由“小康”奔向“富裕”，2002年至今（2004年恩格爾係數為36.4）正處富裕水平，表明上海市民的生活水平不斷提升。

上海市2000~2004年城市居民家庭人均消費支出情況見下表。

表4 上海市2000~2004年城市居民家庭人均消費支出（單位：元）

年份	消費支出	食品	衣著	家庭設備用品及服務	醫療保健	交通和通信	教育文化娛樂服務	居住	雜項商品和服務
2000	8868	3947	567	683	501	759	1287	794	330
2001	9336	4056	577	579	558	958	1422	796	390
2002	10464	4120	613	653	734	1115	1668	1189	372
2003	11040	4102	751	792	603	1259	1834	1280	419
2004	12631	4593	797	780	762	1703	2195	1327	474

進一步統計分析發現，表 4 中食品、衣著和家庭設備用品及服務 3 種消費占消費支出中的比例，表現出逐漸下降的趨勢，而醫療保健、交通和通信、教育文化娛樂服務和居住 4 種種消費占消費支出中的比例，表現出逐漸上升的趨勢。這說明市民消費結構正在發生變化，漸漸向著醫療保健、交通和通信、教育文化娛樂服務和居住方面傾斜。據報導，去年有 800 多萬市民自費參加游泳健身活動，體現出市民體育消費的良好勢頭。

3.1.5 市民生活和健身環境得到改善

環境保護治理和城市綠化建設讓市民生活和健身環境得到改善。以重點領域、重點項目和重點地區為突破口，加快推進第二輪環保三年行動計畫，城市整體環境品質穩步改善。2004 年，全市用於環保的資金投入 225.37 億元，相當於上海市生產總值的比例達到 3.03%。水環境品質進一步改善。用水質標識指數衡量，全年中心城區重點整治河道污染比上年下降 17%。全市新增汙水處理能力超過 300 萬噸/日。蘇州河綜合治理二期工程全面開工，整治中心河道 75 條（段）共 98 公里，敷設截汙管道 56.69 公里。大氣環境顯著改善。全市區域降塵量比上年下降 25%。全年空氣品質指數達到二級和優於二級的天數占全年天數的 85%。2000~2004 年上海市環保投入見表 5。

表 5 上海市 2000~2004 年環保投入（單位：億元）

年份	環境保護投資	城市環境基礎設施建設投資	環境保護投資相當於 GDP(%)
2000	141.91		3.10
2001	152.93		3.10
2002	162.39	126.99	3.00
2003	191.53	144.05	3.10
2004	225.40	166.90	3.03

上海綠化建設以實施科技興綠、科技興林為抓手，大力推進城市生態景觀走廊建設，城市生態環境明顯改善。至 2004 年末，上海城市園林綠地面積 2.67 萬公頃，其中，公共綠地面積 1.1 萬公頃。城市人均公共綠地面積達到 10 平方米，綠化覆蓋率達到 36%。近年來相繼建成了延安中路綠地、太平橋綠地、黃興公園、大寧綠地、徐家匯公園、廣場公園三期、徐家匯公園三期、延虹綠地、世博林綠地等近 250 塊 3000 平方米以上的大型開放式生態景觀綠地，使市民的生活環境和健身環境得到顯著改善。

3.2 上海社會經濟發展給市民體質帶來新的問題

按照國際經驗，人均 GDP 由 1000 美元增至 3000 美元的階段，是居民膳食結構發生迅速變化的時期，也是諸多營養不良性疾病的高發階段。此外，生活、工作壓力日益加大，室內外環境污染加重以及各種不良生活方式的存在，使居民

的體質健康狀況受到很大損害。

3.2.1 上海市民生活方式發生改變

美國的統計數據表明，在 1998 年，前三位的致死病因是心臟疾患、癌症和中風。中國國家統計局 1993 年發佈消息，在造成國民死亡的病因中，癌症和心、腦血管疾病已由原來的第 5、第 6 位上升至第 1、第 2 位。2004 年上海市前十位疾病死亡原因和構成也表現出類似的趨勢（見表 6）。通過大量的研究，人們對於當前這些嚴重危害健康疾病已經取得了較為廣泛和深入的認識，雖然病因各不相同，但人們卻發現它們有一個重要的共同之處，那就是這些疾病的發生往往與人的生活方式密切相關。

表 6 上海市前十位疾病死亡原因和構成（2004）

死亡原因	死亡率 (1/10 萬)	占死亡總數 (%)
迴圈系病	235.64	32.90
腫　　瘤	217.63	30.40
呼吸系病	88.6	12.40
損傷和中毒	45.73	6.40
內分泌免疫代謝病	28.58	4.00
消化系病	18.84	2.60
傳染病及寄生蟲病	13.15	1.80
精神系病	9.45	1.30
泌尿生殖系病	8.01	1.10
神經系病	6.79	1.00

表中排列前兩位占到 63.3%的死亡原因是迴圈系病和腫瘤，他們是正在嚴重威脅市民生命的疾病，這些疾病又被稱為“生活方式疾病”（lifestyle diseasc）。根據我國 19 個城鄉點的調查，在心臟病、惡性腫瘤和腦血管的致病因素中，生活方式與行為因素均占第一位。人類致死原因也越來越多地與生活方式聯繫在一起。

交通工具的便捷，電子電腦的普及應用，高層樓房的不斷湧現等等，使上海市民的靜態生活越來越多，市民形態指標發生顯著變化。

體重指數（MBI）是當今國內外廣泛應用的參照個體的身高來評價其體重是否合理的簡便易行的指標。對大多數成人來說，BMI 指數的過度增高或降低與不良健康後果之間的聯繫十分明顯。BMI＝體重（kg）/ 身高^2（m）。以世界衛生組織（WIIO）BMI 評價標準對 2005 年上海市體質監測成年人、老年人 BMI 進行評價，結果顯示：體重過低（BMI＜18.5）男女分別為 4%和 6.4%，體重正常（BMI=18.5~24.9）為 62%~70%，超重（BMI=25~29.9）為 31.5%和 21.6%，

肥胖（BMI≥30）為2.8%和2.6%。與2000年相比，上海市男性體型已發生一定變化，BMI上升，人群中體重超重、肥胖檢出率上升，老年女性超重、肥胖檢出率上升。

腰臀比（腰圍/臀圍）是判斷肥胖類型的有效指標之一，在一定程度上反映身體脂肪的分佈特徵，腰臀比在男子大於0.95，在女子大於0.86被認為是腹部脂肪過多，並可能存在較大的不利於健康的危險性。2005年上海市體質監測結果顯示，成年男女的腰臀比指數皆有所上升，成年男性顯示出腰腹部脂肪堆積更趨明顯，成年女性顯示出有腹部脂肪堆積過多的傾向。當體內脂肪合成增加，脂肪組織就趨向於在身體的某些部位累積。關於身體脂肪分佈規律對健康的影響已有很多研究，如肥胖術語的使用：男性型肥胖（身體外形呈蘋果樣變化）是用來描述脂肪在軀幹和腹部過度堆積的術語；而脂肪主要堆積在臀部和大腿部位則被稱為女性型肥胖（身體外形呈梨子樣變化）。按照其對健康的不利影響，男性型肥胖最大的危險是與心血管疾患密切有關。

上述表明，生活方式的改變會引起死因排序的變化以及身體形態的變化，除此之外，也會給市民身體機能和身體素質帶來不良影響。

3.2.2 上海市民生活壓力不斷增大

大量人口遷入和外來流動人口增長迅速，上海人口總量規模不斷擴大。上海開埠時人口不足10萬，至1949年解放時，上海人口為520萬，2005年11月1日零時，上海市常住人口為1778萬人，與本市第五次人口普查相比，增加了137萬人，增長8.35%；年平均增加27.4萬人，年平均增長1.62%；其中，外來常住人口為438萬人，占24.63%。隨著信息化社會的到來，社會競爭日趨激烈，上海市民在生活中腦力勞動等靜態生活方式的比例增加，體力勞動成分相對減少，精神和心理方面承受更多的壓力。在上海市，無論上海人、新上海人、流動人口，無論男女、老少，各行各業的絕大多數市民較其他城市承受著更大的工作壓力、生活壓力（如，住房壓力）。

壓力指一個人處於陌生的、受威脅、受挫折或衝突的情境時，心理上、情緒上、生理上所產生的反應。不愉快或有害身心的壓力，會影響健康與生理表現。長處劣壓的情境會導致冠心病、高血壓、飲食失調、潰瘍、糖尿病、氣喘、精神沮喪、偏頭痛、睡眠障礙、慢性疲勞、甚至某些癌症的產生。國際高血壓學會（International Society of Hypertension, ISH）2006年指出全球有972000,000高血壓患者（占成年人群26.4%），其中工業化國家居民僅占1/3（333000,000），發展中國家占2/3（629000,000）。

2005年上海市體質監測結果顯示，參與體育鍛煉者的年齡分析，鍛煉者比例呈現“U”型趨勢，其中男性的穀底在40~50歲，女性則在35~40歲，在這兩個年齡階段，不鍛煉者分別占到61%和65%。其原因主要是沒有時間。誠然，研究提示“沒有時間”只是自己編造的理由，但為什麼會有這樣的現象出現呢？本文推論，工作壓力、生活壓力的增大，使成年人將重心放在應對工作壓力、生

活壓力上，而無暇顧及自己的身體，造成體質透支，甚至出現英年早逝。

4 上海市民體質強弱反作用於社會經濟的發展

在健康與經濟的關係中，傳統模式體現在，通過更好的營養、更易取得清潔用水、更好的衛生設施、更多更好的衛生保健和更好的心理社會資源等，來實現收益到健康的過程。新的健康與經濟關係模式表現出收益到健康、健康到收益的雙向性。通過提高生產率、教育、投資和人口紅利（人口轉變的潛在後果）等，來實現健康向收益的轉化。

促進經濟增長的關鍵機制是人口轉變，伴隨人口轉變的兩個重要變化，一是人口增長率的變化，二是年齡結構的變化。2005 年末，上海市常住人口數 1778 萬人，常住人口密度為每平方公里 2804 人，該市常住人口自然增長率為 0.96‰，這是自 1994 年以來首次出現"正增長"，正增長利於減速老齡化。目前該市人口老齡化程度不斷上升，全市戶籍人口平均預期壽命 80.13 歲。

2002 年，聯合國將老齡人口的標準提高到 65 歲，根據這一界定所做的人口學標準，65 歲以上人口占人口總數 7%以上為老齡社會。而上海早在 1979 年，65 歲以上的老人已占 7.2%，成為中國最早步入老齡社會的城市。5 個市民中有 1 個老人。

駛入經濟快車道的上海，已經取得了舉世矚目的成就，但這座城市的建設者卻在"一天天變老"：20 多年的老齡化積累，13 年的人口負增長，使得上海老齡化速度正逐年飆升。

關於人口結構的調研，上海 60 歲以上的老年人口已經達到 266 萬，48 歲至 52 歲的人口最多，處於最高峰，這就意味著，在未來幾年，上海老齡化程度還將進一步加深，與此同時，0　14 歲和 25 歲至 35 歲的人口在整個人口結構中卻處於低谷。對此，在穩定低生育水平的前提下，應合理有序地引入外省市勞動力。這樣的策略，能在一定程度上解決人口結構中的數量需要。

以人口結構為依據，可將人類分為需要供養的老年人口、工作年齡人口和需要撫養的幼年（青少兒）人口。上海市工作年齡人口的體質健康狀況直接影響上海社會經濟的發展。人力資源是眾多資源中最不可替代的資源。勞動者的體質狀況是人力資源中極為重要的組成部分之一，也是經濟發展的重要基礎之一。若勞動者的傷病增多、醫療開支增加、勞動力資源尤其是那些需要經過複雜培訓的勞動力資源缺乏，將給經濟發展帶來不利影響，甚至制約經濟的發展。而在需要供養的老年人口和需要撫養的幼年（青少兒）人口中，體質的強弱除直接給社會帶來良性或不良影響外，還會給工作年齡人口帶來支援或負擔，進而影響社會經濟的發展。

5 上海市民體質與社會經濟關係的實證舉例

實證舉例題目：上海 20~59 歲女性體重指數與體育消費承受能力的關係分析

5.1 研究目的

體重指數（BMI）是一個參照個體的身高來評價其體重是否合理的簡便易行指標。對大多數成年人來說，BMI 指數的增高與不良健康後果之間的聯繫十分明顯。上海市 20~59 歲女性居民 2000 年和 2005 年體質監測結果顯示，兩次 BMI 基本一致，顯示出 2005 年沒有上升的較好狀態。

2005 年上海市體質監測結果還顯示，上海市成年男性因體重增加，BMI 也隨之上升。除 50 歲年齡組外，2005 年各年齡組 BMI 均值皆大於 2000 年，平均上升了 0.5，而且具有顯著性差異。成年男性超重、肥胖檢出率分別為 36.8%和 8.9%，均比 2000 年上升 2.9 個百分點，增長幅度分別高於全國平均增長水平的 1.6 和 1.2 個百分點。

2005 年上海市體質監測結果又顯示，上海市成年女性每月體育消費承受能力低於男性。由此可以看到，每月體育消費承受能力偏低的女性與每月體育消費承受能力偏高的男性相比，女性 BMI 維持在較好的穩定狀態，男性 BMI 呈現明顯上升的狀態。那麼，BMI 與體育消費承受能力之間的關係究竟如何？本文以 BMI 維持在較好穩定狀態的女性為研究對象，試圖瞭解上海市成年女性 BMI 與體育消費承受能力之間關係的現狀，探討上海市 20~59 歲女性居民中，不同體重指數的人群與其每月體育消費承受能力之間的關係，為研究居民體育消費與體重指數及健康之間的關係提供參考，為政府有關女子體育健身及女性體育消費的決策提供依據。

5.2 研究方法

上海市在第二次國民體質監測工作中，除完成國家統一的基本信息問詢、問卷調查和檢測指標測試之外，還對 20~59 歲受試者做了增補問卷的調查，其中包括居民每月體育消費承受能力的調查。在這次調查中，"每月體育消費承受能力"主要指用於購買體育器材、服裝、體育比賽門票、體育報刊，繳納活動經費，健身等。選項共包括 8 個：（1）不考慮支出；（2）少於 10 元；（3）10~30 元；（4）30~50 元；（5）50~100 元；（6）100~300 元；（7）300 元以上；（8）拒絕回答。填寫時向受試者解釋（3）~（7）選項中經費範圍包括下限值，即 10~30 元是指"10 元到不足 30 元"。共有 23326 人參加調查，23226 人對此作了填答，有效率為 99.57%。本文統計分析時，剔除填寫"拒絕回答"（第 8 選項）者共計 668 人。實際研究對象為 22558 人，其中女性為 11530 人。本文主要通過 Excel 及 SPSS 統計套裝軟體對調查數據進行統計處理。

5.3 研究結果

研究結果包括性別特徵、女性年齡特徵、體重指數分類評價中的體育消費結構

特徵三方面。

5.3.1 性別特徵

在女性中，隨著每月體育消費承受能力的增加，體重指數呈現下降趨勢，男性表現為相對平穩及略有上升的趨向。

男性和女性體重指數與每月體育消費承受能力的關係曲線具有不同的走向，其深層原因有待進一步研究，但女性的這一特徵提示人們，較低的體育消費承受能力與較高的體重指數有關。產生這種現象的原因可能是由於在影響體育消費承受能力的諸多因素中，收入情況是極為重要的一個方面，而收入與 BMI 之間存在一定的關聯。2006 年《美國預防醫學雜誌》報導，低收入婦女居住的環境和社會生態特徵與體重指數和患心血管疾病的危險呈正相關。研究發現，體重指數和心血管疾病發病危險與犯罪行為呈正相關，但與臨近的富裕程度呈負相關。當然，影響體育消費承受能力的其他因素，如對健身、健康的認知以及體育鍛煉行為等因素，也會影響體重指數。

5.3.2 年齡特徵

55~59 歲女性中，所有體育消費承受能力者的體重指數均值皆大於 24.0（超重）。50~54 歲女性中，體重指數均值超過 23.9（超重）者集中在"不考慮支出"和"100 元以上"中，分別占該人群總數的 57.1%和 3.2%。

除最低和最高兩個年齡組外，25~54 歲女性表現出相似的趨勢，即各年齡組的最大體重指數均值出現在"不考慮支出"或"10 元以下"體育消費承受者中。

綜觀本研究結果中的"基本特徵"和"年齡特徵"來看，"不考慮支出"或"10 元以下"的女性體育消費承受者應當引起關注。儘管整體而言，女性消費受年齡影響很大。20 歲以前的女性憧憬成熟，20 多歲的女性期待愛情和成功，30 多歲的女性要留住青春，40 歲以後的女性生活的重心在家庭與子女，周而復始，一代又一代。但在本研究中，就各年齡組而言，上海女性體育消費承受能力與體重指數的關係，呈現出不同的年齡特徵。其共同點在於"零消費"或"低消費"者應引起重視。因此，在指導女子體育健身和女性體育消費時，應提出有針對性的方案，尤其是女性中較低體育消費承受能力者。這樣才能既使女性增強體質、促進健康，又使商家獲得源源不斷的客戶和超額的回報，並兼顧弱勢群體，讓我們的社會更加和諧。

5.3.3 體重指數分類評價中的體育消費承受能力的結構特徵

依據上海市 2005 年國民體質監測報告中使用的體重指數評價標準，對 20~59 歲上海女性體重指數進行分類評價後，再計算不同體重指數分類中的體育消費承受能力百分比，從而得到體重指數分類評價中的體育消費承受能力結構特徵。

結果顯示，"偏瘦"和"正常"者的每月體育消費承受能力表現出相似的結構特徵，在"不考慮支出"中分別占各人群總數的 45.4%和 46.8%。

而"超重"和"肥胖"者的"不考慮支出"所占百分比明顯上升，分別占各人群總數的56.6%和63.7%。"超重"、"肥胖"者中，"不考慮支出"和"10元以下"者占"超重總人數"、"肥胖總人數"的68.6%和76.3%。

這進一步提示，"零消費"和"低消費"者與較高的BMI有關聯。

5.4 實證舉例小結

本文中的實證舉例是有關體質與經濟關係的探討，該研究提示，上海市20~59歲女性居民的體重指數與體育消費承受能力有關聯。

6 全文結論

6.1 上海社會經濟發展，通過使更多市民參加體育鍛煉、享受良好醫療衛生保健服務、提高文化教育水平、改變消費水平和消費結構以及環境保護治理和城市綠化建設等途徑，增強市民體質。

6.2 上海社會經濟發展，通過生活方式的改變及生活壓力的增大，會給市民體質帶來等新的問題。

6.3 上海市民中具有較強體質者對社會經濟發展有促進作用。

6.4 上海市民中具有較弱體質者對社會經濟發展有阻礙作用。

6.5 上海市20~59歲女性居民的體重指數與體育消費承受能力有關聯。

參考文獻：(略)

青春期骨骼、肌肉和脂肪的研究

Beyond bone – muscle and fat: a longitudinal study of puberty growth

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Understanding how bone, muscle and fat develop through childhood, puberty and adolescence is vital if we are to build up effective ways of protecting and enhancing children's health. Especially, osteoporosis and obesity, two disorders of body composition, are growing in prevalence. In this presentation, the results from a longitudinal study of puberty growth will be used to explain 1) what are the determinants of the trait position (eg. bone & lean mass) in normal distribution? 2) Whether variances in bone, muscle and fat traits originate in early life? 3) Do the traits track so that the relative position of individual's trait in the population distribution is unchanged?

The study subjects consisted of 258 10-13-year old girls at the baseline. They were followed on average of 6.5 years and their results reflect the entire follow-up period (n=217). Using random coefficients modeling in the MIXED procedure of SAS we found that subjects gained about 0.49 kg/month of body weight before menarche and 0.17 kg/month after menarche. The weight gain was portioned into 124 g/mo of fat and 355 g/mo of lean mass before menarche; and 108 g/mo of fat mass and 59 g/mo of lean mass after menarche, respectively. The bone mass accrual was accompanied by lean tissue mass accrual until 3y after menarche. Thereafter, growth of lean mass ceased, but fat mass continued to increase (0.96 kg/y) and was the main contributor of body weight change (1.12 kg/y) near peak height (164.5 cm at 48mo and 164.8 cm at 84mo follow-up).

Further, we found that the position of an individual's body height, bone mass and lean mass traits relative to others is established before puberty, if not in utero and remains in its percentile till early adulthood. However, the different traits (eg. size and mass) do not necessarily occupy the same percentile. On the other hand, the proportion of fat

mass remained constant before menarche but increased after menarche.

In summary, the changes in bone and lean mass are synchronized during rapid growth period in early puberty. In late puberty lean mass ceases to increase, and the fat accumulation is associated with bone accrual. However, a small increase in lean mass has higher impact than that of fat on bone mass accural during postpuberty to early adulthood. The accumulation of fat mass is subject to environmental factor. These findings provide evidence and have implications for prevention of fat mass gain in those children who are at risk of overweight or obesity.

城市老年人的肌力變化及其對 ADL 的影響

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Changes in muscle strength and its effects on ADL in the elderly living in cities

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摘要

通過調查測試上海、南京、蕪湖三城市 1,226 名 60-97 歲老年人的肌力與日常生活活動能力（ADL），瞭解城市老年人肌力變化特點，分析肌力變化與 ADL 的關係。以最大握力和反復坐起試驗（RCS）評價上下肢肌力，通過問卷調查瞭解 ADL，使用 ROC 曲線法確定生活自理能力明顯下降時的肌力臨界值。結果表明：城市老年人肌力隨年齡增長而下降，男女性分別在 80 歲和 75 歲之後下降幅度增大；肌力下降將給老年人 ADL 帶來不良影響；以 RCS 時間=9.0 秒表示肌力下降的臨界值較為合理，此時靈敏度為 0.88，特異度為 0.60。為了防止老年人肌力下降影響老年人日常生活活動能力，需要有針對性地在老年人體育鍛煉中增加力量練習的比重。

關鍵詞：城市老年人；握力；反復坐起試驗；ADL

Abstract

The purpose of this study was to investigate changes in muscle strength and its effects on activity of daily living (ADL) in the elderly dwelling in three Chinese cities (Shanghai, Nanjing and Wuhu). A total of 1,226 community-dwellers aged 60 to 97 was included in this study, and grip strength and Repeated Chair Stands (RCS) test were conducted, and ADL was investigated by a questionnaire. A Receiver Operating Characteristic curve was used to identify the cut off point of the muscle strength decline at which the elderly lost independence. The results of this study showed that the muscle strength declined with increased age, and those declines decreased the

ability to perform daily tasks in the elderly. Given a cut off point of 9.0 seconds in RCS test, sensitivity was 0.88 and specificity was 0.60. The present study suggested that muscle strength training programs were needed for the elderly at risk of losing independence.

Key Words: The elderly; Grip strength; Repeated Chair Stands; ADL

肌力水平明顯下降是人類進入老年期後所出現的重要生理特徵之一。由於人類的大多數日常生活活動（ADL）都是建立在一定的肌力水平上的，因此肌力下降會給老年人的 ADL 帶來不良的影響，甚至引發跌倒等意外傷害事故。而這類事故又將導致老年人長期臥床不起，最終喪失生活自理能力[1]。隨著我國人口高齡化進程的加速，使用合理有效的方法評價老年人的身體素質、制定有針對性的措施以改善或延緩老年人肌力下降的進程已成為體育學、社會學、醫學等領域中的重要研究課題之一。但是從我國的現狀來看，有關老年人肌力的流行病學研究所涉及的年齡跨度較小，尤其是探討肌力下降對 ADL 影響的研究較為少見。為此，本研究以大樣本城市老年人為對象、通過研究老年人肌力下降的現狀及其對老年人 ADL 的影響，為今後進一步開展老年人體質研究，制定相關對策提供可參考的數據。

1. 研究對象與方法

1.1 研究對象

研究對象為居住于上海、南京、蕪湖三個城市市區的居民，年齡跨度為 60 至 97 歲，有效樣本為 1,226 人。研究對象的年齡及性別分佈見表 1。

表 1　測試對象分佈狀況

年齡（歲）	60-64	65-69	70-74	75-79	80-84	85-	合計
男	113	99	123	72	64	29	500
女	135	169	186	100	104	32	726

1.2 研究方法

在社區測試時採用非概率抽樣法募集測試對象，為減少選擇性偏倚，採用贈送紀念品的方式鼓勵更多老年人參加調查和測試。使用問卷調查法瞭解老年人的一般狀況及有關 ADL 的若干指標。上肢肌力評價指標為最大握力，下肢肌力評價使用反復坐起試驗（Repeated Chair Stands，RCS）。最大握力的測試參照國民體質監測的方法；[2] CRS 測試受試者從椅子上反復站立坐下 5 次的時間，CRS

時間較長表示下肢肌力較差。[3]

統計分析時，使用 Pearson 相關分析探討年齡與肌力測試指標的關係；使用卡方檢驗分析兩組分類變數百分率的差異；運用受試者工作特徵（ROC）曲線法求得引起生活自理能力顯著下降的肌力臨界值（cut off point）。所有統計學分析均採用 SPSS11.0 統計軟體，統計學顯著性水平定為 $p < 0.05$。

2. 研究結果

2.1 城市老年人肌力下降的特點

圖 1，2 所示內容為不同年齡段的肌力測定值。由圖可見老年人的上下肢肌力均隨年齡增長而下降。握力與年齡的相關係數為：男性：-0.508（$p<0.01$），女性：-0.487（$p < 0.01$）；RCS 時間與年齡的相關係數為：男性：0.435（$p < 0.01$），女性：0.499（$p < 0.01$）。在握力這一指標上，存在較大的性別差異，但是這一差異有隨著年齡增長縮小的趨勢；但 RCS 這一指標則與握力變化呈現相反的趨勢，即在較年輕時性別差異不太明顯，在 80 歲以後女性的 RCS 時間高於男性。當以前一年齡段測定值為基準計算肌力指標的變化率時發現，男性在 80-84 歲這一年齡段內握力下降了 16.5%，而在此之前的下降率不超過 8%；RCS 時間延長了 33%，而在此之前最大為延長 17%。當計算每個年齡段變化的絕對值時，也可以看到同樣的結果。另一方面，女性則在 75 歲左右出現了類似的特徵。由此可見 80 歲和 75 歲可能是老年男女肌力急劇下降的一個重要時期。

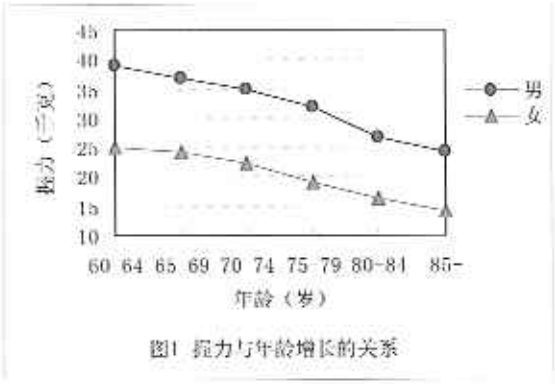

图1 握力与年龄增长的关系

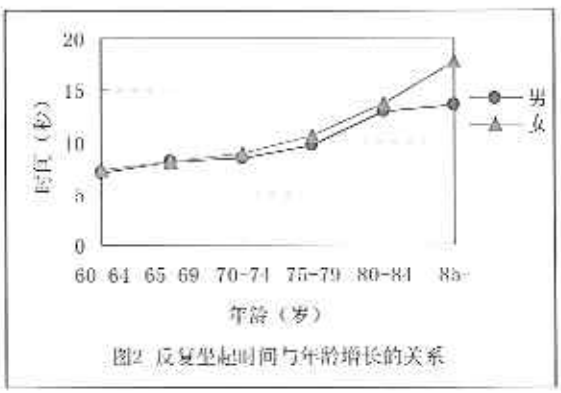

图2 反复坐起时间与年龄增长的关系

2.2 城市老年人的肌力與 ADL

本文作者在進行問卷調查時詢問了生活自理能力和完成部分需要一定體力的日常活動的情況，並將肌力測試指標按大小順序分成 4 個相等的組，觀察了不同肌力水平對 ADL 的影響。表 2，3 數據顯示：在肌力水平較低的老年人中生活不能完全自理者所占比率明顯增多、完成需要一定體力的日常活動能力顯著下降。此外，評價下肢肌力的 RCS 時間這一指標與以下肢肌肉活動為中心的日常活動關係更為密切。

表 2　老年人的握力與 ADL

ADL \ 握力百分位	~ P_{25}	P_{26} ~ P_{50}	P_{51} ~ P_{75}	P_{76} ~
生活不能完全自理	51.1	46.3	28.2**	28.0**
不能連續行走 1 小時	35.7	30.4	17.6**	13.4**
爬樓梯時感到吃力	40.9	40.2	33.4	30.1
下樓梯時需抓住扶手	47.5	31.5*	15.5**	13.8**
上公共汽車的臺階時感到吃力	50.0	45.8	28.2**	22.3**
打開新飲料瓶等瓶蓋時感到吃力	35.7	30.4	17.6**	13.4**

注：表中數字為回答者占各百分位區間的百分數。

*：與 "~P_{25}" 組相比時，$p < 0.05$;　**:與 "~P_{25}" 組相比時，$p < 0.01$。

表 3　老年人的 RCS 時間與 ADL

ADL \ 反復坐起時間百分位	~ P_{25}	P_{26} ~ P_{50}	P_{51} ~ P_{75}	P_{76} ~
生活不能完全自理	59.2	31.7**	24.6**	19.9**
不能連續行走 1 小時	50.0	27.7**	14.1**	9.7**
爬樓梯時感到吃力	47.6	40.2	34.3*	35.1*
下樓梯時需抓住扶手	50.2	32.6**	19.5**	6.9**
上公共汽車的臺階時感到吃力	64.2	38.3**	29.9**	19.5**
打開飲料瓶等瓶蓋時感到吃力	37.1	20.4**	16.9**	12.3**

注：表中數字為回答者占各百分位區間的百分數。

*：與 "~ P_{25}" 組相比時，$p < 0.05$；　**:與 "~ P_{25}" 組相比時，$p < 0.01$。

2.3 導致生活自理能力顯著下降的肌力指標臨界值

為了比較握力與 RCS 對生活自理能力顯著下降的鑒別能力，首先分別計算了兩項指標的 ROC 曲線。由圖 3 可見，RCS 曲線下方的面積大於握力曲線，因此使用 RCS 的 ROC 曲線更為有效。當 RCS 為 9.0 秒時，其靈敏度為 0.879，特異度為 59.4，因此可以看作鑒別生活自理能力顯著下降的臨界值。

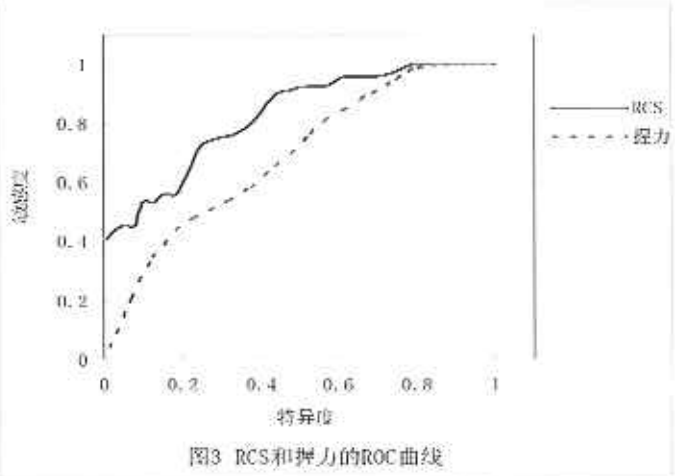

图3 RCS和握力的ROC曲线

3. 分析與討論

3.1 城市老年人的肌力評價與變化特點

本研究以上海、南京、蕪湖三個不同人口規模、經濟水平的城市老年人為對象進行了研究，獲得了較大的樣本數據。所測的最大握力值接近于國民體質同齡人的數值，因此具有一定的代表性。握力不僅是反映上肢肌力的重要指標，而且與其他部位肌肉也有著較高的相關關係,[4] 因此在進行有關體質的流行病學研究時常作為重要測試指標。[2]在評價下肢肌力時，最理想的方法是直接測定下肢的肌力，如膝關節伸展的力量等。但是，由於這些方法均需要相應的儀器，因此不太適宜於大樣本的流行病學研究。國外研究已證明從椅子上站起坐下與下肢肌力有著密切的關係,[5] 下肢肌力下降時完成站起坐下動作的時間明顯延長，反復坐起試驗的信度也得到了驗證。[6] 加之，以反復坐起作為測試指標不僅方便易行、成本低廉，而且受試者容易掌握測試要領，易於接受。因此，最近十多年來已成為國外流行病學研究中最常使用的肌力評價指標之一。[7,8]

Frederiksen 等人[9]以 8342 名 46-102 歲丹麥人為對象進行了握力變化的研究。他們發現，從 46 歲到 85 歲的這一年齡區間裏，握力下降與年齡增長之間大致呈線性關係，85 歲以後出現急劇下降的現象。但是從 Frederiksen 等人提供的圖表可以看出男女性分別在 80 歲和 75 歲有一個較為明顯的下降。本研究結果顯示：我國城市老年男子在 80 歲以後會出現一個肌力顯著下降的過程，而老年女子則出現得較早，在 75 歲左右。這可能提示我國老年人在這些年齡區間內肌力的下降更為明顯。因此在指導老年人進行體育鍛煉時有必要針對不同年齡人群選擇不同的鍛煉方法，尤其是對於後期老年人應當增加肌力鍛煉的比率，以避免其肌力的進一步下降。

3.2 城市老年人的肌力變化與 ADL

隨著全球人口老齡化進程的加速和後期老年人數量的不斷增加，從日常生活活動能力的角度研究老年人的體質已成為國外研究的一個熱門課題。由於肌力是完成日常生活活動的基礎，因此許多學者將研究重點放在了肌力與 ADL 的關係上。Al Snih 等[10]對墨西哥裔美國老年人進行了 7 年的前瞻性研究，其結果表明：握力水平較低者在未來的 7 年中 ADL 指數將明顯下降。Rolland Y 等人[7]從對居住在法國巴黎、里昂等幾個大城市 75 歲以上女性進行了 5 次反復坐起試驗、步行速度和工具性日常生活活動能力關係的研究。其研究結果也證實了下肢肌力下降將嚴重影響老年人的日常生活活動能力。由於本研究對象包括了部分前期老年人，因此選擇了部分需要一定體力的日常生活活動作為調查內容，以觀察老年人在肌力下降過程中對 ADL 的影響。本研究結果也表明上下肢肌力下降將嚴重影響老年人日常活動的能力。在調查的項目中"爬樓梯"與"爬公共汽車臺階"是兩個較相似的動作，但是公共汽車臺階平均高度在 35 釐米左右，而樓梯的高度僅為 20 釐米。因此完成"爬公共汽車臺階"更加要求具有較高下肢肌力水平。值得注意的是，儘管握力與其他部位的肌力有著一定的相關關係，但是老年人下肢肌力

的下降率超過上肢，並且老年人日常生活中大多數活動都與下肢活動有關，因此在研究肌力與 ADL 的關係時使用能充分反映下肢肌力的指標似乎更為合理。

3.3 ROC 曲線與肌力下降臨界值

ROC 曲線是是臨床流行病學中用於評價診斷性試驗優劣並確定臨界值的一種方法，[11] ROC 曲線的繪製原理是將連續變數設定出多個不同的臨界值，在每個臨界值處計算出相應的靈敏度（sensitivity）和特異度 (specificity)，再以靈敏度為縱坐標、(1-特異度）為橫坐標繪製成曲線。在 ROC 曲線上，最靠近座標圖左上方的點為靈敏度和特異度均較高的臨界值，因此曲線下面積越大，表示該方法所能達到的靈敏度和特異度越高。本研究嘗試使用 ROC 曲線法對導致生活自理能力顯著下降的肌力下降臨界值進行了探討，為制定有針對性的鍛煉方案提供理論依據。在比較了最大握力和 RCS 的 ROC 曲線以後發現，後者的 ROC 曲線具有更高的靈敏度和特異度，因此使用 RCS 的 ROC 曲線來判斷肌力下降臨界值。由於 ROC 曲線是由許多個臨界值所構成，因此需要通過尋找靈敏度和特異度的最佳組合來選定其中一個值作為最佳臨界值。靈敏度是指受檢者中被某診斷方法檢出陽性者所占的百分率；特異度是指受檢者中被某診斷方法檢出陰性者所占的百分率。在進行臨床流行病學調查時，如果一味地強調靈敏度而忽略特異度，則大量陰性者也會與陽性者同時被檢出，從而降低了診斷的精確度。但是選定肌力下降的臨界值是為了有針對性地進行運動干預，防止肌力進一步下降以致喪失生活自理能力，即使將生活自理能力未顯著下降的老年人也列為運動干預的對象也不會造成不良後果，所以在制定這一臨界值時不必像臨床流行病學研究那樣對特異度要求過高，可以在重視靈敏度的同時適當兼顧精確度。研究結果表明：當 RCS 為 9.0 秒時，靈敏度達到了 0.879，特異度為 59.4。也就是說，生活自理能力顯著下降的老年人中有 87.9%的 RCS 時間超過了 9.0 秒，同時在生活自理能力未顯著下降的老年人中也有 40.6 超過了這一臨界值。此外，在制定預防性干預的基準值時應當適當地低於 9.0 秒，將干預對象的範圍擴大到肌力水平接近於臨界值的老年人，可以進一步起到防患於未然的效果。

4. 結論

本研究結果表明：進入老年期後人體的肌力繼續隨年齡的增長而下降，80 歲和 75 歲可能是老年人男女肌力明顯下降的轉捩點。握力水平和 RCS 時間與城市老年人的 ADL 有著密切關係，而 RCS 時間延長則會明顯影響老年人完成下肢肌肉活動為中心的日常活動的能力。RCS 時間 =9.0 秒可以作為對老年人進行運動干預的一個重要參考值。

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女大學生有氧運動、瑜珈和有氧瑜珈的運動量與自我意念訓練上的效果比較研究

COMPARING THE EFFECTS OF SESSIONS NUMBER OF AEROBIC, YOGA AND AEROBIC-YOGA TRAINING ON PHYSICAL SELF-CONCEPT OF FEMALE UNIVERSITY STUDENTS

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Abstract:

The purpose of the present study was comparing the effect of 5 and 10 weeks of aerobic, yoga and aerobic-yoga exercises on female students' physical self-concept. For that reason, 76 sedentary female students with mean age of 20.49±1.32 years from Ferdowsi University who had not had any experience about selected training modes were voluntary selected. They were randomly and equally assigned to three experimental groups (aerobic, yoga and aerobic-yoga) and one control group. The experimental groups participated in two 60-minute sessions per week for ten weeks in certain related programs. During this period, the control group did not engage in any organized exercise program. In order to collect data, Physical Self-Descriptive Questionnaire was used at three different times of the program (at the beginning, in the middle and at the end). This questionnaire has been validated in Iran and its reliability was 0.94 which had been done in a pilot study in the present research. For data analysis, the mean scores of physical self-concept derived from subtracting posttest and midtest from pretest for each group was calculated. One-way ANOVA and post hoc Duncan test showed that at the end of 5th week of exercise there was a significant difference between physical self-concept means of experimental and control groups ($F=3.634$, $P<0.05$). By assessing means differences, it was cleared that there is a significant difference in physical self-concept of yoga and aerobic-yoga groups in comparison with control group ($P<0.05$). However, this difference was not significant between aerobic and control group ($P>0.05$). The same results were gained at the end of 10th week of exercise ($F=6.383$, $P<0.05$). In addition, for assessing the differences within groups, Paired-Sample T Test showed that in yoga group there was a significant difference between physical self-concept mean of subjects in 5 weeks

and 10 weeks of exercise ($P<0.05$) but this difference was not significant in aerobic, aerobic-yoga and control groups ($P>0.05$). These results show that 5 and 10 week exercise programs in yoga and aerobic-yoga group has caused an increase in female students' physical self-concept, but this exercise period in aerobic group could not bring about remarkable increase in physical self-concept. Examining of physical self-concept mean of subjects between 5 and 10 weeks of exercise indicate that increasing the exercise session number after 5 weeks in yoga, aerobic and aerobic-yoga groups has been respectively associated with significant increase, decrease and non significant increase of physical self-concept. Therefore, the significant increase of physical self-concept in aerobic-yoga group at the end of 10 weeks of exercise can be attributed to effects of first 5 weeks. Overall, it can be concluded that physical self-concept improvement and its relative stability respectively in yoga and aerobic-yoga groups are due to the motivational effects of yoga exercises that agrees with literature.

細胞凋亡在增齡大鼠中的變化及游泳運動對體細胞凋亡的影響

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Trend of Apoptosis Accompanying the Aging of Rats And the Influence of Swimming in Apoptosis

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摘 要

細胞增值、分化和死亡，貫穿於多細胞生物體生長、發育和衰老的全過程，是同等重要的生命活動。在20世紀60年代，學者們就注意到細胞“死亡”有兩種不同的方式，一種就是人們熟知的壞死，還有一種就是在組織學特徵和生理生化等方面的表現不同於壞死的細胞凋亡。顯然，前者是由各種致病因數引發的細胞“意外”死亡，會引起機體生理功能的紊亂和疾病的發生。而後者且是一個具有遺傳特徵的，在基因調控下實現的細胞有序“自殺”過程，一般屬於細胞的生理性死亡過程。

增齡（或衰老）是世界上任何一個生物體都無法擺脫的生理過程，而且又常常與死亡相聯繫，一個正常的個體即使不患有任何一種致死性疾病，其最終依然是難逃因衰老而死亡的厄運。

研究發現，體育運動既是延緩細胞衰老發展的重要手段，同時又是介導細胞凋亡發生的誘因；伴隨增齡的進程，機體內各種細胞均會出現不同程度的退行性變化，增齡受損細胞的清除和修復是“抗衰老”研究領域的重要內容，機體內自我修復機制是否存在通過細胞凋亡清除受損細胞或衰老細胞；或通過增齡細胞或衰老細胞的“自殺”行為進一步加重衰老的發展；同時，在運動健身研究領域中，是否存在適宜的身體活動或長期有規律的鍛煉介導細胞凋亡發生和發展的現象，尤其是長期有氧練習是否通過慢性的累計效應，干預了增齡細胞的凋亡過程，最終達到延緩細胞衰老的目的。也就是說，細胞增齡、凋亡和長期有氧運動之間到底存在什麼樣的因果關係或依存關係，這一切都需要在研究中得到進一步證實。

研究目的

本文將根據前人研究成果，結合細胞凋亡、細胞增齡和運動健身的基本理論和方法，力圖通過觀察在長期無負重游泳運動模型中，大鼠外周血白細胞、組織細胞（肝細胞、心肌細胞）在增齡過程中，細胞凋亡的特徵、發生和發展變化規

律，以及有氧運動對體細胞凋亡的影響，尋找細胞凋亡現象是否存在清除增齡大鼠受損細胞的證據；並通過對凋亡調控基因蛋白表達和體內自由基代謝水平的同步觀察，力爭從細胞（或分子）水平上解釋有氧運動延緩細胞增齡的作用或可能的機制。

研究方法

本文選擇2月齡（青年組）和9～10月齡（老年前期組）SD大鼠為實驗對象；採用自然增齡動物模型，選擇無負重游泳作為運動干預的方式，用運動持續時間的變化來確定運動負荷，選擇運動持續時間為1小時／每天和2小時／每天，運動頻率為6次／每週和3次／每週（隔日），游泳運動的總持續時間為14周。採用流式細胞儀技術測定外周血白細胞凋亡率，採用細胞生物學新技術“組織晶片”技術，結合TUNEL染色技術確定肝細胞和心肌細胞凋亡率，同時採用免疫組織化學技術測定組織中Bax和Bcl-2基因的陽性表達，採用黃嘌呤氧化酶法測試血清和組織中SOD，採用硫代巴比妥酸（TBA）比色法測定血清和組織中MDA，採用硝酸還原酶法測定血清和組織中NO含量。數據處理為常規統計方法、非參數核對總和單變數雙因素分析。

結論

1．外周血白細胞凋亡不存在隨增齡凋亡出現增加或下降的變化趨勢，這對保持短壽細胞數目的穩定，維持機體免疫力具有十分重要的意義；長期有氧運動可以明顯的介導外周血白細胞凋亡的發生和發展，並且，白細胞凋亡率存在隨運動負荷遞增逐漸增加的趨勢，其中，2小時組凋亡率最高，隔日1小時組凋亡率最低。這一特點在老年前期組和青年組中表現基本一致。長期有氧運動有效的促進外周血白細胞凋亡的發生和發展，這是否也是有氧運動延緩機體免疫功能隨增齡下降的細胞學機制，還有待於進一步研究。

2．肝細胞凋亡存在隨增齡明顯下降的趨勢，這對維持肝細胞數量或緩解增齡過程中肝細胞數目丟失具有十分重要的意義；長期有氧運動可以有效的阻止肝細胞凋亡率在增齡過程中下降的趨勢；在老年前期組中，訓練1小時和2小時組對肝細胞凋亡能力的恢復作用最明顯；有氧運動促進肝細胞凋亡能力的提高可能就是有氧運動延緩細胞增齡發生和發展的重要細胞學機制之一。關於，在青年組中，肝細胞凋亡率出現的不規律變化還有待於進一步研究。

3．心肌細胞凋亡率不存在隨增齡出現增加或下降的變化趨勢，這一特點對維持高度分化細胞的壽命具有十分重要的作用；長期有氧運動可以有效的降低心肌細胞凋亡的發生和發展，減少心肌細胞在增齡過程中出現生理性死亡現象，從而保證了增齡過程中心臟功能的正常發揮。至於在老年前期和青年隔日訓練1小時組中，心肌細胞凋亡率明顯低於其他實驗組的結果，是否驗證了隔日進行體育鍛煉的健身功效還有待於進一步深入探討。

4．長期有氧運動是介導外周血白細胞、肝細胞和心肌細胞發生凋亡的重要

誘因，而引發這一變化的影響因素或可能存在的調控機制，是 Bax 和 Bcl-2 基因蛋白的不同表達，以及自由基代謝產物 SOD、MDA 和 NO 含量發生變化的結果。

5．機體內不同體細胞隨增齡變化具有不同的特點，這主要與細胞種類和分化程度有關。

6．關於肝細胞凋亡率隨增齡和運動的變化特點，是否較好的驗證了細胞凋亡在細胞增齡（或衰老）進程中的地位和作用，還有待於進一步研究。

總之，有氧運動作為一種積極的健身方式，在日常生活中被人們廣泛接受，本研究的結果證實了，有氧運動以及長期的積累效應具有通過介導不同體細胞凋亡的發生和發展，來達到延緩細胞整齡的進程，也就是說，長期有氧運動所引發體細胞凋亡的改變可能就是運動健身效應的細胞學機制之一。

關鍵詞： 細胞凋亡，增齡大鼠，游泳運動，外周血白細胞，肝細胞，心肌細胞，基因表達，自由基

Abstract

The hyperplasia, differentiation and death of cell goes through the whole life of multicellular organism. All of which are the same important to life. Early from the 1960s, researchers have noted the two ways of cell "decease", one is necrosis, as all known; the other is apoptosis, with different histological, physiological and biochemical characters. Obviously, necrosis is the "accidental death" of cell caused by nosogenesis; while apoptosis is an ordered "suicide" process controlled by gene that has heredity features, and generally belongs to physiological death process of cell.

Aging, associated with death is a normal physiological process that none of the organisms could get rid of. Even if any individual who have no deadly illnesses, will have to face up to such process.

Researches have indicated that physical activity is not only the manner of delaying cell aging, but also the inducement of apoptosis. Accompanying aging process, all kinds of cell decline differently. It is important to research the "clear-away" and remodeling procedure of aged or injured cell for aging resistant aspect. It is also important to confirm whether the function of aged or injured cell is cleared away via apoptosis, or the function of the action of aged cell suicide itself to increasing the aging process would be the mechanism of somatic self-remodeling. Moreover, the relationship between cell aging, apoptosis and long term aerobic exercise needs

further research.

Goal of present study

Present study was conducted to give evidence to the hypothesis of the existence of the clear-away of injured cell via apoptosis in rats. This was carried out in a chronic swimming model by observing the aging, apoptosis and development characters of peripheral blood leukocyte, hepatocyte and cardiac muscle cell. The other goal of the study was to explain the possible mechanism of the function of aerobic exercise to delay aging process on the cell (molecular) level. This was carried out via the simultaneous observation to the albumen expression of apoptosis-control-gene, and the metabolize level of internal free radical.

Methodology

Subjects of present study were SD rats of 2-month and 9-10-month in age, separately represents the youth group and before old group. The intervention treatment was swim without weight loading, exercise regimens were 1-hour /day or 2-hours /day, with 6 times / week or 3 times / week. The whole regimen lasted for totally 14 weeks. The apoptosis ratio of peripheral blood leukocyte was measured through Flow Cytometry, the apoptosis ratio of hepatocyte and cardiac muscle cell was measured through Tissue chip combined with TUNEL staining technique; Bax and Bcl-2 genetic expression in tissue was tested via immune histochemistry technique; also, method of xanthine oxidas was used to test the SOD level in serum and tissue; method of TBA colorimetry was used to test the MDA level in serum and tissue; and method of nitric acid deoxidization was employed to the content of NO in serum and tissue. Conventional statistical methods were used for data analysis.

Results

1. There were no correlation between the apoptosis of leukocyte and aging. This is especially important to maintain the immunization function by keeping the stable number of short-life cell. Long-term aerobic exercise had an obvious relation to the apoptosis of peripheral blood leukocyte, while the ratio of leukocyte apoptosis had the trend of increasing with exercise workload. Among which, the 2-hours group had a maximum while every-every other day group had a minimum apoptosis ratio. The phenomenon was similar in both groups of youth and before aged. Results implicated that long term aerobic exercise could effectively facilitate the apoptosis of leukocyte in order to ensure the renovate ratio of short-life cells which would be very important to maintain physical immunization function. This might also be one of the

cytological mechanisms of how aerobic exercise delays the decline of physical immunization accompanying with aging.

2. Number of hepatocyte obviously decreased accompanying with aging. This is particularly important either to the maintenance of hepatocyte number or to slowing down the loss of hepatocyte accompanying with aging. Long-term aerobic exercise can effectively prevent hepatocyte number from decreasing accompanying with aging. Among the groups of aged, results showed that rats of 1-hour and 2-hours group whose recovery function of hepatocyte apoptosis were of most significant. The increasing number of hepatocyte might be one of the cytological mechanisms of how aerobic exercise delays cell aging. Further researches on the phenomenon of the anomalous change of the hepatocyte apoptosis ratio among the youth groups are needed expectably.

3. There was no trend of cardiac muscle cell increasing or decreasing accompanying with aging apoptosis. This character is particularly important to maintain the life of highly-differentiation cells. Long term aerobic exercise can effectively slow down the apoptosis of cardiac muscle cell, decrease the phenomenon of physical death of cardiac muscle cell when aging, and therefore ensured the normal cardiac functioning. As for the rats in the before-aged groups and in the youth-every-other-day-youth group, whose apoptosis ratio of cardiac muscle cell were significantly lower than those in other groups, does this implicate that exercise every other day means more benefits, it still needs further researches.

4. Long term aerobic exercise is an important incentive leading to the apoptosis of peripheral blood leukocyte, hepatocyte, and cardiac muscle cell. The causal attribution of such changes might be the different expressions of Bax and Bcl-2 genes, along with the change of metabolize resultant of internal free radical and NO content.

5. Different trends of changing observed from different cells along with aging, are associated with the kinds of cell.

6. The issue of whether the function of apoptosis in aging process has been properly validated through checking the relationship between hepatocyte apoptosis with aging and exercise needs further more researches.

In conclusion, aerobic exercise as an active health-improving manner has been widely accepted by mass in everyday life. Results of present study gave evidence to that the accumulation effect of long-term aerobic exercise could delay the progress of cell aging by causing the apoptosis of different kinds of body cell. In other words, the

change of the apoptosis of body cells caused from long-term acrobic exercise might be the cytological mechanism of the beneficial effect of physical exercise.

Key： **Apoptosis** **Aging Rat** **Swimming** **leukocyte**
hepatocyte **cardiac muscle cell** **genetic expression** **Free Radical**

專題報告1
Symposium 1

跳繩鍛煉對大學生情緒、睡眠健康的干預研究

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A Study of Rope Skipping Exercises on Emotion, Sleep Health of University Students

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摘 要

研究目的：隨著社會競爭日趨激烈，人們生活節奏不斷加快，睡眠品質問題已成為世界性的健康問題，許多現代人出現了不同程度的睡眠障礙，嚴重影響了身心健康。大學生是未來社會的生力軍，他們的身心發展正處於定型期，有調查結果表明：13.9%～28.6% 的大學生有睡眠品質問題。眾所周知，科學的鍛煉能有效促進人的身體健康。然而，身體鍛煉的健心功能還未被人們充分認識，鍛煉與睡眠品質的關係研究仍極度缺乏，本文就是通過對大學生參加跳繩鍛煉前後睡眠品質和焦慮、抑鬱症狀進行比較研究，瞭解跳繩鍛煉對改善大學生睡眠品質和情緒健康以及生活品質的作用和功能，為大學生參加鍛煉以達到健身、健心的目的提供科學依據。

研究方法：從在校三年級且平時不參加鍛煉的人中，隨機選取自願參加的男 26 名、女 42 名共 68 名受試大學生，他們身體健康，無生理性急病。受試者每週參加 3 次、每次 35～50min 的中等強度跳繩鍛煉，共 18 周。在鍛煉前後採用匹茲堡睡眠品質指數 (PSQI) 問卷評價量表、焦慮 (SAS) 及抑鬱 (SDS)自評量表、睡眠自我認識評價量表作為評價睡眠品質、情緒、睡眠自我滿意度的工具，對受試者進行問卷調查，所有數據用 SPSS 11.5 軟體進行統計分析。

研究結果：參加跳繩鍛煉後的大學生匹茲堡睡眠品質指數與鍛煉前相比有顯著性下降(P<0.05)，焦慮和抑鬱分值顯著小於鍛煉前，且也有顯著性變化(P<0.05)，對睡眠的滿意度顯著好於鍛煉前（P<0.01）。

研究結論：

1、中等強度的跳繩鍛煉能有效地改善平時不參加鍛煉大學生的睡眠品質，使入睡時間縮短，睡眠障礙減少，睡眠效率提高。

2、中等強度的跳繩鍛煉能有效地降低平時不參加鍛煉大學生的焦慮和抑鬱水平，改善抑鬱的程度比焦慮程度顯著，從而改善了他們的情緒水平，這對預防大學生易發的心理疾病有積極性作用。

3、參加跳繩鍛煉後，大學生對睡眠的滿意度顯著好於鍛煉前。這增強了大學生對生活的適應感、信心感、快樂感，消除和減輕抑鬱、緊張、焦慮、易激怒、敵對等情緒障礙，使大學生對生活充滿自信心和樂趣，進而提高大學生的身心健康水平和生活品質。

4、跳繩鍛煉對改善睡眠品質和情緒有不可低估的作用，所以學校可採取各種有效方式，吸引學生尤其是不喜愛參加體育鍛煉的大學生，參加跳繩鍛煉，堅持有氧運動以促進大學生身心的全面健康。

關鍵詞： 跳繩；大學生；睡眠品質；焦慮；抑鬱

Abstract

Study purpose: At present, social competition becomes more and more exciting, living rhythm of people becomes faster and faster, sleep quality turns into the problem of health in the world. Sleep barriers of modern people seriously affect their bodies and mental health. University students are the fresh troops in the future, and their bodies and mind fall into patterns. Investigation showed that 13.9%~28.6% university students are had sleep quality problems. We know that exercise can improve people's health .However this exercise hasn't been found, study on relations between training and sleep quality are wanted. This paper studied the sleep quality and emotion of 68 university students before and after rope skipping exercise. It suggested that rope skipping exercise could effectively improve symptom of anxiety and depression of university students change the sleep quality and had positive effect on their mental health.

Study method: From the students in Grade Three who didn't like exercise, 68students without any mental diseases were chosen to test. They took part in rope skipping 35 times a minute, three times a week, 18 weeks in all. Through using the method of PSQZ before and after rope skipping, SAS and SDS self-evaluation questionnaire, SPSS11.5 software is used in all data statistics and analysis.

Study result : The PSQI of university students after rope skipping has significantly lower comparing with before exercise . The sleep quality is better than before.

Study Conclusion:

1、Medium strength rope skipping can effectively improve sleep quality of University students who don't like take part in exercise at usual, reduces time of falling sleep and barriers of sleep ,raise the effect of sleep.

2、Medium strength rope skipping has effectively lower the anxiety and depression of the students who don't take part in exercise at usual improves their emotion, takes great effect ion preventing disease

3、After rope skipping, university students show greater satisfaction to sleep than before. This increases their adaptability to life, confidence, happiness. This also reduces the emotion barriers such as depression, nervous, anxiety, hostility. This makes the students fill with confidence and interest, raise their mental health level and life quality.

4、Rope skipping takes great effect to improve sleep quality and emotion. So all kinds of effective ways should be adapted to abstract the students, especially those who don't like sports exercise to take part in rope skipping in order to improve the bodies and mental health of the students

Keywords：rope skipping；University Students；sleep quality；anxiety；depression；

中、日成年人身體素質現狀的比較研究

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Comparison research on physical diathesis between Chinese and Japanese adult

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本次中日合作國民體質比較研究的目的就是通過對中日成年人身體素質現狀的調查、分析，探索兩國成年人身體素質特徵、規律以及發展趨勢，同時對加強跨國、跨地區研究進行有益嘗試和探索。

測試對象為 20～74 歲身體健康居民。中國取樣城市為上海市，男性 1247 人，女性成年 1256 人；日本取樣城市為東京，男性 947 人，女性 1058 人。共計 4508 人。

檢測項目為握力、縱跳、1 分鐘仰臥起坐、6 分鐘走、坐位體前屈和閉眼單腳站立等 6 項。其中縱跳、1 分鐘仰臥起坐只為 20-39 歲檢測項目。

1、中日成年人身體素質比較

中國成年人的肌肉力量，與日本成年人多數年齡段無顯著差異。但是，表示相對力量的平均握力比體重的對比結果，中國女性成年後期顯著低於日本女性。

中國成年人力量速度隨年齡增長下降速度顯著高於日本成年人。

中國成年人力量耐力水平低於日本，女性隨年齡增長下降速度較日本女性顯著。

中國成年人耐力素質所有年齡段均高於日本成年人，50 歲左右出現明顯下降。而日本成年人隨年齡增長緩慢下降。

中日男性柔韌素質變化趨勢一致，多數年齡段無顯著性差異。日本女性基本保持在較高水平，下降幅度很小，多段高於中國女性。

中國成年人所有齡段與日本同年齡段的平衡能力的變化趨勢基本一致，從 20 歲開始隨年齡增長呈直線快速下降至 74 歲。

小結

除男女耐力、女子柔韌等素質外，中國成年人國民運動能力的多項身體素質指標總體水平略低於日本，並且在達到峰值後，隨年齡增長而下降的速度和幅度大於日本，尤其是成年女性在各項指標中表現的更為明顯。

2、影響成年人身體素質變化的因素

機體各系統機能在達到生長發育的高峰以後，就會隨年齡增長出現持續衰

退，而且這將是一個不可逆的老化、退行過程。本次調查各項指標均體現了這一規律。

肌肉力量在 30 歲左右達到最大值，並保持到 50 歲左右，然後出現緩慢下降。與本研究結果也相吻合。

而經常參加耐力訓練或運動的中老年人，隨著加齡變化較小。

3、中日兩國成年人身體素質變化比較研究

研究證明，人類機體各系統機能在達到生長發育的高峰以後，就會隨年齡增長出現持續衰退，而且這將是一個不可逆的老化、退行過程。出現衰老現象或衰老的程度既有人類所共同的規律性，又存在極大的個體差異，這不單純是機體的內因起作用，而且還包括了飲食、身體運動、生活習慣、心理及社會環境等外在因素的影響。

在 1985 年-2005 年的 20 年間，中國成年人身體素質的變化趨勢為速度、耐力和柔韌素質有所下降，力量素質有所提高。例如 1994 年中國成年男性 20-55 歲握力指標的均值是 46.25 千克，2005 年為 49.12 千克，增長了 6.23%。而日本成年人身體素質整體呈下降趨勢。

從隨年齡增長力量素質下降的幅度來看，1994 年，中國成年男性握力指標年下降最大值為 1.9 千克（4.02%）；日本同期年最大下降幅度為 1.98 千克（4.24%），高於中國 0.8 千克。2005 年兩國檢測結果比較顯示，中國成年人年下降最大值為 3.25 千克（7.53%），日本同期最大下降幅度為 2.71 千克（6.75%）。可見，雖然中國成年人身體素質指標在歷次體質測試中都有所提高，但與日本成年人相比，總體處於較低水平，尤其各項指標在達到峰值後，隨年齡增長而下降的幅度要大於日本。

上世紀 60 年代中期，隨著日本經濟的快速發展，日本為瞭解國民的體質、運動能力現狀，開展實施了體質、運動能力調查，其調查結果不僅可以為增強體質、保持和增進健康服務，同時，還作為體育運動及行政指導可資利用的基礎數據。幾十年來，日本已經形成了一整套定期進行體質監測的運營體系，並使國民體質較高的、相對穩定的水平上。

中國自上世紀八十年代開始改革開放以來，在社會、經濟、文化環境方面以及生活環境和勞動條件都發生了極大的變化，生活水平提高，閒暇時間增多，勞動條件改善，特別使得成年人出現勞動時間減少，勞動強度降低，營養物質豐富等現象，在提供諸多優越的物質條件的同時，也為成年人帶來了一些新的問題，如："攝取多"、"消耗少"、"靜的多""動的少"。導致形態、機能改變，進而影響人的身體素質，使成年人各系統因年齡而引起的快速退行性變化，最終影響成年人的生活活動能力和身心健康。

本次調查問卷顯示，有過俱樂部、各級校隊經驗的人數，中國居民的比例明顯低於日本居民，這在青少年時期還不顯著，到了成年時期各項機能隨年齡增加出現快速自然下降時，自我監督、自我鍛煉的能力不足。從參加鍛煉的人數比例

來看，中國每週鍛煉"3-4 次"和"不參加"鍛煉的比例均高於日本，而每週 1-2 次或每月 1-3 次的人數比例則是日本顯著高於中國。說明中國經常鍛煉的人群比較集中，總體鍛煉的人數比例少於日本，需要利用各種方式調動更廣泛人群參與到經常鍛煉的隊伍中來。

從對"體質信心"、"很想鍛煉"、"鍛煉有益"的調查得到的肯定回答百分比來看，中日居民對健身有益健康的常識有著高度的一致性。中國居民"體質信心"方面要顯著高於日本，說明了中國居民樂觀自信的態度，但也會出現盲目樂觀，忽視健康的隱患。從"很想鍛煉"的人數百分比來看，中國成年男女又全部低於日本，也反映了日本居民由於擔憂自己的體質狀況而產生鍛煉的積極傾向，以及早做好健身安排。

4 結論與建議

（1）本次聯合比較研究，中國成年人身體素質水平低於日本，且男性差距更大，僅柔韌素質好於日本；

（2）中國成年人身體素質隨年齡增加而下降的退行性變化速度高於日本；

（3）20 年來，中國成年人國民運動能力的身體素質指標有所提高，但與日本成年人相比，總體處於較低水平；

（4）不斷完善測試項目與方法，統一標準，加強跨國、跨地區的國民體質合作比較研究，為深入開展人類體質研究積累更廣泛的數據。

2000-2005 年 7-19 歲中國學生體質狀況的比較研究

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Comparison research on physical fitness of Chinese 7-19 years old student between 2000-2005 year

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摘要

目的：廣大學生青少年身心健康、體魄強健、意志堅強、充滿活力，是一個民族旺盛生命力的體現，是社會文明進步的標誌。2007 年 3 月，胡錦濤總書記就增強青少年學生體質健康問題做出重要批示，指出"增強青少年體質，促進青少年健康成長，是關係國家和民族未來的大事，需要我們全社會的關心和支持。"2000 年和 2005 年兩次中國學生體質與健康調研均是由教育部、國家體育總局、衛生部、國家民族事務委員會、科學技術部共同組織實施的全國性學生體質與健康調研。本文根據 2000 年和 2005 兩次中國學生體質調研數據，對我國 7-19 歲青少年學生身體形態、機能和素質指標進行 5 年的對比分析，以揭示我國青少年學生體質狀況的變化特徵和規律，掌握我國學生體質健康和發展趨勢，為制定學校體育衛生工作發展規劃、科學開展學校體育衛生工作提供科學依據。

方法：2000 年和 2005 年兩次調研的學生樣本均來自 31 個省、自治區和直轄市的學校 7-19 歲的在校學生。本研究所採用的樣本特徵及檢測指標基本相同。用 SPSS10 統計軟體系統處理數據，採用常規獨立樣本 T 檢驗。

結果：身體形態的變化特徵。身高：1・7～19 歲男女生的身高 2005 年較 2000 年明顯增長。2・男女生身高增長幅度 2000 年和 2005 年均在青春期最大（男生在 11 歲，女生在 9 歲），均在 16 歲最小。3・鄉村男女生增長幅度明顯大於城市男女生。體重：1・7～19 歲男女生的體重 2005 年較 2000 年增長。2・男生在 12 歲，女生在 11 歲體重增長幅度最大，男女生均在 18 歲最小。3・城男較鄉男增長幅度大，鄉女較城女增長幅度大。胸圍：1・7～14 歲男女生的胸圍 2005 年較 2000 年增長。2・男生在 12 歲，女生在 11 歲胸圍增長幅度最大，男女生均在 18 歲最小。3・城男較鄉男增長幅度大，城女較鄉女增長幅度大。BMI（稱為體重

指數（或體質指數），是一種計算身高比體重的指數。即，BMI=體重（kg）/身高^2（m）。它反映了人體骨骼、肌肉、皮下脂肪及內臟器官的發育狀況和人體充實度，間接的反映人體營養狀況。）：1．7～16 歲男生，7～14 歲女生的 BMI 2005 年較 2000 年增長。2．男生在 12 歲，女生在 11 歲 BMI 增長幅度最大，男女生均在 18 歲最小。3．城男較鄉男增長幅度大。維爾維克指數（Vervaeck index,就是體胸身高指數，人體測量複合指標之一。它是 1920 年由維爾維克提出而命名的。實際上是體重／身高指數與胸圍／身高指數的總合，反映人體長度、寬度、圍度、厚度和密度，並與心肺呼吸機能相其他指數均有密切的關係。可表明人體的結實程度。它不僅是一個營養指數，也是評價體格、體質的一個較好的指標。可表明人體的結實程度。其計算公式為：（體重十胸圍）／身高×100，體重計量單位用公斤(kg)，胸圍計量單位用釐米(cm)，身高計量單位用釐米(cm)。）：1．7～16 歲男生，7～15 歲女生的維爾維克指數 2005 年較 2000 年增長。2．男生在 12 歲，女生在 11 歲維爾維克指數增長幅度最大，男女生均在 18 歲最小。3．城男較鄉男增長幅度大，城女較鄉女增長幅度大。小結：學生形態發育水平繼續提高，學生營養狀況繼續改善，超重和肥胖學生增多。學生身高仍保持繼續增長的趨勢，男女學生身高增長的幅度 7-12 歲間較 13-19 歲間大，鄉村學生增長幅度明顯大於城市學生，提示鄉村地區在影響身高指標的因素上城鄉間差異在減小，如遺傳、營養水平、社會經濟發展、體育衛生事業發展等。學生體重、胸圍、BMI、維爾維克指數變化規律基本一致，男生均在 7～12 歲，女生均在 7～11 歲增幅逐漸增大至最高峰；男女生均在 13～18 歲增幅逐漸減小至最低點，19 歲增幅又加大。城市學生增長幅度均明顯大於鄉村學生（除體重指標鄉女較城女增長幅度大），提示城市地區在影響體重、胸圍、BMI、維爾維克指數指標的因素上仍遠遠區別於鄉村地區，如營養水平（熱量攝入過多）、生活方式（玩電腦遊戲，戶外活動過少）等。

身體機能的變化特徵。肺活量：1．7～19 歲男女生的肺活量 2005 年較 2000 年明顯下降。2．男生在 18 歲，女生在 14 歲肺活量下降幅度最大。3．城男較鄉男下降幅度大，城女較鄉女下降幅度大。肺活量/體重指數：1．7～19 歲男女生的肺活量/體重指數 2005 年較 2000 年明顯下降。2．男女生在 7 歲下降幅度最大，在 19 歲下降幅度最小。3．城男較鄉男下降幅度大，城女較鄉女下降幅度大。小結：肺活量水平繼續呈下降趨勢。

身體素質的變化特徵。通過握力、速度素質（50 米跑）、爆發力素質（立定跳遠）、力量耐力素質（7-12 歲男生斜身引體、13-19 歲男生引體向上、7-19 歲女生一分鐘仰仰臥起坐）、耐力素質（7-12 歲男生和女生 50 米×8 往返跑、13-19 歲男生 1000 米跑、13-19 歲女生 800 米跑）評價青少年學生的身體素質。握力：1．7～19 歲男女生的握力 2005 年較 2000 年明顯增長。2．男生握力在 14 歲，女生在 12 歲增長幅度最大。3．城男較鄉男增長幅度大，城女較鄉女增長幅度大。速度素質（50 米跑）：1．12～19 歲男生，9～19 女的 50 米跑成績 2005 年較 2000

年明顯下降。2．男生 50 米跑成績在 19 歲，女生在 17 歲下降幅度最大。3．鄉男較城男下降幅度大，鄉女較城女下降幅度大。爆發力素質（立定跳遠）：1．7～19 歲男女生的立定跳遠 2005 年較 2000 年明顯下降。2．男生立定跳遠在 19 歲，女生在 15 歲下降幅度最大。3．城男較鄉男下降幅度大，鄉女較城女下降幅度大。力量耐力素質（7-12 歲男生斜身引體、13-19 歲男生引體向上、7-19 歲女生一分鐘仰臥起坐）：1. 7-12 歲男生斜身引體 2005 年較 2000 年顯著增長，13～19 歲引體向上 2005 年較 2000 年有明顯下降。女生 7～19 歲一分鐘仰臥起坐 2005 年較 2000 年明顯下降。2．男生斜身引體在 12 歲增長幅度最大，男生引體向上在 17 歲下降幅度最大；女生一分鐘仰臥起坐在 17 歲下降幅度最大。3．7-12 歲男生斜身引體鄉男較城男增長幅度大，13～19 歲男生引體向上鄉男較城男下降幅度大，女生一分鐘仰臥起坐城女較鄉女下降幅度大。耐力素質（7-12 歲男生和女生 50 米×8 往返跑、13-19 歲男生 1000 米跑、13-19 歲女生 800 米跑）：1. 7-12 歲男生 50 米×8 往返跑 2005 年較 2000 年明顯下降，13～19 歲 1000 米跑 2005 年較 2000 年有明顯下降。7-12 歲女生 50 米×8 往返跑 2005 年較 2000 年明顯下降、13-19 歲女生 800 米跑 2005 年較 2000 年明顯下降。2．男生 50 米×8 往返跑在 11 歲下降幅度最大，男生 1000 米跑在 13 歲下降幅度最大；女生 50 米×8 往返跑在 11 歲下降幅度最大，女生 800 米跑在 13 歲下降幅度最大。3．7-12 歲男生 50 米×8 往返跑鄉男較城男下降幅度大，13～19 歲男生 1000 米跑鄉男較城男下降幅度大，7-12 歲女生 50 米×8 往返跑鄉女較城女下降幅度大，13-19 歲女生 800 米跑鄉女較城女下降幅度大。小結：學生除握力水平提高外，速度、爆發力、力量耐力、耐力等素質水平進一步下降。男女學生 50 米跑成績隨著年齡增長下降幅度也隨著增加。男女學生立定跳遠成績隨著年齡增長下降幅度也隨著增加。7-12 歲男生斜身引體成績隨著年齡增長增長幅度也隨著增加，13-19 歲男生引體向上成績隨著年齡增長下降幅度也隨著增加，女生一分鐘仰臥起坐 7-9 歲隨著年齡增長下降幅度也隨著增加，10-19 隨著年齡增長下降幅度基本不變。13-19 歲男生 1000 米跑成績隨著年齡增長下降幅度也隨著減少，女生 800 米跑成績隨著年齡增長下降幅度也隨著減少。

結論：1.學生形態發育水平繼續提高，學生營養狀況繼續改善，超重和肥胖學生增多。2. 肺活量水平繼續呈下降趨勢。3. 學生除握力水平提高外，速度、爆發力、力量耐力、耐力等素質水平進一步下降。

關鍵詞：學生 體質 分析

天津市 20-69 歲人群形態體質指標年齡變化趨勢及擬合的研究

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Age changing tendency and the curve fitting survey of the physical criterion on 20-69 people in Tianjin

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摘要

1 研究目的

為了全面準確地瞭解天津市 20-69 歲人群身體形態的變化趨勢及城鄉、性別差異，本文利用 2005 年天津市國民體質監測的 20—69 歲人群的形態指標檢測結果，選擇適當類型的曲線來擬合這些實測數據，並用擬合的曲線方程來分析主要指標的變化趨勢以深入探討天津市 20—69 歲人群的身體形態變化特點和趨勢。

2 研究對象和方法

研究對象為 2005 年天津市國民體質監測中 20—59 歲成年人、60—69 歲老年人，有效樣本共計 19087 人。每 1 歲為一個年齡組，分為男總體組、男城鎮組、男鄉村組，女總體組、女城鎮組、女鄉村組。

研究指標：身高、體重、胸圍、腰圍、臀圍、克托萊指數、BMI、維爾維克指數、腰臀比。

利用曲線擬合方法，按性別、城鄉分別以各年齡組的均值來擬合曲線的方程式。對各指標進行多種曲線擬合，根據確定係數 R^2 選擇適當的曲線類型，以 R^2 最大者為優。最終確定線性方程和二次方程為最佳擬合曲線。

3 研究結果

3.1 天津市男女總體身高均隨年齡的增加呈下降趨勢，其他指標男子組極值年齡介於 44.6～55.9 歲之間，平均為 50.4 歲；女子組極值年齡介於 53.4～65.0 歲之間，平均為 59.8 歲，女子組滯後於男子組。

3.2 天津市鄉村男子極值年齡介於 47～53 歲之間，平均為 50.6 歲，城鎮男子極值年齡介於 43～58 歲之間，平均為 50.2 歲。城鎮男子腰圍、臀圍、腰臀比達到極大值的年齡滯後於鄉村男子，其他指標先於鄉村男子組。

3.3 天津市鄉村女子極值年齡平均為 59.5 歲，城鎮女子極值年齡平均為 66.6 歲，其中 BMI 和維爾維克指數的極值年齡超過了 69 歲，除臀圍外，城鎮組達到極大值的年齡均滯後於鄉村組。

4 結論

4.1 天津市 20—69 歲人群男女身高均隨年齡的增加逐漸降低，無論男女城鎮組身高隨年齡的遞增而降低的速率均大於農村組。

4.2 天津市男子在 44～50 歲，女子在 53～65 歲身體充實程度達到極大值，女子滯後於男子 10 歲左右；男子城鎮組身體充實度達到極值的年齡先於鄉村組，女子城鎮組身體充實度達到極值的年齡滯後於鄉村組。

4.3 天津市男子腰臀比達到極大值的年齡為 55.9 歲，男子城鎮組腰臀比達到極大值的年齡滯後於鄉村組；女子則在 20—69 歲年齡段呈線性增長的趨勢。

關鍵詞：天津；體質監測；身體形態；曲線擬合

Abstract

1 .Research objection

With the aim to master the changing tendency and the distinction between the rural and urban people and sex in 20-69 age group in Tianjin the research use the data from the second national physical fitness surveillance in Tianjing aging from 20 to 69 to choose the proper curve fitting, which can be used to analyze the changing tendency of the main criterion and to further analyze the changing features and tendency in the shape of people aging 20-69 in Tianjin .

2. Research objection and measures

The objection is the adults aging from 20 to 59, the senior aging from 60 to 69 and the valid sample is 19087. Aging group is divided in one age, and the sex distinction is divided by the female and male group .in terms of region we have the female rural group, male rural group, female urban group, and male urban group.

Research criterion: body height, body weight, Waistline, buttock line, Vervaeck index, BMI, Vervaeck index, WHR

By means of curve fitting, the curve equations are combined by average value of every age group divided by sex and region. Curve fitting the entire criterion .And choose proper curve fitting by definite R2, which is the bigger and the better. The best curve fitting is the finally definite linear equation and quadratic equation

3. The finding of the research

3.1 The body height declined with the age increasing, both female and male .The maximum age of male is between 44.6 and 55.9, while average age is 50.4. The maximum age of female is between 53.4 and 65.0 while the average age is 59.8.thus the female group is lagged by the male group.

3.2 The maximum age of rural male group is between 47 and 53, while the average age is 50.6. And that of urban male group is beween43 and 58, while the average age is 50.2. In terms of the WC, the buttock line, the WHR the maxim age of urban male group is lagged by rural male group, but in advance of the rural group in terms of other criterions.

3.3 The average maximum age of rural female group is 59.5, while that of the urban female group is 66.6. In terms of the BMI and the Vervaeck index, the maximum age is over 69. In terms of all the criterions, except the buttock line, the average maximum age of urban group is lagged by that of rural group.

4. Conclusion

4.1 In the age group of 20 -69, both male and female's height are declining with the age. The drop speed of the urban group is quicker than that of rural group with considering the sex distinction.

4.2 In the municipal of Tanjin, male develop into maximum full body shape at age of 44-50 while female at the age of 53-65, that is the female are lagged behind by 10 years. In terms of the full body shape, the maximum age of urban male group is in advance of that of rural group. Female group has quite different result .the urban group is lagged by the rural group.

4.3 In Tianjin, the male group get the maximum WHR at the average age of 55.9 , and in terms of it ,the urban group is lagged by the rural group .In the age between 20 and 69 , WHR of the female group has the tendency of linear growth .

Key words : Tianjin ; the National Physical Fitness Surveillance; body sharp; curve fitting

我國幼兒體質的變化特徵

任弘，李紅娟

國民體質監測研究組

Change characteristic of physical fitness of Chinese child

Ren Hong, Li Hongjuan

1、前言

2005 年第二次國民體質監測結果顯示：我國幼兒體質狀況總體好於 2000 年。體質綜合指數為 101.97，比 2000 年提高了 1.97%，尤其身體素質綜合指數比 2000 年提高了 3.59%。這得益於我國社會總體經濟水平的提高和國民整體生活條件的改善，以及國家對婦幼衛生、母嬰保健工作的高度重視。

為進一步探索我國幼兒體質的主要特徵和變化規律，深入分析 2005 年與 2000 年兩次國民體質監測數據，深度挖掘數據蘊含的信息，分析引起幼兒體質變化可能的原因，預測幼兒體質未來發展趨勢，特進行此專題研究。

2、監測對象概況

2000 年與 2005 年兩次監測幼兒樣本均來自全國 31 個省、市、自治區城鄉的 3-6 歲幼兒，2000 年和 2005 年樣本總量分別為 52249、54462 人。各年齡組樣本構成在兩次監測中是均衡的。

在本研究中,將按照全國總體、城鄉、南北方、三個經濟區、6 個行政區五種分類方法對 2000 年和 2005 年兩次監測結果進行比較，尋找幼兒體質檢測指標的動態變化特徵。

3、數理統計方法

本研究主要進行各種分層情況下，各年齡組幼兒 2005 年與 2000 年的變化情況，研究中不再對同一測試年不同幼兒進行對比。採用的統計方法有：

1、獨立樣本 T 檢驗；

2、多因素方差分析；

3、Pearson 相關係數；

4、結果與分析

4.1 幼兒身體形態的變化特徵

4.1.1、身高

總體上，2005 年各年齡組男女幼兒身高較 2000 年均有顯著增長。按城鄉、南北方、經濟區分層，各層 2005 年較 2000 年各年齡組男女均有顯著增長（$p<0.001$）。按行政區分層比較，華北地區部分年齡組（男 3、4 歲，女 4、5 歲）無明顯變化外，其餘各行政區均有顯著增長（$p<0.05$）

4.1.2、坐高

總體上，2005 年各年齡組男女幼兒坐高較 2000 年均有顯著增長。按城鄉、經濟區分層，各層 2005 年較 2000 年各年齡組男女均有顯著增長（$p<0.001$）。按行政區分層比較，多數地區 2005 年較 2000 年各年齡組男女均增長，尤其華東、中南、西南地區增長顯著。

4.1.3、體重

總體上，2005 年各年齡組男女幼兒體重較 2000 年均有顯著增長。按城鄉、經濟區分層，各層 2005 年較 2000 年各年齡組男女均有顯著增長（$p<0.001$）。按行政區分層比較，華北地區部分年齡組（男 3、4、5 歲，女 4、5 歲）變化不明顯，其餘地區 2005 年較 2000 年各年齡組男女均顯著增長。

4.1.4、胸圍

5、6 歲男性幼兒、3、6 歲女性幼兒 2005 年較 2000 年有顯著增長（$p<0.001$），其餘年齡組無顯著性變化。按城鄉分層，各層變化趨勢與上述規律比較一致。按經濟區劃分，東、中部地區部分年齡組 2005 年較 2000 年顯著增長（男 5、6 歲，女 3 歲），西部地區則沒有增長，男女 3 歲組甚至較 2000 年下降。按行政區分層，華北地區部分年齡組（男 4 歲，女 4、5 歲）2005 年較 2000 年下降，華東、中南、西南、西北等地區部分年齡組 2005 年較 2000 年增長。

4.1.5、皮褶厚度

總體上，2005 年較 2000 年多數年齡組男女幼兒各部位皮褶厚度均減少（$p<0.001$）。按城鄉分層，各年齡組各部位皮褶厚度兩年度比較與總體趨勢一致。按經濟帶分層，上臂部皮褶厚度東、中部部分年齡組 2005 年有所增長，西部各年齡組均下降；肩胛下、腹部皮褶厚度除中部個別年齡組 2005 年略有增長

外，東、西部多數年齡組均下降。按行政區分層，各層多數年齡組男女各部位皮褶厚度均下降（$p<0.05$）。

4.1.6、身高胸圍指數

總體上，2005 年較 2000 年各年齡組身高胸圍指數男女均有顯著降低（$p<0.001$）。各種分層對比結果與上述規律一致。

4.1.7、身高坐高指數

2005 年較 2000 年 3、4 歲組男女幼兒身高坐高指數無顯著變化，5、6 歲組男女均有顯著降低（$p<0.001$），表明隨年齡增長，身高的增長較坐高佔優勢。按城鄉分層，城市男女幼兒身高坐高指數 2005 年較 2000 年降低顯著（4、5、6 歲），鄉村則僅女性 6 歲組有顯著降低。按經濟區分層，身高坐高指數為西部地區降低顯著（3、5、6 歲）（$p<0.001$）。按行政區分層比較，華北、華東部分年齡組身高坐高指數增大，表明這些地區幼兒坐高的增長較身高佔優勢；東北、西南、西北地方多數年齡組身高坐高指數降低（$p<0.05$）。

4.1.8、BMI

總體上，2005 年較 2000 年各年齡組男女幼兒 BMI 均有顯著增長（$p<0.001$）。按城鄉分層，兩年度變化趨勢與總體比較一致。按經濟區分層，東、西部男女各年齡組 BMI 增長顯著（$p<0.001$），中部部分年齡組變化不明顯（男 4、5 歲，女 4 歲）。行政區分層比較，華東、西南地區大多數年齡組均有顯著增長（$p<0.05$），其他行政區無顯著性變化。

4.1.9、三處皮褶厚度和

總體上，男女各年齡組三部位皮褶厚度和 2005 年較 2000 年均顯著減少（$p<0.001$）。按城鄉分層，除城市 6 歲組男女外，其餘年齡組 2005 年較 2000 年男女各部位皮褶厚度均減少（$p<0.001$）。按經濟帶分層，三部位皮褶厚度和中部地區變化不明顯，個別年齡組（女 6 歲）有所增長，東、西部多數年齡組 2005 較 2000 年顯著減少。按行政區分層，除東北、西南變化不顯著外，各層多數年齡組男女各部位皮褶厚度均減少（$p<0.05$）。

4.1.10、小結

（1）2000 年相比，2005 年幼兒長度指標、重量指標及機體充實度指標（BMI、克托萊指數等）增長顯著，圍度、皮褶厚度指標增長不明顯，甚至有降低。

（2）按經濟區和行政區域劃分，各層間差異較明顯，各指標華東和西部地區變

化明顯，中部地區較不明顯。

（3） 城鄉均有較一致的變化，但多數指標變化幅度城鎮大於鄉村。

4.2 幼兒身體機能、素質的變化特徵

4.2.1、心率

總體上 2005 年男女幼兒心率與 2000 年相比，略有降低。城鎮幼兒心率降低現象比鄉村明顯，男女東中部幼兒 2005 年心率比 2000 年下降，而西部幼兒升高，差異均有顯著性，$P<0.01$。男女北方幼兒 2005 年心率比 2000 年下降，$P<0.05$。南方無變化。華東和西北地方男女幼兒心率均上升。中南地區男女幼兒心率均下降，$P<0.01$。

4.2.2、立定跳遠

總體上，各年齡組幼兒 2005 年比 2000 年均提高，差異有顯著性意義，$P<.01$。在城鄉、南北方、東中西部經濟區分類對比中，2005 年立定跳遠成績均好於 2000 年，$P<.01$。在分行政區對比中發現，西南、西北、東北、中南 4 個行政區幼兒立定跳遠成績提高，差異有顯著性意義，$P<.05$。華北、華東地區幼兒立定跳遠成績整體上無變化。

4.2.3、網球擲遠

總體上，2005 年與 2000 年相比，幼兒網球擲遠成績呈下降趨勢。城市男女幼兒 2005 年與 2000 年相比，均沒有顯著性變化。而鄉村幼兒部分年齡組顯著下降。東部地區女性幼兒、中部男女幼兒 2005 年網球擲遠成績比 2000 年差，$P<.01$。只有西部地區男性幼兒有顯著提高。北方男女幼兒 2005 年網球擲遠成績比 2000 年差，$P<.01$。南方沒有顯著變化。華北、東北和華東地區幼兒網球擲遠成績下降，中南和西南地區提高，西北地方不變。

4.2.4、坐位體前屈

總體上，各年齡組幼兒坐位體前屈成績均提高。按城鄉、南北方、經濟區及行政區劃分對比中發現，大部分年齡組幼兒坐位體前屈成績都有提高。

4.2.5、10 米折返跑

總體上，各年齡組 10 米折返跑成績均下降，說明幼兒整體速度素質提高。在分城鄉、經濟區、南北方對比中，也有上述規律。華北和華東地區沒有變化，其他四個行政區均有提高。

4.2.6、平衡木完成時間

總體上，各年齡組幼兒平衡木完成時間均無顯著性變化。城鄉分層對比，也無變化。按經濟區分層，發現中部地區男性幼兒平衡木完成時間增加，說明平衡能力下降。西部男性幼兒平衡木完成時間縮短。 西北地方男女幼兒和西南地區男性幼兒平衡木完成時間縮短，其他行政區沒有變化。

4.2.7、雙腳連續跳

總體上，各年齡組幼兒平衡木完成時間均縮短，說明幼兒平衡能力提高。鄉村各年齡組完成時間均縮短，城鎮幼兒部分組縮短。西部地區完成時間縮短最顯著，中部次之，東部最不明顯。除東北地區沒有變化以外，其他 5 個行政區幼兒雙腳連續跳時間均縮短。

4.2.7、小結

（1）、反映機能水平的心率 2005 年比 2000 年有所下降，尤其以城鎮、東中部和北方幼兒下降顯著。
（2）2005 年比 2000 年改善的身體素質指標有：立定跳遠、折返跑、雙腳連續跳、坐位體前屈；沒有變化的指標是：平衡木完成時間；下降的指標是：網球擲遠。
（3）身體素質指標的變化規律沒有出現明顯的城鄉區別。
（4）南方幼兒網球擲遠和平衡木完成時間均沒有變化。
（5）東部地區女性幼兒、中部男女幼兒網球擲遠成績下降。中部地區男性幼兒平衡能力下降。而西部地區男性幼兒上述兩個指標均有顯著提高。
（6）2005 年與 2000 年比，幼兒身體素質變化規律在行政區之間有差異，具體表現為：華北、東北、華東地區幼兒素質提高不明顯，而中南、西南和西北地方提高明顯。

5、結論

（1）我國幼兒體質水平整體提高。身體長度、重量及充實度、生理機能、下肢力量、速度和柔韌素質增長顯著。而身體相對圍度、皮下脂肪、上肢爆發力顯著下降；平衡能力沒有變化。
（2）幼兒體質的變化規律沒有出現明顯的城鄉區別。
（3）全國不同地區幼兒體質變化規律不近相同。

新疆維吾爾族3~6歲幼兒體質研究

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The Physical Fitness Research of 3-6 year-old young Uygur Nationality Children in Xinjiang

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摘　要

通過抽樣調查對新疆1400名新疆維吾爾族3～6歲幼兒男女身體形態、機能、素質共14項指標的測試，進行研究分析，揭示新疆維吾爾族幼兒生長發育的變化規律、發展趨勢和城鄉間所存在的差異及原因等，為研究新疆維吾爾族幼兒體質變化的規律和制訂各項體質評定標準提供科學依據。

目　的：揭示新疆維吾爾族幼兒生長發育的變化規律、發展趨勢和城鄉間所存在的差異及原因等，為研究新疆維吾爾族幼兒體質變化的規律和制訂各項體質評定指標提供科學依據。

對象和方法：對象為3～6歲幼兒，分3歲、3.5歲、4歲、4.5歲、5歲、5.5歲和6歲共七個年齡段，男子7個年齡組，女子7個年齡組，對象標本量為700人（男350人、女350人）。測試實施方法均按照《中國幼兒體質調研實施方案》進行，數據的檢測、驗收、數據統計均按幼兒體質調研的檢測細則、驗收細則的要求進行，採用統一規定的器材。測試時間為：2002年4月14日～6月3日。形態指標：身高、坐高、體重、胸圍上臂部皮褶厚度、肩胛下角皮褶厚度、腹部皮褶厚度；機能指標：安靜脈搏（心率）；身體素質指標：立定跳遠、網球擲遠、坐位體前屈、10米折返跑、走平衡木、雙腳連續跳，共14項。測試數據統一用SPSS10.0軟體及Excel軟體進行統計處理。

結　果：

（1）維吾爾族3~6歲幼兒形態發育指標隨年齡的增長呈自然增長規律。三項皮褶厚度指標均增長。

（2）維吾爾族3~6歲幼兒10m折返跑、立定跳遠、網球擲遠、雙腳連續跳、平衡能力呈現明顯的年齡特徵，即隨年齡的增長，男、女幼兒水平逐漸上升。柔韌性素質呈明顯的性別特徵，女好於男。其他素質項目均為男好於女。農村幼兒

好于城市幼兒。

（3）安靜心率城市高於農村，但無明顯城鄉差異。

建　議：

（1）加大國民體質監測宣傳力度，提高人們對幼兒體質監測、測定工作的認識。

（2）家長和幼兒科學調整幼兒的飲食結構，宣傳普及營養知識，提倡健康的生活習慣。

（3）家長和幼兒教師要從幼兒興趣出發，培養幼兒至少有一項體育愛好，循序漸進、持之以恆地堅持鍛煉，以逐步提高新疆幼兒生長發育水平，改善體質狀況。

關鍵詞：體質　測試指標　研究分析　3~6歲幼兒　維吾爾族　新疆

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Abstract

Through sampling investigation, this paper testing and analysis on 14 fitness index such as the body shape, function, and constitution on 1400 3-6years old male and female Uygour nationality children .To discover the drifting regularities, tendency, the differences between city and town and the caused reasons among Uygur nationality children's growth, in Xinjiang, so as it can offer the scientific data for the variety changes regularities research.. The purpose is to offer the scientific basis for physical fitness changing and establish various evaluation standards in Xinjiang.

Key words: Physical fitness; Test indexes; Research and analysis; 3-6year-old children; Uygur nationality; Xinjiang.

北京市殘疾學生體質狀況及健身現狀的調查與分析

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An Investigation of fitness and exercise current situation of Disabled Students in Beijing

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摘要

目前我國大陸現有殘疾人約6200萬，6—14歲義務教育學齡階段的殘疾兒童約750萬，這一龐大的數據引起了社會的普遍關注。通過北京市殘疾學生體質檢測狀況的統計數據以及健身需求的問卷調查，對北京市殘疾學生的各項形態機能指標、體質達標現狀及健身需求等方面進行分析，提出影響殘疾學生體質健康的因素，並對其健身狀況提出合理化建議，為深化殘疾學生體育教育改革、提高殘疾學生體質狀況提供參考。

中文關鍵詞：殘疾學生；體質檢測；現狀與對策

Abstract

In our country mainland there are about 62 million disabled people including 12.89 million children 0—18 years old, and 7.5 million children 6—14 years old who should accept compulsory education are among them。This huge datum has drawn common concern in the society. In the paper, according to the statistics datum about physique state of the disabled students in Beijing and the investigation questionnaire, some physique function index, the current situation to reach the physique standard and the fitness demand are analysed. Then some factors that influence physical health of disabled students and some conductive suggestions for fitness are proposed. The paper offers a few references for deepening the sports educational reform and improving physique state of the disabled students.

Keywords: disabled students ; the physique measuring ; current situation and countermeasure

貴州省2005年國民體質達成率分析

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Analysis on the Qualification Rate of National Physical Fitness in Guizhou 2005

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摘要

本文通過2005年貴州省國民體質監測工作的測試數據，選取各性別、各年齡段達標的不合格率、合格率、良好率、優秀率，分析貴州省國民體質現狀，旨在為我省更進一步開展《全民健身計畫綱要》提供有益參考。

本研究採用了體質測定法，問卷調查法，並用SPSS軟體統計處理採集到的數據。

從測試結果的總體分析來看，貴州省國民體質達成率82.14%，就性別差異來看，男性的總體合格率高於女性；2005年貴州省國民體質達成率明顯低於全國國民體質達成率，有非常顯著差異。2005年貴州省國民體質的總體合格率比2000年貴州省國民體質的總體合格率高，男性和女性的結果趨勢都是相同，貴州省國民體質的總體合格率的發展趨勢是朝良好方向發展，在5年的時間內貴州省國民體質的總體合格率提高了16.35個百分點。此外，優秀率幼兒低，成年甲組和成年乙組比較高而老年人最低。城市總體合格率高於農村，有非常顯著性差異。城鄉差別比較大，體力組總體合格率比非體力組低得多。

我省屬於西部欠發達地區，有17.86%的國民沒有達到《中國國民體質測定標準手冊》評分標準中的合格標準，還有待加大全民健身工程的各種力度更進一步提高貴州人民的健康水平。

我省國民體育人口較少，通過體育鍛煉提高身體素質的意識淡薄，達成率低於全國平均水平。要改變這種狀況，一是要加大宣傳《全民健身計畫綱要》的力度，提高國民的體育鍛煉對增強體質必要性的認識。二是要普及體育鍛煉的科學知識和正確的鍛煉方法。三是加強機關、企事業單位、社區、農村體育工作，在城市幼兒組、成年組到老年組的總體合格以上百分率明顯高於農村，有非常顯著性差異，特別要加強農村體育工作，提高農村體育人口率、體育鍛煉達成率是當今農村體育工作的重點。四是加快體育設施建設，以小型體育場地為主，以社區為主，村寨為主，科學指導老年人的體育鍛煉，以提高我省老年人體育鍛煉的達成率。

Abstract

National physical Fitness surveillance was expanded in 9 counties and cities in Guizhou province, 2005 , based on Scheme on National Physical Fitness 2005, and 23152 valid samples are tested. This essay provides many statistics of national physical fitness surveillance in Guizhou, it analyzes the present condition of national physical fitness in Guizhou, it also chooses the qualified and disqualified rates, good and excellent rates from different variables. It aims at providing helpful reference and opinions to improve national physical fitness..

People in 9 counties and cities are chosen as the samples in this research, questionaire on national physical fitness are used to collect valid statistics. SPSS is used to analyze the statistics.

Based on the results of the test, the average qualification rate of Guizhou national physical fitness (hereafter simplified as QRNPF) is 82.14% (83.63 for males and 80.68 for females), i.e. the qualification rate of males is higher than that of females. It also shows that the QRNPF in Guizhou is lower than QRNPF in the whole country. But compared with the QRNPF in 2000, it has improved by 16.35% (males: 18.45%, females: 14.62%). QRNPF in Guizhou tends to develop better and better. The research also shows that sports workers in Guizhou have devoted a lot to the programme of improvingnational physique and health. It also shows that people in Guizhou have paid more and more attention to their physical fitness and health. As for excellent rates, preschool children have very low rates, adults groups are the highest and the old group is the lowest. The rates of cities is much higher than that of countries. There exists notable difference between cities and countries. Furthermore, the rate of manual laborers tend to be higher than non-manual laborers. But there is also an interesting finding, i.e. the qualified rate for males and females tend to be the same.

Guizhou is still an under-developed province, there are about 17.86% people who cannot reach the standard issued by the Sport Bureau in the Criterion of National Physical Fitness. Kinds of measures should be taken to improve people's physique and health

In Guizhou, there are fewer sports population, people do not pay much attention to physical training, the qualification rate is lower than that of the whole country. Such situation should be improved. Therefore measures should be taken to propagate the Scheme of Improving National Fitness and improve people's consciousness of the importance of sports training. Secondly, scientific training methods and related knowledge should be introduced to all people. Thirdly, the government offices,

factories, communities and countries should be encouraged to devote much attention to the sports work. Especially in the countryside, the QRNPI is the lowest, the sports work should be paid more attention to. Last but not least, the construction of the sports installation should be strengthen, scientific guidance should be given to the old, not only in communities in cities, but also in villages in the distant countryside, to improve the QRNPI in our province. Only by doing these can people's health conditions in the whole country be really be bettered.

關於長春市成年人和老年人體質監測結果的整理與分析

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The Rearrangement and Analysis for the Result of the Physical Quality Monitoring among Adults and Senior Citizens in Changchun City

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摘要

本文根據 2005 年長春市國民體質監測結果，運用文獻數據研究法、抽樣測試調查法、數理統計法、問卷調查法等方法，綜合分析了長春市 20-59 歲（1667 人）、60-69 歲（420 人）兩類人群體質的現狀及可能的影響因素，總樣本量共計 2087 人，其中男性 1041 人，女性 1046 人。旨在為充實並完善我市市民體質監測系統和數據庫，瞭解我市市民體質現狀和變化規律，為全民健身計畫的實施提供科學依據，為我市經濟建設和社會發展服務。

本文是本次監測工作的一部分，本次監測工作是落實《全民健身計畫綱要》推動國民體質建設科學化的一項重要舉措，體現了時代的發展與人民的需求，對提高我市市民的素質和健康水平具有重要的意義，標誌著我市市民體質建設邁入了新的發展階段，國民體質現狀是社會文明和進步的重要標誌。

本文分為現狀分析和專題研究兩部分。現狀分析部分全面描述了我市成年人、老年人身體形態、機能和素質的現狀及變化規律，並將我市與全國平均水平進行了比較分析；專題研究部分深入描寫了體質的性別特徵和年齡特徵，探討了生活環境、生活方式以及某些健康指標與體質的關係，系統地分析了體育鍛煉對

增強國民體質的作用和社會因素對國民體質的影響。

相信本文的研究成果對我市市民體質監測和研究工作將會起到指導和借鑒作用，呼籲更多的市民加入到體育健身中來，遠離疾病、科學健身。對推進全市健身事業的科學化進程和構建面向大眾的體育服務體系將有所貢獻。

總之，本文的宗旨是為了使市民的身體更健康，使市民的生活方式更合理，從而為社會發展得更迅速起到一定的推動作用。

通過數理分析和比較分析得出，我市成年人各項指標總體來說均優於全國平均水平；我市老年人各項指標均優於全國均值，或至少與之持平；我市老年人較成年人參加體育鍛煉的積極性高，主動性強。

關鍵詞：體質　形態　機能　素質

Abstract

This article comprehensively analyze the present state and the potential influential factors of the physical quality of two groups of people at the age from 20 to 59 (1667 people) and from 60 to 69 (420 people) by using the approaches including Literature Research Approach, Sampling Test and Investigation Approach, Mathematical Statistical Approach and Questionnaire Approach based on the result of Changchun City Citizens' Physical Quality Monitoring in 2005. The total number of the samples amounts to 2087, including 1041 male and 1046 female. This article aims at enriching and improving the monitoring system and the data base and understanding the present state and changing regularity of the citizens' physical quality, providing a scientific reference to the implementation of the body-building plan for all citizens, and serving to the economic construction and the social development of our city.

This article is part of the monitoring project, which is an important measure in implementing *the Outline of Body-building Plan for All Citizens* and in improving the scientific construction of the citizens' physical quality. It embodies the development of the times and the requirements of the people, and marks a new developmental phase of the citizens' physical construction in our city, which is significant to the improvement of the diathesis and the health level of the citizens. The present state of the citizens' physical quality is an important notation of social civilization and development.

This article includes two parts which present the analysis of the present state and the monographic research respectively. In the part of present state analysis, the author describes present state and the changing regularity of the figure, function and diathesis of the adults and senior citizens in our city comprehensively, and compare

and analyze the level in our city with the national average level; in the part of monographic research, the author deeply describes the characteristics related to sex and age, discusses the relationship between physical quality and living environment, living style and some health indicators, and systematically analyzes the effect of physical exercises in improving the citizens' physical quality and the influence of social factors to the citizens' physical quality.

It is believed that the research achievements of this article could serve as an instruction and reference to the monitoring and research of the citizens' physical quality in our city, appealing to more citizens to get involved in physical exercises to exercise scientifically and to keep away from diseases, and make great contributions to the scientific progress of body-building utilities and the construction of mass-facing physical service system.

In a word, the aim of this article is to make the citizens more healthy and the citizens' living style more reasonable, and in this way to impel the society to develop faster.

Through the mathematical analysis and the comparative analysis we can work out that all the indicators of the adults in our city are superior to the national average level in general; all the indicators of the senior citizens in our city are superior or at least equal to the national average level; the senior citizens behave more actively than adults in physical exercises in our city.

Keywords：physical quality, figure, function, diathesis

海南省成年人體質狀況調查分析

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Investigation and Analysis on condition of Adult Physical Fitness in Hainan Province

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摘要

研究目的：為掌握占較大比重並為社會生產作出重大貢獻的成年人的體質健康狀況及存在的問題和體質變化規律，科學評價成年人群的健康水平，2005 年海南省國民體質監測中心對 20~59 歲人群進行了調查，本研究對海南省成年人的身體形態、機能和身體素質狀況進行了分析，根據存在的問題提出相應對策和措施，從而為本省實施全面健身綱要提供科學依據。

研究方法：（1）測試指標、規則為國家體育總局制定的《2005 年國民體質監測工作手冊》；（2）測試樣本為海南省 4 個市縣的的 20~59 歲男、女成年人，總共有效樣本數為 5040 人；（3）測試時間為 2005 年 3 月~12 月間；（4）用 SPSS 套裝軟體進行統計處理和檢驗。

研究結果：（1）形態的變化：海南省男、女性成年人身高、體重均值均低於全國均值水平。男性在 40 歲之前，各年齡段體重增長有顯著性差異($p<0.05;p<0.01$)。女性在 25~45 歲之間體重隨年齡增長有顯著性差異($p<0.05;p<0.01$)，但在 45 歲以後隨年齡的增長體重逐漸下降，45~49 歲、55~59 歲兩個年齡段分別較前一年齡段體重下降有顯著性差異($p<0.05;p<0.01$)。（2）機能的變化：海南省成年人的肺活量均低於全國平均水平($p<0.01$)，女性在 50 歲以後肺活量下降顯著($p<0.01$)。（3）素質變化：男性握力在 45~54 歲各年齡段握力下降明顯($p<0.01$)，女性握力在 40 歲以後各年齡段握力下降明顯（$p<0.05$）。海南省成年人坐位體前屈的平均值分別低於全國均值，經 T 檢驗男性($p<0.01$)，女性($p>0.05$)。海南省成年人的縱跳高度分別高於全國均值($p<0.01$)，但下降也較顯著，男性在 30 歲以後，女性在 24 歲以後，下降具有顯著性($p<0.01$)。海南省男性俯臥撐在 30~39 歲年齡段較前一年齡下降顯著（$p<0.01$）。海南省成年女子 1min 仰臥起坐平均值高於全國平均值 7.8 次($p<0.01$)。但下降幅度具有顯著性（$p<0.01$）。海南省成年人閉眼單腳站立平均值男、女性分別高於全國均值，經 T

檢驗男性（$p>0.05$），女性($p<0.01$)。海南省成年人反應時隨年齡增大呈下降趨勢，男性在 40 歲以後，女性在 45 歲以後反應時下降顯著（$p<0.05$；$p<0.01$）。

主要結論：（1）海南省成年人男、女身高、體重分別低於全國平均水平，應加強營養和體育鍛煉。（2）海南省成年人應加強有氧耐力練習，特別是成年女性在 50 歲以後要加強有氧耐力練習；（3）海南省成年男性應加強力量和柔韌性練習。成年女性在握力、縱跳、1min 仰臥起坐、閉眼單腳站立好于全國平均水平，但是隨著年齡的增長下降也非常顯著，海南省成年人自 40 歲開始，心肺功能、柔韌性、力量等多項指標衰退明顯，建議進入此年齡段的人應重點加強心肺功能、柔韌性、力量等方面的體育鍛煉。

Abstract

Research purposes: In order to master the condition of fitness and exist questions and variation laws of the adults who make major part and make great contribution for social products. To science assess the health level of the adults. The Hainan national fitness monitor centre make a investigation for adults between 20-59 in 2005. This paper analysis the physical form. Function and quality. According to the exist questions to take appropriate measures, and to provide science basis for the national exercises essentials.

Research methods: (1) Testing index and laws are according to the general Administration of sport of china drawn up《national physical monitor working handbook in 2005》. (2) Testing samples are the adults between the age of 20-59 in four town and county in hainan province. All the samples are 5040. (3) Testing time is between march-december in 2005. (4) Statistical analysis and checkout with the SPSS software package.

Research results: (1) The variety of the physical form: the male, female adults' height. Weights are lower than national mean. Before the age of 40 of the man, each age phase the increase of the weight have the remarkable difference ($p<0.05$; $p<0.01$). Between the age of the 25-45 of the female, the weight have the remarkable difference with the age increase ($p<0.05$; $p<0.01$). But after the age of 45, the weight is gradually getting decrease with the increase of the age, the weight of the two phase of the age of 45-49, 55-59 are decrease than 40-44, 50-54, and they have remarkable difference ($p<0.05$;$p<0.01$). (2) The variety of the function: the adults pulmonary of the Hainan are lower than national mean ($p<0.01$). After the age of 50, the female pulmonary descend have a remarkable difference ($p<0.01$). (3) The variety of the quality: the male grip decease is remarkable difference between the age of 45-54. After the age of 40, the female grip decrease is remarkable difference ($p<0.05$). the

seat body curved of the adults of the hainan are lower than the national mean, with T testing male ($p<0.01$), female ($p>0.05$). The vertical jump of the adults of hainan are taller the national mean ($p<0.01$). But decease is remarkable difference, after 30 of the male, 24 of the female, the decrease is remarkable difference ($p<0.01$). The push-up of the male of the Hainan decrease between 30-39 is remarkable difference ($p<0.01$). The 1min sit-ups of the female of the Hainan is more 8 times than the national mean ($p<0.01$). But deceasing is remarkable difference with the increasing age ($p<0.01$). The close eye single-leg stand of the adults of Hainan are better than national mean, with T testing male ($p>0.05$), female ($p<0.05$). The reaction time of the adults is decrease with the increase of the age. After 40 of the male, 45 of the female the reaction time decreasing is remarkable difference ($p<0.05$; $p<0.01$).

Main conclusion: (1) the height and weight of the adults of Hainan are lower than the national mean, they should enhance nutrition and exercises. (2) The adults should enhance endurance training. Especially the female, when they are more than 50 ages, they should enhance more endurance exercises. (3) The male of the Hainan should enhance physique strength and flexibility training. The grip, vertical jump, 1min sit-ups, close eyes single-leg stand of the female are better than national mean. But they are decease remarkabl difference with the increase of the age. From the age of 40, the function of the heart-lung, flexibility and strength etc begin to decline, we suggest they should enhance the function of the heart-lung, flexibility and strength training.

廣東省各經濟發展區域成人體質特徵研究

羅智

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The adult constitution feature research of each area of economic growth of Guangdong province

Luo Zhi

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摘要

本文以廣東省各地區經濟發展狀況為依據，劃分經濟發展區域，研究不同區域成人體質特徵，並從行為方式與生活習慣二維角度解析體質差異的原因，結果顯示：經濟發達與欠發達地區成年男子"向心"性增重更為明顯，且經濟發達地區成年男子存在更多高血壓的機能隱患，這可能與其每天較長的工作時間和參加體育鍛煉人數百分比較小有關；各經濟發展區域之間，成年女子體質差異不如男子明顯，這可能與經濟發達地區女子 40 歲後較為寬鬆的工作環境，以及健身人數百分比隨年齡俱增有關；另外，本研究結果提示，加強經濟發達地區成人（尤其是成年男子）體育鍛煉意識的培養、引導經濟欠發達地區成人空閒時間的利用，可能對廣東省成人體質的提高有著較大的幫助。

關鍵詞： 成人 區域 體質

Abstract

This paper is taking the Guangdong province condition of various places of economic growth as basis and the partition area of economic growth , studies that different area is accustomed to the 2 reasons of dimension angle analysis physique discrepancy into the quality feature of human body and from behavior way and life , shows as a result: Economy is developed and owe developed region adult man " centripetal " sexual weightening finish is more obvious, and economic developed region adult man has the function hidden trouble of more hypertension, this is possible with its daily longer working time and attend the people percentage of physical training less relevant; Between each area of economic growth, adult woman physique discrepancy is not as good as man it is obvious, this is possible the woman relatively comfortable working environment after 40 years old with economic developed region, as well as gymnastical people percentage follows age all increase relevant; Additionally, this research result is refered to , strengthens economic developed region to grow up

(especially adult man) physical training the training of consciousness , guide the economic use owed developed region adult idle time, the possible raising that becomes the quality of human body for Guangdong province has greater help.

Keyword: constitution adult

上海和東京兩地學生身體素質二十年動態變化的比較分析

劉新華

Comparison research on 20 years physical diathesis change between Shanghai and Tokyo students

Liu Xinhua

1. 前言

自中日兩國開展國民體質監測工作以來，兒童青少年的體質健康狀況，一直受到中日兩國政府和專家學者的高度重視。1985年中日兩國首次就兒童青少年的體質狀況進行了聯合調查研究。2005年，兩國在第一次聯合調查的基礎上又進行了第二次更為廣泛的聯合調查研究。20年來，兩國的社會和經濟發展均發生了不同程度的變化，兒童青少年的體質狀況也在不斷地變化和發展。身體素質作為兒童青少年體質監測的重要指標，在一定程度上可以看作是人體形態結構和機能的綜合表現。中國和日本同屬亞洲國家，在歷史、文化、氣候、生活習慣等方面有諸多相似之處。本文通過對上海和東京兩地學生的身體素質進行比較，探討兩地學生身體素質的發展變化規律以及各自的特點和差異點，對於預測我國兒童青少年身體素質未來的發展趨向具有重要的現實意義。

2. 研究對象與方法

2.1 研究對象：

6～19 歲中國上海市和日本東京都及附近地區兒童青少年（學生）各 14 個年齡組。根據可比性原則，本文對 7-19 歲的年齡組進行比較分析。

2.2 分析指標：

以 1985年和2000年中國學生體質與健康研究組編寫的中國學生體質與健康調研報告、2005年第二次國民體質監測公報、日本文部省體育局統一出版的1985年和2005年的體力·運動能力調查報告書以及1985年和2005年中日聯合調查數據為基礎資料；選用分別反映速度、耐力、柔韌、爆發力、力量和靈敏素質的50米跑、1500米、1000米、800米、50米X8、折反跑、5分鐘跑、立位體前屈、坐位體前屈、縱跳、立定跳遠、斜身引體向上、引體向上、握力、仰臥起坐和左右橫跨16項指標，分別對此16項指標統計計算，並對其進行動態對比分析。

2.3 研究方法：

通過測試法對6～19歲的學生的身體素質指標進行了測試。各項指標的測試方法與儀器，根據兩國協商，中方按照《2005年國民體質監測工作手冊》中的測

量方法和指定器材測試。

3・研究結果與分析

3.1 1985-2005年中日兩國學生身體素質的動態變化分析

3.1.1 中日兩國男生身體素質20年間的動態變化分析

在1985-2005年的20年間，中國男生反映爆發力的立定跳遠和力量素質的握力、斜身引體向上（7-12歲）有所提高，其中斜身引體向上（7-12歲）有明顯提高。反映速度素質的50米跑、柔韌素質的立位體前屈、引體向上（14-18歲）、耐力素質的1000米跑均有不同程度下降，其中立位體前屈和1000米跑下降幅度較大。

而日本男生除反映靈敏素質的左右橫跨略有上升外，反映力量素質的握力、斜身/引體向上，速度素質的50米跑和下肢爆發力的縱跳、立定跳遠基本上呈下降趨勢或下降不明顯。

3.1.2 中日兩國女生身體素質20年間的動態變化分析

在1985-2005年20年間，中國女生除反映下肢爆發力的立定跳遠（13-18歲），力量素質的斜身引體向上（7-13歲）和反映腰腹力量的仰臥起坐（14-17歲）有不同程度提高外，均有不同程度下降，其中50米跑和立位元體前屈下降幅度較大。

而日本女生除反映靈敏素質的左右橫跨、柔韌素質的立位體前屈和腰腹力量的仰臥起坐（2000-2005年）略有上升外、反映力量素質的握力、耐力素質的折返跑、速度素質的50米跑以及下肢爆發力的縱跳、立定跳遠基本上呈下降趨勢或下降不明顯。

3.1.3 中日兩國學生身體素質20年間動態變化的對比分析

我國反映男女生6項身體素質的指標雖然與日本反映男女生8項身體素質指標不完全相同，但基本上都是反映速度素質、耐力素質、柔韌素質、爆發力和力量素質的指標。從兩國學生身體素質的總體情況來看，我國學生身體素質的發展有升有降，呈不平衡發展；而日本基本保持不變或呈下降趨勢。

3.2 1985-2005年上海市和東京都學生身體素質的動態變化分析

（上海市有三項指標為1985-2000年）

3.2.1 上海市學生的身體素質發展不均衡，整體水平呈上升趨勢，部分素質有所下降

上海市學生5項身體素質指標，在1985-2000年的15年間，反映下肢爆發力的立定跳遠、力量素質的斜身/引體向上、速度素質的50米跑、柔韌素質的立

位體前屈（女生）和腰腹力量的仰臥起坐（女生）均有不同程度提高，部分素質指標增長幅度較大；而男生立位體前屈除 7-12、14、15、17、19 歲外，50 米 X8/1000 米跑，男生除 10、12 歲、女生除 10、11、14-19 歲有所增長外其餘年齡組均有所下降，因此，上海市學生 5 項身體素質有增有降，發展不平衡。從總體上看，上海市男女學生身體素質在 1985-2000 年 15 年間的變化，在一定程度上反映了我國學生身體素質的發展和變化趨勢。

3.2.2 東京都學生身體素質發展呈下降趨勢

東京都學生 6 項身體素質指標，除反映力量素質的握力，男生 7、8、10-14 歲、女生 7-13 歲，耐力素質的折返跑，男生 13-15 歲，速度素質的 50 米跑，男生 10、12、14、15 歲，女生 11 歲，腰腹力量的仰臥起坐，男生 7、9、13、15、18 歲，女生 7-9、11-17 歲有所增長外，其餘年齡組均有不同程度下降，其中縱跳和 5 分鐘跑下降幅度較大。因此，在 1985-2005 年的 20 年間，東京都男女學生 6 項身體素質基本上呈下降趨勢。與日本全國學生身體素質的發展和變化趨勢基本相吻合。

3.2.3 上海和東京兩地學生速度素質呈現不同發展趨勢

50 米跑是反映速度素質的一項重要指標。1985-2005 年的 20 年間，從上海和東京兩地學生 50 米跑的增長情況看，上海市 7-19 歲男女生 50 米跑的平均增長值，2005 年較 1985 年相比有明顯提高。而全國男女生卻出現了負向增長趨勢，女生下降幅度大於男生。東京都 7-19 歲男女生 50 米跑的平均增長值，在 1985-2005 年的 20 年間，總體上保持穩定，略呈下降趨勢。與日本全國 20 年間的變化基本相同。

1985 年和 2005 年上海市男生的平均成績分別是 8.80 秒和 8.34 秒，20 年間平均提高了 0.46 秒，增長率為 5.2%。而 1985 年和 2005 年東京都男生的平均成績分別是 8.48 秒和 8.62 秒，20 年間平均下降了 0.14 秒，增長率為-1.6%。1985 年和 2005 年上海女生的平均成績分別是 9.82 秒和 9.35 秒，20 年間平均提高了 0.47 秒，增長率為 4.8%。1985 年和 2005 年東京女生的平均成績分別是 9.27 秒和 9.52 秒，20 年間平均下降了 0.25 秒，增長率為-2.7%。

1985-2005 年的 20 年間，上海市男女生速度素質呈正增長趨勢，而東京市呈負增長趨勢，但上海市男女生 1985 年的平均值均低於東京都男女生 1985 年的平均值。

3.2.4 東京兒童青少年柔韌素質自然增長高峰年齡較上海提前

7-19 歲的兒童青少年正處在生長發育的重要時期，身體各項素質的發展會出現隨著年齡增加而自然增長的現象。上海市和東京都男女生柔韌素質 1985 年和 2005 年出現自然增長的現象具有一定的規律性。上海市男生 1985 年和 2000 年

突增期年齡分別始於 11 歲和 12 歲，並分別於 18 歲和 17、18 歲達到高峰，2005 年與 1985 年相比達到自然增長高峰的年齡提前。東京都男生 1985 年和 2000 年突增期年齡分別始於 12 歲和 10 歲，並均於 14 歲達到高峰。上海女生 1985 年和 2000 年突增期年齡分別始於 12 歲和 14 歲，並分別於 16 歲和 17 歲達到高峰。東京女生突增期年齡分別始於 11 歲和 12 歲，並分別於 16 歲和 15 歲達到高峰，2005 年與 1985 年相比達到自然增長高峰的年齡提前。除 1985 年上海和東京女生達到自然增長高峰年齡相同外，其餘東京均較上海提前。

4、結論

4.1 1985-2005 年的 20 年間，我國男女學生身體素質的發展不均衡，有增有降；而日本基本保持不變或呈下降趨勢；

4.2 1985-2000 年的 15 年間，上海市男女學生身體素質發展水平有不同程度提高，但個別素質，有增有降，發展不平衡；東京都男女身體素質，在 1985-2005 年的 20 年間基本上呈下降趨勢；

4.3 東京和上海兩地學生速度素質的發展呈現不同發展趨勢；

4.4 2005 年與 1985 年相比東京都男女學生柔韌素質自然增長高峰年齡較上海提前。

三年的運動實踐對肥胖和體質的影響

Impact of a 3-year physical activity intervention on obesity and fitness in young children: The Medical College of Georgia FitKid Project

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Abstract

Background. The current epidemic of juvenile obesity is partly due to youths being increasingly exposed to "obesogenic" environments. For example, during after-school hours, youths are often in an environment in which sedentary activities (TV watching, video games) and energy-dense snacks are readily available, whereas opportunities for moderate-vigorous physical activity (MVPA) are limited.

Study purposes. The Medical College of Georgia FitKid Project (MCG FitKid) was designed to test the hypotheses that an after-school environment that encourages MVPA and healthy snacks (a "fitogenic" environment) will: 1) prevent inappropriate increases in body fat percent and 2) improve cardiovascular (CV) fitness over a 3-year period (grade 3 to grade 5).

Study design. This study was conducted in collaboration with a public school district in Augusta, Georgia. Sixty-three percent of the students was African-American (AA), 32% white and 5% other racial groups. Eighteen elementary schools were randomly assigned to control (9 schools) or intervention condition (9 schools), stratified by school-level sociocconomic status. Because we planed to examine the effect of an environmental modification, school (rather than individual) was the unit of randomization and analysis. A total of 604 students (306 control and 298 intervention) were tested at baseline in grade 3. A total of 298 students were tested in the 9 intervention schools at baseline in grade 3. Participation rate at baseline in grade 3 was 49%. Attrition rate for three years was 45%.
Measurements taken at the beginning (baseline) and end (post-test) of each school year (grade 3 to grade 5) included: body fat percent with dual-energy x-ray absorptiometry; and CV fitness (heart rate at completion of a three-minute step test; beats/minute; high heart rate=poor CV fitness); anthropometry (height, weight, waist circumference). Half of the students in intervention schools worn a heart rate

monitor each day to monitor levels of physical activity intensity. A mobile health lab was used to collect data on school ground to reduce participant burden.

Intervention protocol. All 3rd grade students in the intervention schools were invited to participate in the MCG FitKid after-school program. The MCG FitKid lasted 120 min each school-day afternoon. The first 40 min was used for healthy snacks and teacher-assisted homework and academic enrichment activities. The next 80 min was used for PA that emphasized enjoyable developmentally-appropriate games, sports and dance forms (30-minute warm-up and skill instruction, 40-minute MVPA, and 10-minute stretching/cool-down). Students were transported home on school bus afterward. The MCG FitKid program was delivered by trained school teachers. The after-school program was provided to students in intervention schools five days a week during school year (September to May). No intervention was provided during summer breaks. All 3rd grade students in the control schools were invited to participate in testing only and did not receive any intervention.

Data analysis. Data was analyzed using the mixed models (SAS 9.0) to account for the clustering effect due to randomization by school design. A growth curve model was fitted to test the difference in linear trends between intervention and comparison groups over six time points. An unconditional intercept-only model with school as a random term was tested first to estimate the intraclass correlation due to clustering. Then fixed-effected terms (intercept, time, treatment group, sex, race, and height) and two random-effect terms (% of students eligible for free or reduced school lunch and % of students who were white) were entered in the model. Height was included as a proxy of maturation. Age was originally included but was not used, since it was highly correlated with height and not correlated with the outcome measures. Interaction terms of all significant terms were also tested. The fitting of the models was conducted using a backward stepwise approach. Only significant terms (main effect or interaction) were retained in the final model. P-value for significance in all analysis was set .05.

Results. The average attendance in the after-school program was 2.5 time/week; the average heart rate during the physical activity section was 149 beats/minute.

For body fat percent, there was a significant difference in the linear trend (treatment by time interaction term) between the intervention and comparison group ($p < 0.041$). The average difference between the groups was 1.68% over three years. The

interaction term for time by treatment by height was also significant ($p < .04$) suggesting that overtime body fat percent change rate was faster with faster physical maturation in intervention group. All fixed terms were all significant.

There was no significant difference in growth trend on fitness (HR at completion of step test) between intervention and comparison groups. Only sex and race were the significant terms in the final model. Figure 1 showed although the CV fitness was improved at each post-test, it rebounded to baseline level of previous year. It is clear that the program effect on fitness in intervention group was attenuated over summer breaks, where no intervention was offered. Therefore, the linear trend was difficult to model since the rebound over summer made it difficult to fit a linear line (see Figure 1 attached below).

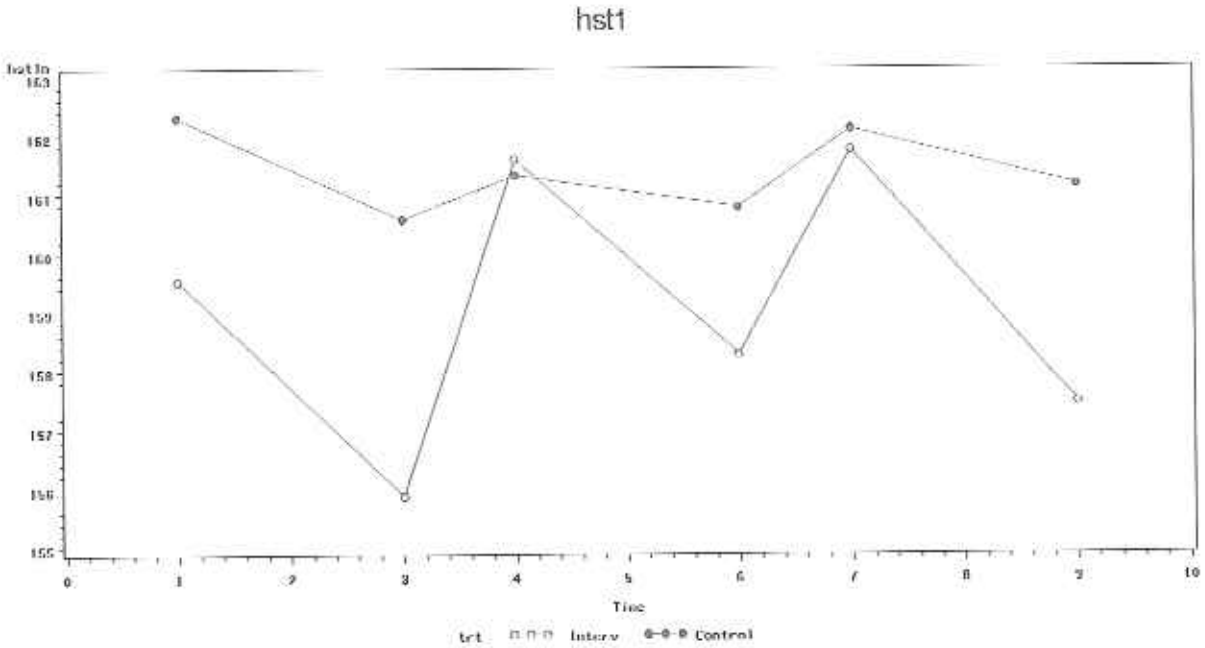

Figure 1. Heart rates over six measurement times (baseline (Time 1, 4, and 7) and post-test (Time 3, 6, and 9) for three years; closed circle=control; open circle=intervention)

Conclusion. This demonstrated that a supervised and safe after-school environment that promoted PA and healthy eating prevented accumulation of inappropriate amounts of body fat and had a favorable impact on CV health in youths. Government and public health agencies should be encouraged to implement such after-school programs to prevent juvenile obesity and associated health problems. It should be noted that although the CV fitness and body fat percent were improved at the end of each school year (September to May), they rebounded over summer breaks

(June to August) in students in intervention schools. Therefore, it is important to provide year-around physical activity programs.

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2005 年常德市老年人體質監測報告

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A Report on Surveying Physical Fitness of Old People in Changde City

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摘　要

欲探討常德市老年人的體質狀況，隨機抽取 839 名老年人進行了體育鍛煉問卷調查和體質測試。結果顯示：常德市老年人閒暇時間主要做家務、玩棋牌和視聽娛樂的比例依次為 62.22%、49.46%和 43.89%，只有 29.68%的老年人選擇體育鍛煉。常德市老年人體育人口比例為 18.59%，城鎮（30.00%）高於鄉村（7.16%）（$p<0.01$）。常德市老年人體育鍛煉參與率為 43.98%，且城鎮（72.38%）高於鄉村(15.51%)（$p<0.01$）。步行、健身操（舞、秧歌）和武術（氣功）排在老年人體育鍛煉項目的前 3 位，防病治病、提高運動能力和減壓（調節情緒）排在體育鍛煉目的的前 3 位元。老年人參與體育鍛煉的主要障礙為工作忙缺少時間、沒興趣、缺乏場地設施、缺乏指導和家務忙缺少時間。有關工作時間的問卷調查結果顯示，38.62%的老年人每天仍需工作，8.94%的老年人每週工作 40 小時以上，需工作的老年人鄉村多於城鎮。常德市老年男子吸煙率為 51.66%，女子為 10.79%。常德市老年人身體形態指標的均數均城鎮高於鄉村。老年人體重超重和肥胖的比例高達 41.95%，且女性（47.96%）大於男性（36.02%），城鎮（47.14%）大於鄉村（36.75%）（$p<0.01$）。按收縮壓≥140mmHg，舒張壓≥90mmHg 為高血壓的診斷標準，常德市老年人高血壓檢出率為 32.42%。常德市老年人的肺活量和身體素質指標低於湖南省 2000 年的監測結果。常德市老年人體質合格（含優、良）率為 91.42%。老年人體質水平鄉村高於城鎮，這與體質評價所依據的各單項指標的城鄉特點有關。結論：常德市老年人體質整體水平較好，但肺活量和身體素質較低，體育人口比例較低，體育鍛煉參與度不高，吸煙、超重、肥胖

和高血壓現象較嚴重。建議政府及其主管部門加大投入，改善群眾健身條件，加強全民健身的宣傳、健身知識的普及和鍛煉方法的指導，同時開設老年健身門診，提高老年人的健身效果。

關鍵詞：老年人；體質；體育鍛煉；監測

Abstract

To explore the physical fitness of old people in Changde city, 839 old people aged from 60 to 69 years old were sampled randomly and investigated by questionnaire and examining fitness in 2005. The results shout: the old people in Changde city chose doing housework, playing chess and cards, watching TV as leisure-time activities. Only 29.68% of them prefer doing sports. The rate of sports population of old people in Changde is 18.59%, which of city (30.00%) is higher than that of countryside (7.16%) ($p<0.01$). The proportion of old people who take exercise is 43.98% in Changde city, which of city (72.38%) is higher than that of countryside (15.51%) ($p<0.01$). Old people like walking, setting-up exercise (yangko) and wushu (qigong) most. The first 3 purposes of doing sports they chose are preventing and curing disease, improving athletic ability and decompression (adjust sentiment). The main obstacles that prevent old people taking part in sports are "lack of time because of busy work"," lack of place and facilities"," lack of time because of housework". The relative questionnaire about work time shows that 38.62% of old people need to work every week. 8.94% of old people work more than 40 hours every week, and more old people in rural area need to work than old people in urban area. 51.66% of old men and 10.79% of old women smoke in Changde city. The indexes of physical configuration of old people in urban area are higher than old people in rural area. 41.95% of old people are overweight even obese, and the rate of woman (47.96%) is higher than that of man (36.02%), in urban (47.14%) is higher than in rural (36.75%) ($p<0.01$). The mean of vital capacity of old people in rural area is bigger than the old people in urban area. According to hypertension diagnostic standard (systolic pressure $\geq$ 140 mmHg, diastolic pressure $\geq$90 mmHg), the proportion of the old people with of hypertension in Changde city is 32.42%. The

average vital capacity and indexes of physical quality of the old people in Changde city are lower than that of Hunan province in 2000. The rate of the standard physical fitness of old people is 91.42%, which of old people in rural is higher than that of old people in urban area. It is related to the different characters of the individual index that the physical fitness evaluation system base on between city and countryside. The conclusion is that: the entirety level of the physical fitness of old people in Changde city is relatively high. But vital capacity and physical capability are not very good. The proportions of sports population and participants in physical exercise are a little low. There are too many over weight and obese old people, people with hypertension and smokers in Changde city. The government and the departments in charge are suggested to increase inputs to develop public sports facilities, improve the condition of body-building for masses, strengthen the organization and leadership of extensive mass fitness campaign. And it is also important to improve the propaganda to popularize knowledge of fitness and guidance of the methods of it. And "body-building clinic" especially for old people is helpful to improve the fitness of them.

Key words: old People; physical fitness; physical exercise; survey

河南省成年人體質狀況和體育鍛煉的調查分析

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Investigation and Analysis of Adult Fitness and Physical Exercise in Henan Province

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摘要

本文根據對河南省三個城市的20～39 歲和40～59 歲的成年人體質監測結果,採用文獻研究法、數理統計法、數據調查和分析法,從生活習慣、工作情況、日常活動和體育鍛煉情況等方面,研究和探討了河南省成年人體質的特徵和變化規律。研究結果對指導河南省全民健身活動的科學開展，對今後長期動態地觀察河南省的成年人體質狀況變化，對群眾體育政策、法規的制定和實施提出了理論依據。

關鍵詞:河南省,成年人，體質,體育鍛煉，分析報告

Abstract

Based on the monitoring result of the adult physical fitness aged at 20-39 & 40-59 years old in three cities of Henan province and through using literature, methods of mathematics statistics, methods of data investigation and analysis, this article research the habit, work, daily activities and physical exercise, etc. and discuss the characteristics and changing rule of their physical fitness. The result is good for active development sport for adult of Henan province, mass sport policy, constitution and law implementation.

Key words: Henan province, adult, fitness, physical exercise, analyzing report

廣西 40-59 歲成年女子體質的因數結構研究

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Research on Physical Fitness Genes Structure between 40~59 Years Old Adult Women in Guangxi

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摘要

研究目的：探討影響廣西 40～59 歲成年女子體質的主要因數及其因數結構特點。

研究方法：抽取 2005 年廣西國民體質監測 40-59 歲的成年女子 1758 人，體質監測指標和品質控制按照《2005 年國民體質監測工作手冊》進行。本課題研究指標有:城鄉、受教育程度、職業、平均每週工作時間等 18 項詢問指標和該年齡段的機能和體能指標共 36 項。採用 Principal components 分析法對數據進行公因數提取並對特徵根大於 1 以上的公因數進行方差最大化正交旋轉提取因數。

研究結果：影響廣西 40-59 歲成年女子體質因數的重要性程度從高到低依次排列是體育鍛煉因數、體型因數、職業因數、呼吸和體能因數、血壓因數、吸煙因數、心血管機能因數、睡眠因數。在 8 個主要因數中最重要的是體育鍛煉因數和體型因數，平均每週體育鍛煉次數、平均每次體育鍛煉的時間和堅持體育鍛煉時間是影響體育鍛煉因數的最為重要的因素。

研究結論：研究對象體質因數的內部結構、各因數對體質影響的重要程度各不相同、各指標間存在著相互關係。建議中年女子養成有規律鍛煉習慣、不吸煙、每天保證足夠睡眠時間的良好生活方式，維持血壓在正常範圍，改善和增強體質。

關鍵詞：女子;體質;因數;結構

Abstract

Object: affecting gene structural Characteristic and the major genes between40~59 years old adult woman physical fitness in GuangXi were studied.

Method: 1758 women aged 40 to 59 year were selected in Guangxi national physical fitness monitoring. The index and quality control of monitoring is according the workbook of national physical fitness monitoring in 2005. There are physical function index , physical quality index and 18 item inquisition index such as city and countryside, the degree of receiving education, occupation, on-time average week, and so on . The common gene was extract by principal components. The common gene was revolved if the eigenvalve exceed 1.

Result: The important degree of affecting gene structural Characteristics in order is the physical training gene, shape gene, occupation gene, respiration and physical fitness gene, blood pressure gene, smoking gene, cardiovascular function gene, sleep gene. In the 8 major genes, it is most important to be the physical training gene and shape gene. The physical training degree every week, the physical training time at a time, the time insisting on physical training were the most important to the physical training gene.

Conclusion: the internal structure of physical fitness genes and each gene affecting on physical fitness were different. There are correlated among these indexes. We make advise that middle age women should take exercise rule, not smoking, keep enough sleeping time every day, keep blood pressure up to snuff, improve and buildup physical fitness.

Keyword: women: physical fitness: gene: structure

2005 年瀋陽市城市居民體質與階層關係的研究

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The Research on the Relationship of 2005 Physical Fitness and Strata of Shenyang Urbanite

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摘要

1.研究目的

當今世界以經濟和科技為基礎的綜合國力的競爭日趨激烈，從一定意義上講，這種競爭是人才的競爭，是整個民族素質的競爭。而國民體質是民族素質的重要組成部分，國民體質是一個國家、一個民族文明進步的重要標誌，國民體質還是衡量人口素質的重要標誌，是人的素質的重要組成部分。

本研究將組織資源、文化資源、經濟資源這三種資源的佔有情況綜合起來考慮，將對不同階層人群的性別、年齡、體質總分和體質綜合等級等進行分析比較，以期能找出不同階層人群的體質特點，並對比不同階層人群的體質總體情況，詳細分析每個階層的體質特點，使體質研究更加深入，為群眾體育工作的開展、為人們瞭解自身狀況提供科學依據。

2.研究方法

2.1 文獻數據法

採用手工和電腦兩種檢索途徑，對國內外相關研究數據進行收集，並對數據進行了深入細緻的研究和分析。

2.2 體質測定法

在 2005 年 7 月—8 月瀋陽市國民體質監測期間，本人參與測試，對瀋陽市社區和單位的 20-59 歲的成年人進行了體質測試測試工作嚴格按照《2005 年國民體質監測工作手冊》中規定的方法和測試細則進行。

2.3 數理統計法

其中包括：描述性統計分析；差異檢驗；相關分析。

3. 結果分析討論

3.1 不同階層性別比較結果

從統計結果看，測試總數男子少於女子。不同階層分佈：男女均是中層人數最多，其次是中上層，最少是中下層。男女不同階層間差異具有顯著性。

3.2 不同階層年齡比較結果

不同階層男子、女子的年齡順序從大到小依次是：中下層>中層>中上層，方差分析結果顯示：男、女各階層間均是中下層與中上層、中下層與中層間差異顯著，中層與中上層間差異不顯著。

3.3 不同階層總分比較結果

本文分性別對不同階層的體質總分進行了方差分析，結果是男子體質總分從大到小順序是：中層>中上層>中下層；女子總分是：中上層>中層>中下層；男女中下層與中上層、中下層與中層間多重比較差異非常顯著，男女中層與中上層間均無顯著差異。

3.4 不同階層達成率統計結果

優秀率中層和中上層遠高於中下層；良好率、及格率也是中層高於中上層，中下層最低。

女子不同階層間中上層的優秀率遠高於中層和中下層。

3.5 不同階層體質總分及等級間比較

結果是男子體質總分從大到小順序是：中層>中上層>中下層；女子總分是：中上層>中層>中下層；男女中下層與中上層、中下層與中層間多重比較差優秀率中層和中上層遠高於中下層；

3.6 同性別、不同階層體質指標的統計分析

男子身高：中下層與中層、中下層與中上層間差異顯著。體脂率：中下層與中層間差異顯著。

男子各階層間差異無顯著性的指標有：體重、腰臀比、BMI。

女子身高：中下層與中層、中下層與中上層差異顯著。腰臀比：中下層與中層、中下層與中上層間差異顯著。BMI：中下層與中層、中下層與中上層間差異顯著。

女子各階層間差異無顯著性的指標有：體重、體脂率。

從上面的分析看出，階層不同，有些體質指標是有區別的，

3.7 體質相關分析

通過對體質狀況與社會人口學的統計分析，結果是體質等級與社會階層顯著相關，與年齡、性別、婚姻狀況無關。

通過對體質狀況與生活方式多項指標的相關分析看，結果與體質總分相關的指標是工作時間、睡眠品質、坐位時間。

關鍵詞：階層；體質；形態指標；機能指標；素質指標; 城市居民

Abstract

1. Aim of research

Now, the competition of the complex national strength between economics and technology is more intensive. It is the competition of the whole nation's quality. Physical Fitness is one part of the whole national quality, also it is the symbol of the civilization of one nation. Physical fitness is the symbol of population quality.

This paper considers three resources of social identification, culture and economy. We compare the stratification of gender, age, whole fitness scores and classical ranks. We hope to find the regulation of different fitness. Also we analyzed the character of different strata. This paper will give scientific basis for government of mass sports and for people themselves.

2. Research methods

2.1 Literature method: We search a lot of papers.

2.2 Survey method: We survey about 509 urbanite of Shenyang from July to September in 2005.

2.3 Statistic method: Using SPSS 11.5 as the main statistic method. Using descriptive statistic; Comparing means: One-Way AVOVA; Correlate Bivariate.

3. Result Discussion and Analysis:

3.1 Gender: Male is more than female in large fitness indexes. Middle stratum is larger than middle-up one, middle-down stratum is lest. Three strata are significant.

3.2 The ages of different strata: middle-down stratum is the most, middle one is in the middle, middle-up one is the lest. The differences between middle-down and middle-up strata are significant. Also the differences of middle and middle-up strata are significant.

3.3 Whole score and fitness rank of different strata:

The result is: Male order: The score of fitness: middle stratum is the most, middle-up one is

The second, and middle-down one is least. Female: middle-up stratum is the most, middle one is the second, middle-down one is the lest.

3.4 Ratio

The best ratio of all score : middle and middle-up strata are more than middle-down one.

The better ratio of score and the good ratio are all the same as the best one.

3.5 Comparing fitness score and rank: The whole score of male: middle class is the most, middle-up one is the second, middle-down one is lest. For female: middle-up class is the most, middle one is the second, middle-down one is the lest. The best ratio of middle and middle-up strata is much more than middle-down one.

3.6 Statistic analysis of different fitness indexes

The height of male: middle-down stratum is significant than middle one; middle-down stratum is significant than middle-up one. The fattiness ratio: middle-down class is significant to middle one. The indexes of weight, waist-hip ratio and BMI are not significant.

Female: Height is different between middle-down and middle strata, and height of

middle-down class is significant with middle-up one. The indexes of no significance are weight and waist-hip ratio. BMI: middle-down stratum is different with middle one; also middle class is different with middle-up class.

Female fitness indexes: No difference of fitness is weight and fattiness.

3.7 Correlation analysis

The result of fitness is that the physical rank is more significant with strata. It is no different among age, gender and marriage.

The lifestyle indexes are relative with woke time, sleeping quality and sitting time.

Key words: Stratum; Physical Fitness; morphology Indexes; Function Indexes; Constitution Indexes ; Urbanite

福建省三地市成年人體質綜合水平變化探析及干預措施研究

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Analysis of changes of physical fitness and intervention study in Fujian Province adults

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摘要

1 目的：通過分析福建省 2000 年至 2005 年這五年間成年人的體質綜合水平變化狀況，研究探討干預措施，以利今後更有效的制定工作重點及策略。

2 對象和方法：數據來源於福建省 2000 年和 2005 年報送國家體質監測中心的福州、廈門和三明這三個地市的 20-59 歲成年人監測數據。

3 結果與分析

2005 年體質監測結果顯示，福建省 2005 年成年甲組體質綜合水平高於 2000 年；而成年乙組體質綜合水平不如 2000 年，總合格率比 2000 年低 6 個百分點以上。三種人群中城市非體力勞動者的體質綜合水平最高，其次為城市體力勞動者，農民最差。2005 年成年甲組三種人群的體質綜合水平均有不同程度的提高，而成年乙組中城市體力勞動者和農民的體質綜合水平均明顯低於 2000 年，尤其是農民的總合格率低了 13.38 個百分點。分析造成這種結果的最主要原因還是與缺乏體育鍛煉有關。從問卷調查中可見，男女成年人參加鍛煉的人數不到 60%，尤其是農民參加鍛煉的人數不到 35%。

中年人的體質狀況差除了人體自然衰老的因素外，與這個年齡段的人群肩負著工作家庭的雙重負擔，因此缺少鍛煉的時間有關。而且由於經濟的發展，人們業餘生活中可選擇的娛樂活動日益豐富，有相當一部分人將休閒時間過多用於視聽娛樂、上網、打麻將等久坐不動的活動。城市的擴大化和人口的迅速增長，造成人均享有的鍛煉場所減少，交通擁擠，人們花費在上下班路途的時間增加，能支配的業餘時間減少。而農民的工作生活壓力遠遠大於城市居民，在生活條件沒有得到充分改善的情況下，談不上參加體育鍛煉，而且其中許多人存在體力勞動等同於體育鍛煉的錯誤觀點。而成年人健康意識不足、不良的生活方式和人們的

惰性是阻礙他們參加體育鍛煉的最大障礙。

4 干預措施研究

從幼兒開始培養體育鍛煉的習慣。提高國民的健康意識，加大宣傳力度，建立制度舉辦健康教育講座，讓體育成為大眾的生活方式。發展完善體質監測服務體系，提高從業人員的專業知識水平。與醫療單位合作，將體質監測體系逐漸與健康體檢結合，開展體質測定並輔以運動營養等綜合干預措施，並在社區醫院中，建立體質健康檔案，跟蹤觀察固定人群的體質狀況變化情況。發揮行業工會組織的作用，每年進行各項體育比賽，獎勵積極參加體育鍛煉體質良好的員工等。聘請專業人員根據不同行業的工作特點編創相應的工間操，定時讓員工參加活動。關注農民群體的體質狀況，縮小城鄉差距，進一步發展和完善我省的農村體育事業。

關鍵詞：福建省　成年人　體質　干預措施

Abstract

Purpose : By analyzing Fujian province changes in the level of physical fitness among adults， study interventions for the benefit of future work priorities and develop more effective strategies.

Subjects and Methods: Data were collected from Fujian Province in 2000 and 2005 were submitted to the national body monitoring center in adults monitoring data.

Results and Analysis ：Physical monitoring results indicate that in 2005, the 20-39 year-old physical fitness level more than 2000 results， and the 40-59 year-old physical fitness level below 2000 results. Among the three crowds non-manual workers are best in the level of physical fitness, followed by urban laborers, farmers worst. The level of physical fitness in 2005 have improved among the three crowd in age 20-39 ，but the urban laborers and farmers was significantly lower than the average in 2000. The most important reason for this result is the lack of physical exercise. Less than 60% of the number of male and female adults in training, especially the training of farmers having less than 35%. Apart from the middle-aged, the poor state of physical aging of the body's natural factors, with this age group shoulder the double burden of work and family, the lack of training time. Moreover, as economic development, people's choice of entertainment is becoming richer. A large number of people will be too much for the audio-visual entertainment leisure time, the Internet, not to mention playing mahjong and other sedentary activities. And the rapid expansion of urban population growth, resulting in reduce the training

venues. It increased the time spent on the way to work, can reduce the dominance of activities. The pressure of the living in farmers is far greater than urban dwellers, and many of them have erroneous viewpoints that no difference between manual and physical exercise. And the lack of health awareness among adults, unhealthy lifestyle and the people's inertia is the biggest obstacle hindering their participation in sports training.

Intervention studies： From early childhood to begin developing the habit of physical exercise. Raise the awareness of health, greater publicity, and establish a system to organize health education seminars, Sports has become a way of life for the public. Developed physique monitoring service system and enhance the professional knowledge workers. Cooperation with the medical unit, Health monitoring system will be combined with physical examin, Nutrition and exercise prescription. Establish physical health files. The crowd observed a fixed physical condition changes. Every year, Union organizes various sports competitions reward good employees to actively participate in sports and physical training. Aerobics scheduling according to the characteristics of different industries work and allow employees to participate in regular physical exercise. Concerned about the physical condition of the farmers group. Narrowing the gap between urban and rural areas and to further develop and improve rural sports.

Key word：Fujian Province; adults; physical fitness ; Intervention

廣州市某區小學生體質與營養狀況分析

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Analysis of the habitus and nutrition of primary school students in some area of Guangzhou City

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摘要

目的　瞭解廣州市某區小學生體質與營養狀況及其變化，為制定干預措施提供依據。**方法**　分別於 2005 年和 2002 年抽樣測試某區 6 所 1816 名和 1429 名在校小學生的體質與營養狀況。**結果**　該區小學生體質水平總體呈下降趨勢，營養不良檢出率仍處於相對較高水平，05 年肥胖率顯著高於 02 年，其中男生的肥胖率顯著高於女生。**結論**　肥胖率上升是導致體質水平下降的主要原因之一。

【關鍵詞】　小學生；體質；營養狀況

Abstract

Objective　To understand the habitus and nutrition as well as the changes of primary school students in Guangzhou City. **Methods** this research is carried out separately at random selection of 1816 primary school students in the year of 2005 and 1429 primary school students in the year of 2002 from 6 schools in some area. **Results** the habitus of primary school students has a downtrend in this area as a whole and there is a comparative highly level innutrition in the test. The fatness rate is obviously higher in the year of 2005 than that in the year of 2002 and the fatness rate of male students is higher than female. **Conclusion**　The increasing fatness rate is the main reason that causes the declined habitus.

Keys words: primary school student ;　habitus ; nutrition

成年人體質水平之學歷因素初探

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Effect of education degree on physical fitness level of adults

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摘要

1 研究目的

通過對成年人體質指標水平的多因素分析，探討受教育程度（學歷）對成年人體質的影響。

2 方法

2005 年國民體質監測上海市成年人（20-59 歲）監測樣本為研究對象。採用一般線性模型（GLM）統計方法對各項體質測試指標進行學歷、鍛煉狀況的多因素分析。

3 結果

BMI、腰臀比指數等形態指標水平與學歷有關，男性成年人隨學歷的提高，指標水平增大，趨勢變壞，女性變化趨勢相反。鍛煉因素對身體形態的影響很小。

機能、素質指標的水平均與學歷有關，其中男女肺活量指數、選擇反應時、閉眼單腳站立、縱跳，及俯臥撐（男）/1 分鐘仰臥起坐（女）等指標均為正向關聯，即隨著受試者學歷的提高，指標水平呈提高趨勢；男女臺階指數、男性的握力指數和坐位體前屈指標變化趨勢則相反；女性的握力指數和坐位體前屈指標變化趨勢沒有明顯的規律。鍛煉因素對部分機能、素質指標呈正向關聯，包括男性閉眼單腳站立、坐位體前屈、縱跳、俯臥撐，女性肺活量指數、選擇反應時、閉眼單腳站立、坐位體前屈等，但大部分指標的鍛煉因素方差貢獻率顯著小於學歷因素，即成年人鍛煉狀況對指標水平的影響總體不大。

4 結論

受教育程度是影響成年人體質水平的重要因素，就目前成年人的鍛煉狀況而言，其作用總體上大於鍛煉因素的影響。在一些技術性較強的體質測試指標中，

學歷因素所表現出的優勢，其原因與受試者學生時代所掌握的運動技能有關。

成年人體質水平、體育鍛煉意識和行為的差異表明，學校體育對於青少年掌握運動技能，提高身體素質，養成體育鍛煉的意識和習慣具有重要的作用。

關鍵詞：國民體質，學歷，運動技能，體育鍛煉

Abstract

Objective: The purpose of this study was to explore the effect of the education degree on Physical fitness level of adults through analyzing multiple variables.

Method: The data were obtained from the Shanghai adults (20- 59years) samples of the 2005 National Physical Fitness Survey. Multivariate analysis of General Linear Model (GLM) was used to examine relationships between education and exercise status and physical fitness level.

Result: For adults, education degree was significantly related to physique、health-related fitness and skill-related fitness level. Positive correlations were found relationship is inverse in fe between physique such as BMI、Waist-hip-ratio and education degree in male, and the male. In addition, positive correlations were also found between Vital Capacity Index、Choice reaction time、Eye-closed and single-legged standing time、Vertical jump、Push-up/Sit-up and education degree of adults, but Step test Index、Handgrip Index and Sit &reach up in male were negatively associated with education degree. Handgrip Index and Sit &reach up in female was unrelated to their education degree. There were positive correlations between some health-related fitness or skill-related fitness level and exercise, but compared to education degree, exercise was moderately associated with physical fitness level of adults.

Conclusion: Education degree is an important factor in physical fitness level of adults, as far as it goes; the effect is higher than exercise. The skill-related fitness level was associated with higher education degree; it might be result from the sports skill acquired in school days. The difference in physical fitness level、exercise consciousness and behavior of adults indicated that it is important for adolescent to learn sports skill and train exercise consciousness in school days.

Key word: physical fitness, education degree, sports skill, exercise

專題報告2
Symposium 2

中國成年人超重肥胖現狀分析

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The Status of Overweight and Obesity in China Adults

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前言

隨著中國經濟的持續高速發展，人們的生活水平和生活方式已經和正在發生著巨大的改變，與之相伴隨超重和肥胖人群在我國迅速增大。超重和肥胖作為多種慢性病的獨立的危險因素已經被許多研究所證實，超重和肥胖對個體而言，是引起多種慢性病的高危因素，影響其生理和心理的健康狀況，進而影響到生活質量；而對社會而言超重和肥胖則造成了醫療負擔的增加，以及社會勞動生產力的下降。

由於中國經濟和社會的快速變化，超重和肥胖在人群中的狀態也呈快速變化的狀態，動態觀測超重和肥胖的發展趨勢，在我國對個體的干預和群體的預防和監控，以及相關政策的制定都有積極的的意義。本研究著重探討我國成年人超重肥胖的現狀，兩次國民體質監測（2000 年至 2005 年）中國成年人超重、肥胖率的變化，以及成年人老年人的地域、經濟區域特徵。目的為預防和監控、實施干預提供科學依據。

關鍵詞: 超重、肥胖、中國成年人、BMI

Foreword

In the past twenty years, along with fast development of Chinese economy, the living level of Chinese people has been improved prevalently and citilization of the whole society has been accelerated continually, which lead to the great change on lifestyle, furthermore, quick increase on overweight and obesity. It is well known that overweight and obesity are unique risk factors of many chronic diseases, which will have do harm to individual and society in many aspects such as declining living quality, reducing social labor productivity and increasing the burden of disease. Thus, it is important meaningful to analysis and monitor the status and characteristics of Chinese overweight and obesity. The research apply the data of Chinese Physical Fitness Surveillance for analyzing the status and development trend of Chinese overweight and obesity in order to establish corresponding policy to prevent and decrease overweight and obesity.

Key word: overweight; obesity, Chinese adults, BMI

體質指數、體脂率、腰臀比等形態指標與外周動脈僵硬度的相關性研究

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Study of the relationship between some physique indexes such as Body Mass Index, body fat rate, waist- hip ratio, waist and the stiffness of peripheral artery

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摘 要

目的：對體質指數（BMI）、體脂率、腰臀比及腰圍形態指標與外周動脈僵硬度的關係進行分析和比較，探討超重、肥胖對動脈僵硬度改變的危險性影響，並比較幾種評價肥胖的形態指標在影響力上的差異，為預防提供依據。**方法**：對象為 2006 年在南京市生活的不同社區 40-70 歲中老年人群共 907 例，其中男 423 例，女性 484 例，進行肱踝脈搏波傳導速度（BaPWV）和體質指數、體脂率、腰臀比及腰圍測定，分析超重和肥胖對動脈僵硬度的影響及對外周動脈硬化的相對危險度比較。**結果**：(1) 體質指數、體脂率、腰臀比、腰圍 4 種指標評價的肥胖者在 BaPWV 值和外周動脈硬化發生率較正常者均有高度顯著性差異(P<0.01 或 P<0.001)；超重者在 BaPWV 值較正常者有高度顯著性差異(P<0.01) (2)年齡、腰臀比和腰圍在外周動脈硬化組與非硬化組具有高度顯著差異性（P<0.001），性別、BMI 和體脂率在兩組具有顯著差異性（P<0.05）。(3) 體質指數、體脂率、腰臀比、腰圍 4 種指標評價的肥胖者外周動脈硬化 OR 值分別為 1.800、男 1.902 和女 1.850、男 2.014 和女 1.898、男 1.517 和女 1.553。**結論**：(1)用體質指數、體脂率、腰臀比、腰圍 4 種肥胖評價指標均能顯著的反映外周動脈僵硬度的改變，肥胖程度越大，動脈僵硬度越高。(2)高齡、男性、高體質指數、高體脂率、高腰臀比、高腰圍均是外周動脈硬化的危險因素。(3)外周動脈硬化發生率在肥胖級別顯著高於正常級別者，用肥胖來預測動脈硬化風險性比超重更適合。(4)控制年齡這一混雜因素後，體質指數、體脂率、腰臀比、腰圍 4 種指標評價的肥胖者與正常者相比發生外周動脈硬化的風險分別是 1.80、1.85～1.90、1.90～2.01、1.52～1.55 倍。

關鍵詞：形態指標；超重；肥胖；動脈僵硬度；動脈硬化

Abstract

Objective：To provide basis for preventing disease we analyze the relationship between some physique indexes such as Body Mass Index, body fat rate, waist- hip ratio and the stiffness of peripheral artery and discuss the disease risk produced by overweight and obesity and compare the different significance among this physique index. **Methods**：907 elderly among which men occupy 423 and women 484 and age range from 40 to 70 in Nanjing community were measured Body Mass Index, body fat rate, waist- hip ratio, waist and the humerus-ankle pulse wave velocity (Bapwv). **Results**：(1)Comparing with normal person, the obesities evaluated by Body Mass Index, body fat rate, waist- hip ratio and waist had high obvious statistical difference($P<0.01$ or $P<0.001$) in both the changes of arterial stiffness and the occurrence rate of peripheral arteriosclerosis; the overweights had obvious statistical difference($P<0.01$) in the changes of humerus-ankle pulse wave velocity. (2) Comparing with normal group, the group of peripheral arteriosclerosis had high obvious statistical difference($P<0.01$) in age, waist- hip ratio and waist and had obvious statistical difference($P<0.05$) in gender, BMI, body fat rate. (3)The OR values of the arteriosclerosis obesities evaluated by Body Mass Index, body fat rate, waist- hip ratio and waist are 1.800, men 1.902 and women 1.850, men 2.014 and women 1.898, men 1.517 and women 1.553. **Conclusions**：(1) The four indexes of Body Mass Index, body fat rate, waist- hip ratio and waist can reflect the changes of arterial stiffness, the artery become stiff with the increase of obesity. (2) Eld, men, high BMI, high body fat rate, high waist- hip ratio and high waist are all the risk factors of peripheral arteriosclerosis. (3)The occurrence rate of peripheral arteriosclerosis is high in the obesities than the normals. It is more appropriate to estimate the risk of arteriosclerosis by obesity than by overweight. (4)With controlling the age factor, the each risk ratio to occur peripheral arteriosclerosis in four sorts of obesities evaluated by Body Mass Index, body fat rate, waist- hip ratio and waist is 1.80, 1.85～1.90,1.90～2.01,1.52～1.55.

Keywords: physique index: overweight: obesity: arterial stiffness: arteriosclerosis

江蘇省國民體質監測 GIS 數據庫的建立和應用

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Establishment and Application of GIS Database on National Physical Fitness Surveillance in Jiangsu Province

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摘要

目的 建立江蘇省國民體質監測 GIS 數據庫並分析肥胖和體質總體狀況的空間分佈規律。 **方法** 利用 2000 年和 2005 年對江蘇省國民體質調查的數據，建立 GIS 空間數據庫。利用 ArcGIS 的空間分析模組，分別對江蘇省成年人肥胖率和體質總分進行全局性和局域性空間自相關分析。 **結果** 全局性分析顯示，無論是成年人肥胖率還是體質總分的增量變化的標準化結果 *Z(I)*均大於 1.65，說明江蘇省成年人的肥胖率和體質總分的增量變化在全省範圍內具有較好的空間結構性，存在明顯的空間正相關性。局域性分析顯示，全省成年人肥胖率的增量變化在蘇南地區和蘇北地區呈現明顯的空間正相關性，蘇中地區則呈現空間負相關性。另外，對體質總分增量變化的局域性分析顯示，蘇南地區主要表現為明顯的空間正相關性，蘇北地區表現為空間負相關性，蘇中地區則無明顯的相關性。 **結論** (1) 各市成年人無論肥胖率還是體質總分的變化在空間上均具有趨同性；(2) 肥胖率的增量在蘇南和蘇北呈現同步高增長的趨勢，而在蘇中則表現為同步低增長的趨勢。體質總分的增量呈現出明顯的兩極分化，南部地區表現為同步增長的趨勢，而在北部地方則表現出負向趨同性，形成一個不增長甚至負增長的空間聚集區域。

關鍵詞：體質監測；肥胖；體質總分；空間自相關

Abstract

Objective To establish the GIS database of national fitness surveillance in Jiangsu Province and analyze the spatial distribution character of adult obesity and physical fitness conditions. **Methods** Through using national physical fitness investigation

data of Jiangsu Province in 2000 and in 2005, the GIS surveillance database was established. Using the ArcGIS spatial analysis module, whole and local spatial autocorrelation analyses were applied to adult obesity and total score of physical fitness of Jiangsu Province. **Results** Whole spatial autocorrelation analysis demonstrated that standardized values *Z(I)* of the increments of adult obesity rate and total score of physical fitness were bigger than 1.65. That is to say, the increments of adult obesity rate and total score of physical fitness have the better spatial property in the entire province. Spatial variables have significant spatial positive correlation. Local spatial autocorrelation analysis demonstrated that the increment of adult obesity rate presented significant spatial positive correlation in the southern area and the northern area of Jiangsu Province and presented significant spatial negative correlation in the middle area of Jiangsu Province. Moreover, the increment of total score of physical fitness presented significant spatial positive correlation in the southern area and presented significant spatial negative correlation in the northern area of Jiangsu Province. But no significant correlation was found in the middle area of Jiangsu Province. **Conclusion** (1) the increments of adult obesity rate and total score of physical fitness in the cities of Jiangsu Province had spatial homogeneity; (2) The obesity rate presented the synchronized high increase in southern and northern area of Jiangsu Province, but displayed the synchronized low increase in the middle area of Jiangsu Province. The total score of physical fitness presented obvious polarization. The total score in southern area grew for synchronization, but in northern area did not grow, even decreased.

Key words: physical fitness surveillance, obesity, total score of physical fitness, spatial autocorrelation

山西省不同收入水平的農民體質特徵的研究

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The Physical Fitness Research of Farmers in Different Income Level in Shanxi Province

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摘要

研究目的：本文利用 2005 年山西省第二次國民體質監測 11 個市 55 個行政村 20～59 歲 6046 位元農民的相關指標數據，研究和探討不同收入水平的山西農民的體質特徵。

研究方法：根據山西省農村人均純收入，將山西省農村劃分為一、二、三類農村。一類農村：農村居民人均純收入達到或超過國家 2005 年農村居民人均純收入；二類農村：農村居民人均純收入低於國家 2005 年農村居民人均純收入，達到或超過山西省 2005 年農村居民人均純收入；三類農村：農村居民人均純收入低於山西省 2005 年農村居民人均純收入。

研究內容包括身體形態、機能和素質等 10 項指標，對指標做不同年齡段平均數 T 檢驗。

研究結果：1.形態：男子多數年齡段 BMI 一類>三類，女子在 4 個年齡段一類>三類；男子腰圍一類>三類，個別年齡段二類>三類，部分年齡段二類農村女子腰圍大於一類和三類。**2.機能：**男女肺活量：一類>三類；25 歲以後男女臺階指數二類>一類。**3.素質：**男子握力在 25 歲以前一類>三類、二類>三類，女子 35 歲之前二類>一類、40 歲以前二類>三類；男子縱跳 30 歲以前一類>二類，女子縱跳一類>三類；俯臥撐 20～24 歲一類>三類、25～29 歲二類>三類、二類>一類；女子仰臥起坐一類>三類、二類>三類；男子坐位體前屈 35 歲以後三類>一類，女子坐位體前屈沒有一定的變化規律。男子閉眼單腳站立多數年齡段一類>三類，女子閉眼單腳站立可以分為三個階段：30 歲之前互有高低，30～45 歲之間一類>三類，50 歲以後三類>二類、一類>二類，差異有顯著性。

研究結論：1 高收入農村男子在 30 歲以後出現腹型肥胖；2 一類農村農民肺活量水平顯著高於三類農村農民的肺活量；二類農村農民臺階指數大於一類、三類農村；3 高收入農村男子（20～24 歲）和女子（20～40 歲）的力量素質相對於低收入農村有較大的優勢，收入水平對男子力量素質的影響時間較短，對女子相

對較長。

一類農村男子柔韌素質普遍低於三類農村男子；不同收入水平女子柔韌性互有高低；一類農村男子的平衡能力普遍好於三類農村男子，不同收入水平農村女子的平衡能力在不同年齡段交替上升。

關鍵詞： 山西；農民；純收入；體質；特徵

Abstract

Summary: The data of the second Shanxi province physical fitness surveillance 2005 is used in this passage. The surveillance was conducted by selecting 6046 farmers (age 20-59) from 55 administrative villages in 11 cities, researching and discussing the physical fitness of farmers in different income level in Shanxi province.

Method of the research: According to the average of people's net income in villages in Shanxi province, these villages are divided into three kinds. First kind of village:the average villagers' net income reaches or excesses the national average villagers' net income at 2005; Second kind of village:the average villagers' net income is under the national average of villagers' net income at 2005, but reaches or excesses the Shanxi province average of villagers' net income at 2005; Third kind of village:the average villagers' net income is under the Shanxi province average villagers' net income at 2005.

The research includes anthropometry, physiological fitness, physical activity and ten items. Counterpoising the different age groups of research subjects with T test.

Results of the research: 1.Anthropohethy: BMI of men's most age groups, first kind>third kind. Four age groups of women,first kind>third kind. Waist circumference of men, first kind >third kind, some age groups, second kind>third kind,in some age groups,female waist circumference of the second kind of village is bigger than the first and third kind.2.Physiological fitness:The vital capacities of men and women,first kind>third kind. The steps index of men and women (after 25 years old), second kind>first kind.3. Physical activity: Grip of men (before 25 years old),first kind >third kind, second kind>third kind,women before 35 years old, second kind>first kind,before 40 years old, second kind>third kind. Vertical jump of men (before 30 years old), first kind>third kind. Vertical jump of women,first kind>third kind. The push-up (age between 20-24), first kind>third kind, second kind>third kind. Sit-and-reach of men (after 35 years old), third kind>first kind. Sit-and-reach of

women changes in no certain rule. Close eyes balance of men in most age groups, first kind>third kind. Close eyes balance of women could be divided into three sorts: before 30 years old, the comparison can't be certain higher or lower, the age between 30 and 45,first kind>third kind, after 50 years old, third kind>second kind, first kind>second kind, the difference is remarkable.

Conclusion of the research: 1. Male villagers with high income have ventral fatness after 30 years old. 2. The vital capacity level of the first kind of village's people is remarkablly higher than that of the third kind, the cardiovascular level of the second kind of village's farmer is better at large than that of the first and third kind. 3. Strength activities of male villagers with high income are better than that of male villagers with low income (before 30 years old).There is no certain high and low in this comparison after their 30 years old.The strength activities of women with high income of first and third kind of village are better than that of third kind.The flexile activities of the male villagers with high income are worse than that of the ones with low income.There is no certain high or low in comparison among the flexile activities of female villagers with different income level. The balance ability of the men in the first kind of village are better than that of the ones in the third village. The balance ability of female villagers with different income level is higher in turns in different age groups.

Key words: Shanxi; Farmers; net income; Physical fitness; Character

廣州市成年人BMI水平與身體機能及素質的關係研究

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Research BMI level of Guangzhou adult and the relation of BMI and body enginery and diathesis

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摘要

目的 研究廣州市成年人肥胖的發生率及肥胖對身體機能、素質的影響。**方法** 用BMI對研究對象進行分類，分析不同BMI水平成年人的身體機能、素質特徵及其相關性。**結果** 廣州市成年人超重與肥胖檢出率，男性為32.6%，女性為24.2%。成年人無論男女，收縮壓、舒張壓隨BMI值增大而增大，臺階指數和肺活量/體重指數隨BMI值增大而下降。高血壓檢出率隨BMI的增大而升高，各BMI組男性高血壓檢出率高於女性。成年男女縱跳、柔韌性表現為肥胖組均值最差；平衡能力方面，男、女均表現為BMI值正常組好於超重組及肥胖組。**結論** 肥胖是影響身體機能和素質的重要因素，充分認識肥胖的危害，為制定相應的肥胖干預措施提供參考。

關鍵詞 BMI（體重指數）　機能　素質　比較　研究

Abstract

Objective To research the rate of obesity of Guangzhou adult and the affection of obesity to body enginery and diathesis. **Methods** classified the object by BMI(body mass index), and analyze the character of adult body enginery and diathesis in different BMI level. **Results** the obesity rate of Guangzhou adult is 32.6% of male and 24.2% of female. No matter what male or female adult, systolic blood press and diastolic blood press increase gradually with increasing of BMI, step test index and index of vital capacity to bodyweight decline with increasing of BMI. The examine rate of hypertension add gradually with increasing of BMI and the examine rate of hypertension of male is high of female in every BMI level. Adult jump and flexible capacity of obesity team is lowest and standard team of BMI level is high of overweight team and obesity team in balance capacity. **Conclusions** Obesity is important fact which affect body enginery and diathesis, so we should realize the risk of obesity and constitute some measure to prevent obesity.

Key words: BMI　enginery　diathesis　compare　research

國民體質監測數據邏輯檢驗方法的數學模型的建立

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Establishment of Logic Check Method Math Model on National Physical Fitness Monitoring Data

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摘要

在國民體質監測工作中，由於抽樣調查技術或疏忽大意導致錯誤，或人為的編造等原因，會使上報上來的數據產生可疑數據。在最終的大型數據庫中，要對其中的可疑數據進行識別和剔除，最大限度的避免與減少誤差，獲得可靠、準確的監測數據，使測量與調查結果能真正反映國民體質的真實水平。本文是運用2000年國家國民體質監測原始數據庫，經過8次實驗，通過專家的反復討論，以及實踐的不斷檢驗，最終採用曲線擬合方法來辨識可疑數據。通過對2005年體質監測的使用，發現該方法的檢驗異常數據的效果較好，基本上能達到去偽存真的目的，可以作為國民體質監測數據邏輯檢驗的方法，在以後的實踐中可以推廣使用。

關鍵詞：國民體質監測；邏輯檢驗；形態；機能；素質

Abstract

In practical monitoring, due to sampling error or negligence error or artificial compilation, etc, the reported statistics may contain some dubious data. This study attempts to establish a method of detecting and verifying dubious data, judging dubious data in scientific ways and distinguish the truthfulness or falseness of the data, in hopes that it can provide a methodology of logical check of data for the on-going monitoring work of the year 2005 and work in the future.

Keywords: National physical fitness monitoring;logical check; physicalcomposition; body function; physical fitness

北京市2000年與2005年成年人腰圍、臀圍、WHR城鄉差異的研究

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Differences Exist between Country and City in samples of 2000 and 2005 about Waist Circumference, Hip Circumference and WHR of adults in Beijng

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摘要

研究目的

綜上所述，北京市成年人群體質狀況2000年與2005年存在一定的差異，造成這種差異的原因是什麼？由於北京市國民體質監測所選取的樣本包含北京市18個區縣的三種不同人群，即農村、城市體力和城市非體力。只有在充分瞭解了這種差異出現在哪種人群中，才能夠更為深入的探索出現這種差異的原因。因而，本文立足于研究北京市成年人群腰圍、臀圍、腰臀比三種常用的指標的城鄉差異，以期能夠為今後研究造成北京市城年人群體質差異原因奠定一定的理論基礎。

研究方法

選取2000年和2005年20～59歲年齡段成年人22332人為研究對象，用實驗測量法獲取身高、體重共2項身體形態指標。數據處理為常規統計方法——單因素方差分析（One-way ANOVA）。

結論

1 20～59歲成年男性腰圍、臀圍均值，2000年部分年齡段城鄉存在差異，農村高於城市；2005年城鄉存在差異，農村低於城市。女性2000年與20005年城鄉

存在差異，農村高於城市。
2 20～59 歲成年男性腰臀比均值，2000 年部分年齡段城鄉存在差異，農村高於城市；2005 年部分年齡段存在城鄉差異，農村低於城市。女性 2000 年與 2005 年城鄉存在差異，農村高於城市。
3 20～59 歲成年男性腰圍、臀圍城鄉差異擴大；女性腰圍、臀圍城鄉差異縮小。
4 20～59 歲成年男、女性腰臀比農村與城市體力的差異縮小，與城市非體力的差異擴大。

關鍵詞：腰圍、臀圍、腰臀比、城鄉、脂肪、生活方式

Abstract

Purpose of study

There is a certain difference of the constitutional state of Beijing citizens in 2000 and 2005, then what is the cause of this difference? The test samples taken from 18 representitive districts and counties in Beijing by the Beijing National Monitoring Institute include 3 different groups of people, which are manual workers and nonmanual workers in urban Beijing and suburb Beijing . We cannot get the relative factors influencing the constitutions of Beijing citizens only after we pay enough attention to this issue. Thus, based on the studies of the differences of the staple index between countryside and the city , including waist circumference, hip circumference and WHR of adults in Beijng.this essay is written in the purpose of offering a theoretical base for the future study of the cause to the constitutional differences between each adult group of Beijing citizens.

Methodology

Taking 22332 adults and senior people aged between 20 and 59 in the year 2000 and 2005 as study targets, I took records of 8 physical indexes from them by experimental measurement, including two indexes of height and weight, The data processing here used is conventional method of statistics and one-way ANOVA.

Conclusion:

1. Average waist circumference and hip circumference of male adults aged between 20-59, difference exists in 2000 between counties and city, and in some age groups counties are lower than the city; differences appear in samples of 2005:

samples in counties are lower than in the city. Average waist circumference and hip circumference of female adults aged between 20-59: difference exists both in 2000 and 2005 between in counties and in city. Samples in counties are higher than in the city.

2. Average WHR figures of male adults aged between 20-59, difference exists in 2000 between counties and city, samples in counties are higher than in the city,differences appear in samples of 2005:and in some age groups counties are lower than the city. Average WHR figures of female adults aged between 20-59: difference exists both in 2000 and 2005 between in counties and in city. Samples in counties are higher than in the city..
3. Average figures of waist circumference and hip circumference of male adults aged between 20-59: differences of waist circumference and hip circumference of female citizens decrease;
4. Average WHR figures of male and female adults aged between 20-59: differences between counties and the manual workers' of the city enlarges, the difference between counties and the manual workers' of the city decrease.

Key words: waist circumference, hip circumference,WHR, body fat, life style, city and countryside

貴州省常鍛煉人群年齡分佈特徵的變化趨勢研究

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Changing trend of age distribution in regularly exercising people in Guizhou province

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摘　要

體育人口，作為人類文明、社會進步的必然結果，是社會經濟發展到一定階段影響人口發展過程的必然產物，也是一定時期內客觀存在的人口現象。體育人口數量與國民體質有著十分緊密的聯繫。本文的目的是：利用 2000 年和 2005 年貴州省兩次國民體質監測的數據，分析貴州省體育人口的年齡分佈特徵變化趨勢及其相應的影響因素，從而為下一步有針對性地開展全民健身活動提供有意義的參考依據。研究對象為參加 2000 年和 2005 年貴州省國民體質監測的人群。抽樣和測試嚴格按照國家統一標準進行，用 SPSS13.0 進行統計學處理。結果發現：2000 年的體育人口比例於 35-49 歲出現明顯的低值，其中尤以 45-49 歲年齡段的體育人口比例最低，50 歲以後出現明顯的增加；而 2005 年體育人口的低值階段男性出現在 30-44 歲年齡段，以 35-39 歲階段為最低值，女性在 25-29 歲達最低值，且均於 45 歲以後出現較明顯的增加。結論：1，貴州省 2000 年的男女體育人口比例均於 35-49 歲出現明顯的低值，其中尤以 45-49 歲年齡段的體育人口比例最低，說明中年人長期、規律的參與體育運動的人數為最少；2，貴州省 2005 年體育人口的低值階段男性出現在 30-44 歲年齡段，以 35-39 歲階段為最低值，女性在 25-29 歲達最低值，且均於 45 歲以後出現較明顯的增加；3，貴州省 2005 年男女對健康的關注程度有所增大，參加體育鍛煉的意識有所增強，打破了 2000 年中年人處於健身低谷期的狀況，中年人參加體育鍛煉的人數比例有所提高，男性和女性對健康的關注時間分別提前十年和五年；4，2005 年體育人口比例最小的年齡段是生育哺乳期的中青年人群，由於正處於成家立業的階段，加上自認為身強體壯，因此有意識參加鍛煉的人數很少，這部分人群將成為新的令人擔憂的對象；5，農民的體育人口比例仍然處於極低的水平，說明農村人群的健身意識非常差，是制約貴州省國民體質水平的一個重要因素。建議：1，繼續加強科學健身知識的普及，尤其是在農村，培養良好的健身意識；2，加強體育基礎設施建設，尤其是在農村修建一定的體育設施，引導農民積極參與體育鍛煉，達到通

過體育運動提高體質的目的；3，積極推廣體質測試服務於民的工作，通過體質測試、評價及健身指導有效地提高全民健身的科學性和合理性；4，建議將體質測試和評價納入公務員和事業單位招工、提拔的體檢內容，列入駕駛員體檢及參軍的內容，從而促使國民對體質健康的重視，從而有效地推動全民健身活動的開展。

關鍵詞： 體育人口　年齡　比例

Abstract

Sport population (regularly exercising people) is a corollary of culture and society progress, which located in the process of population development as a population phenomena. The number of sport population related tightly to physical fitness. This study aimed to analyze the changing trend of age distribution in regularly exercising people and its effective factor, utilized the monitoring data of physical fitness in 2000, and 2005 year in Guizhou province. This work will provide some significant reference for accelerate all people exercise in the future and improve the level of physical fitness. The objects are the people who took part in the monitorings of physical fitness in 2000 and 2005. The people was sampled and measured according to common standard severely. All data were analyzed in SPSS 13.0. The results find that the proportion of sport population, both men and women, fall down in 35~49 years old, especially in 45~49 years old, followed a increase in above 50 years old in 2000. Nevertheless, in 2005 the proportion of sport population was lowest in men aged 30~44, especially in 35~39 years old, and in women, it was lowest in 25~29 years old, and increasing after 45 years old both in men and in women. Through these results we can draw some conclusion: ①The character of age distribution in sport population in 2000 implies the number of people who long-time and regularly exercise is lowest in middle-aged people. ②The character of age distribution in sport population in 2005 suggest that the number of people who long-time and regularly exercise is lowest in 30-44(men) and 25-29(women) years old people. ③Guizhou province resident pay a more attention on health in 2005 than in 2000, with increased desire of exercise. Accordingly the proportion of taking physical activity regularly elevate in the middle-age. The time beginning to pay attention to health in men and women advances 10 and 5 years respectively. ④The youth of in breed and lactation phase hold little proportion of sport population. They usually have a more self-assessment of health, and have more chores and work, resulted in little people exercise. So these people should be focused. ⑤The proportion of sport population in peasant was still

low, which imply peasant have little awareness of body building. This is the important factor restrict physical fitness in Guizhou province. Suggestion: ①We should popularize knowledge of scientific exercise and cultivate consciousness of exercising, especially in countryside. ②To build more essential exercise construction, especially in countryside, guiding peasant to take part in exercise, improving their physical fitness. ③ Assessment of physical fitness should play a important service role. Through measure, assessment and guide improve the level of science and rationality of exercise. ④The measure and assessment of physical fitness should be practiced, when applying for a job, promotion, recruiting, and so on. It can make people pay more attention to physical fitness, make all people exercise.

Key word: regularly exercising people sport population age proportion

久居荒漠環境人群體質狀況及其影響因素的研究

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Physical fitness and impact factor of people who reside in desert environment

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摘要

我國是世界上受荒漠化影響最嚴重的國家之一。而對於沙漠化研究多見於農業、林業、牧業、水利等領域，而在體質領域的研究少有報導。因此，通過對久居荒漠環境人群體質進行綜合研究，探索荒漠環境中影響體質增強因素，不僅可以瞭解其體質狀況，為其遠離疾病，形成健康、科學、文明的生活方式，增強體質，提高生活品質和健康水平提高科學依據，而且對實現"保證和提高億萬人民的身體健康水平和體能素質"，為構建社會主義和諧社會，有著十分重要的現實意義。

研究區概況:鹽池縣位於寧夏回族自治區東部，地處陝甘寧蒙四省（區）交界處。地理座標為北緯 $37^0$04' —38^0 10'，東經 $106^0$30' —$107^0$41'，海拔1295m—1951m，平均海拔高度 1600m。鹽池縣南北長約 120km，東西最寬為132km，總面積為 8557.65km2，鹽池縣城距寧夏自治區首府銀川市140km。 人口 163024 人，屬貧困地區，經濟發展緩慢。

研究對象:按照隨機整群抽樣的原則，在鹽池縣抽取年齡在 20-59 歲成年人677 人，其中，男 345 人，女 332 人。

研究方法: 本研究採用社會調查法、問卷調查、指標測試法、文獻數據法等方法對久居荒漠環境人群體質狀況及其影響因素進行綜合研究。

主要結論

1）寧夏鹽池縣成年人體質狀況堪憂。鹽池縣成年人體質水低於全國和寧夏區同齡成年人體質水平。

2）影響因素：

身體機能、身體素質水平，特別是身體素質水平差是鹽池成年人體質狀況的直接成因；

指向靜態的行為習慣和不良的行為方式是鹽池成年人體質狀況的間接成因；

荒漠環境是鹽池成年人體質狀況的生態成因。

關鍵詞：荒漠環境，體質測定，體質狀況，影響因素

the students in intervention schools worn a heart rate monitor each day to monitor levels of physical activity intensity. A mobile health lab was used to collect data on school ground to reduce participant burden.

Intervention protocol. All fourth grade students in the intervention schools were invited to participate in the MCG FitKid after-school program. The MCG FitKid lasted 120 min each school-day afternoon. The first 40 min was used for healthy snacks and teacher-assisted homework and academic enrichment activities. The next 80 min was used for PA that emphasized enjoyable developmentally-appropriate games, sports and dance forms (30-minute warm-up and skill instruction, 40-minute MVPA, and 10-minute stretching/cool-down). Students were transported home on school bus afterward. The MCG FitKid program was delivered by trained school teachers. The after-school program was provided to students in intervention schools five days a week during school year (September to May). No intervention was provided during summer breaks. Program attendance was recorded each week by research staff.

Data analysis. Changes scores of the study outcome measures from baseline to post-test were calculated. These included changes in body composition (body fat percent, body fat mass (kg), fat free soft tissue (kg), bone mineral density), anthropometry (weight, height, and waist circumference (cm), and fitness (heart rate (beats/min after completing a 3-min step test) and resting heart rate). Frequency of attendance was divided into five levels: less than one day a week, one day a week, 2 days a week, 3 days a week, and 4 or more days a week. Analysis of covariance was used to examine the difference on the change scores using attendance level, sex, race, height change (as a covariate for physical maturation), and baseline measure of dependent measure as fixed effects. Only significant terms were retained in the final model. P-value for significance in all analysis was set .05.

Results. The average attendance in the after-school program was 2.4 times/week in year 2 of the study. The attendance was similar in boys and girls; but attendance was higher in white children than minority children. The average heart rate during the physical activity section was 148 beats/minute in intervention students.

Results of Analysis of Covariance revealed that frequency of program attendance was significantly correlated ($p < .05$) with decrease in body fat percent, body fat mass, resting heart rate, waist circumference and BMI (Figure 1) and improvement in fitness (Figure 2). The most profound changes were consistently observed with attending 4

青少年運動頻率對體脂和體質的影響

Impact of physical activity frequency on body composition and fitness in young children

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Abstract

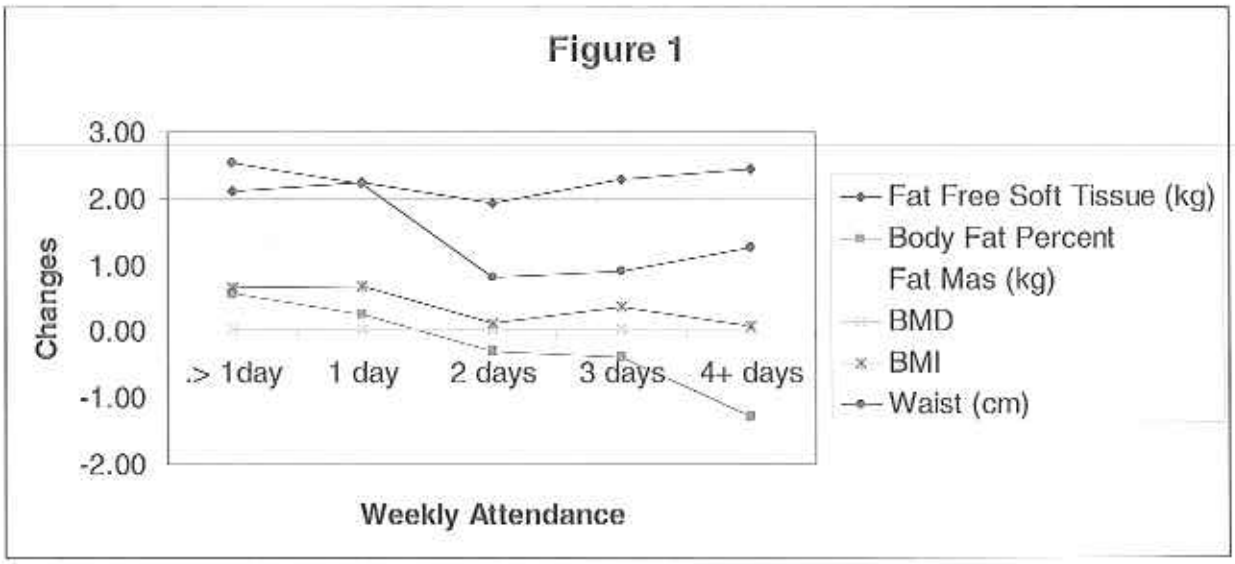
Background. The prevalence of obesity in children has tripled in US children over last three decades. It is recommended that children engage in at least 60 minutes of moderate-vigorous physical activity (MVPA) on most days of the week. There however is little literature that relates frequency of MVPA with improvement in body composition and fitness in children.

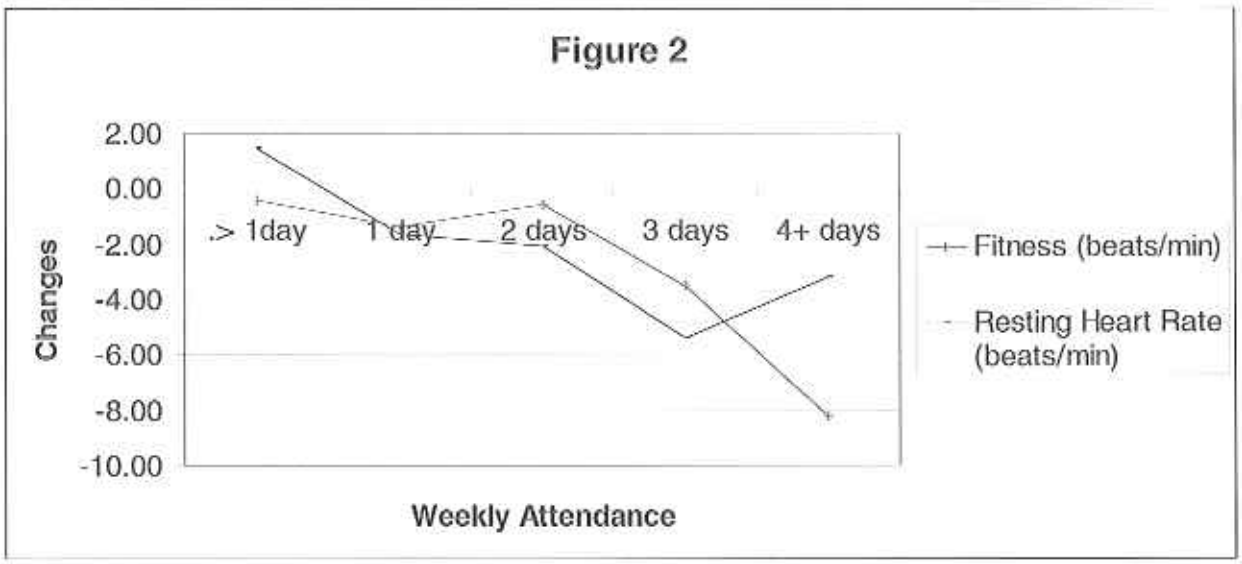
Study purposes. This study presents results of sub-group analysis on data collected in the Medical College of Georgia FitKid Project (MCG FitKid). Data analysis was performed to show the relationships between changes in body composition and fitness and the frequency of attending the MCG FitKid after-school program in children enrolled in intervention schools during year 2 of the study.

Study design. MCG FitKid was designed to test the hypotheses that an after-school environment that encourages MVPA and healthy snacks will: 1) prevent inappropriate increases in body fat percent and 2) improve cardiovascular (CV) fitness over a 3-year period (grade 3 to grade 5) Sixty-three percent of the students was African-American (AA), 32% white and 5% other racial groups. Eighteen elementary schools were randomly assigned to control (9 schools) or intervention condition (9 schools), stratified by school-level socioeconomic status. A total of 600 students (290 control and 310 intervention) were tested at baseline in grade 3. Only 242 students, who enrolled in intervention schools in year 2 of the study, were included in this sub-group analysis study.

Measurements taken at the beginning (baseline) and end (post-test) of school year included: body fat percent with dual-energy x-ray absorptiometry; and CV fitness (heart rate at completion of a three-minute step test; beats/minute; high heart rate=poor CV fitness); anthropometry (height, weight, waist circumference). Half of

or more times of the MCG FitKid after-school program each week. Attending two times a week seemed necessary to produce positive changes in most of the outcome measures, whereas attendance less than 1 time a week was associated with unfavorable changes.





Conclusion. The results of the subgroup analysis suggested that increased attendance in MCG FitKid after-school program was associated with more positive changes in body composition and fitness in children enrolled in intervention schools. The physical activity lasted 80 minutes a day with an average heart rate of 148 beats/min. Attending the program at least two times a week seemed necessary to benefit the program participants; attending the program four or more days a week had more favorable impact on body composition and fitness. The findings have important implications in designing physical activity program for young children.

Keywords: frequency of physical activity, obesity, fitness, children

中日成年人超重肥胖的比較研究

王歡

中日合作國民體質比較研究課題組

Compare of the Prevalence and Trends of Overweight and Obesity in Chinese and Japanese Adults

WANG HUAN

Research team on Chino-Japanese (Shanghai- Tokyo) Cooperative Study on Physical Fitness

摘要

研究目的：

中國上海作為發展中的大城市，正處於經濟快速增長期，人們生活方式的巨大變化已經帶來了肥胖、等健康隱患，日本東京，自然環境與上海相似，在經歷過經濟快速增長後社會發展進入成熟穩定階段，同樣，飲食的西化以及體力活動水平的下降使得肥胖成為危害健康的重要不良因素。研究上海和東京這兩個經濟發展水平不同城市的超重肥胖人群特徵，以及分析中日過去 20 年超重肥胖率的變化趨勢，將為促進兩國超重肥胖防治工作的深入開展，提高人民的生活品質和健康水平，發揮積極作用。

研究方法：

數據來源：直接數據來源於 2005 年中日合作國民體質比較研究數據和 2000 年和 2005 年中國國民體質監測數據。2005 年中日合作國民體質比較研究取樣城市為上海和東京，調研對象為 6-74 歲的城市常住人口，樣本量上海 5799 人，東京 5674 人，調查內容包括生活時間、飲食習慣 、課外活動、體育鍛煉、健康認知幾方面的問卷調查和 21 項體質指標的檢測。本研究選取 20-74 歲 4508 人作為中日成年人超重肥胖比較研究的研究對象。2000 年和 2005 年中國國民體質監測採用隨機整群抽樣原則，從全國 31 個省抽取 223200 人和 494524 人，監測的內容包括詢問調查和體質檢測。

其他資料來源於間接數據，中國超重肥胖數據來自於 1982 年、1992 年、2002 年中國居民營養調查發佈的數據資料。中國居民營養調查採用了多階段分層整群抽樣，1982 年共調查了 178 個點，調查總人數 238134。1992 年共調查了 960 個點，調查總人數 100201。2002 年在全國 31 個省、自治區、直轄市的 132 個縣（區、市）共抽取 71971 戶，243479 人。營養調查包括詢問調查、醫學體檢（包括身高和體重）、實驗室檢測和膳食調查。

日本超重肥胖數據來自於日本全國營養調查（the National Nutrition Surveys of Japan J NNS）部分年代的公佈數據。日本全國營養調查自 1946 年以來年年進行的全國營養調查。調查內容包括詢問調查、醫學體檢和膳食調查。

超重肥胖的判定：體重指數（body mass index，簡稱 BMI）是目前評估肥胖最實

用的人體測量學指標。國際上通常用世界衛生組織（WHO）制定的 BMI 界值，既 BMI 在 25~29 為超重，大於等於 30 為肥胖。在本研究中，為了進行兩國和兩城市肥胖情況的比較，採用上述世界衛生組織（WHO）制定的超重肥胖標準。統計方法：描述中日兩國不同性別、年齡的超重肥胖特徵。採用 t 檢驗進行兩城市 BMI 均值差異的統計學檢驗，卡方檢驗進行兩城市超重肥胖率的統計學檢驗。

研究結果：

1. 二十世紀八十年代初期日本男性超重肥胖率 16.6%，女性 17.8%，中國成年人超重肥胖僅為 6.6%。九十年代日本男性超重肥胖率 22.5%，女性 17%，男性增長明顯，女性保持穩定。1992 年中國超重肥胖率為 16.1%，雖然絕對值低於日本同期水平，但增長速度顯然超過日本。進一步比較日本成年人 1991-1995 和中國成年人 1992 年的 BMI 均值，中國城鄉男性 20-59 歲 BMI 小於日本，中國城市女性各年齡段的 BMI 均值大於日本。進入二十一世紀，兩國超重肥胖的人口比例繼續增長，中國城市人群的超重肥胖率超過日本。

2. 中日超重肥胖人口的城鄉、經濟特徵、性別、年齡特徵表現如下：

城鄉 1992 年和 2002 年中國超重率和肥胖率均呈現城市居民高於農村居民的趨勢，但無論男女，10 年間的超重和肥胖增長幅度均為農村高於城市，城鄉間的差距正在縮小。日本超重肥胖率已經沒有明顯的城鄉差異，城市肥胖率高於農村的現象消失於二十世紀 80 年代。

經濟水平 兩國不同經濟地區的超重肥胖率有區別。中國經濟越發達的地區其超重肥胖率越高，總體來說，大城市高於中小城市，經濟好的農村高於經濟落後的農村。日本與中國不同，小城鎮的超重肥胖率超過大城市。

性別 超重肥胖發展趨勢中的性別特徵，兩國有相似之處。超重肥胖率的性別變化都是由女高男低逐漸轉變成男高女低。性別變化的原因在於男性 BMI 持續增長，女性 BMI 相對穩定，甚至下降。日本 70 年代男性超重肥胖率低於女性（男 15.3% 女 18.1%），80 年代男女接近，90 年代男性明顯超過女性（男 22.5% 女 17.0%）。1992 年中國男性居民超重率和肥胖率低於女性，但到 2002 年，我國城市居民的超重率和肥胖率表現為男性高於女性，而在農村仍然保持女性高於男性的狀況。整體來看我國城鄉居民的男性超重率和肥胖率上升幅度均高於女性。

年齡 日本 20 歲以上成年男性 BMI 在過去 30 年一直在上升，40 歲以上女性 BMI 也在上升，40 歲以下女性呈下降趨勢，尤其 20-29 歲女性下降明顯[5]。1982-2002 年中國城鄉男女 20 歲以上各個年齡段 BMI 都在上升，近五年來除了城市 20-59 歲女性 BMI 呈下降趨勢外，中國男性和農村女性 BMI 繼續增長。中日兩國超重、肥胖率最高的年齡範圍是 40-59 歲。

3. 中日兩國超重肥胖率的變化趨勢特點在 2005 年中日合作國民體質比較研究結果中進一步體現。上海 20-74 歲超重比率 25.9%，東京則是 18.9%。肥胖比率兩城市都是 2%。經過兩城市研究對象人口構成標化後，超重率上海 26.3%，東京 18.8%。肥胖率上海 1.9%，東京 2.0%。

性別特點：上海男性超重、肥胖率 31.4%，2.1%。東京男性超重、肥胖率 25.3%，2.5%。經過年齡標化後上海男性超重率大於東京，肥胖率低於東京。上海女性超重、肥胖率 20.5%，1.7%。東京女性則是 13.5%，1.5%。經過年齡標化

後上海女性超重肥胖率大於東京。

年齡特點：上海男性20-35歲超重率大於東京，而肥胖率小於東京。**40歲年齡組**上海的超重、肥胖率低於東京。**45-70歲**上海男性的超重、肥胖率大於東京。上海女性各年齡組超重、肥胖率大於東京，女性超重、肥胖率的高峰是在60歲。

研究結論：

近二十年來中國和日本的超重肥胖率不斷上升，中國的增長幅度大於日本，但是兩國城市女性的超重肥胖率有下降趨勢。因為兩國所處的社會經濟發展階段不同，日本超重肥胖人口特徵的變遷年代早於中國。作為兩個國家的經濟最發達城市，上海的超重肥胖率顯著高於東京，東京男性超重肥胖人口的平均年齡小於上海，上海中老年女性的超重肥胖的增齡性變化大於東京。

[關鍵詞]　體重指數；超重；肥胖

Abstract

Objective: To provide the prevalence and trends of overweight and obesity in Chinese and Japanese adults. **Methods:** Data came from China Nutrition Health Survey during 1982-2002, and the China Physical Fitness Surveillance during 200-2005, and National Nutrition Survey in Japan during 1976-1995. In addition, Chino-Iapanese (Shanghai- Tokyo) Cooperative Study on Physical Fitness in 2005 provided important data for this study. **Results:**1. The prevalence of overweight and obesity among Chinese and Japanese adults increased in the last 20 years. The increased rate of China was more evident compared with Iapan. Among men, the prevalence of overweight and obesity increased significantly. Among urban women, the decreasing trend was observed in recent time. There was positive relation between economic level and the prevalence of overweight and obesity for Chinese adults, but contrarily for Japan. China had more evident difference of the prevalence of overweight and obesity among urban and rural adults. 2.Compared with Tokyo, the overweight prevalence of men aged 20-74 in Shanghai was higher, but obesity lower. Overweight and obesity population among Japan men were younger than Shanghai. The overweight and obesity prevalence of women aged 20-74 in Shanghai was higher than Tokyo, while the difference increasing with age. **Conclusion:** The epidemic of overweight and obesity measured by BMI increased among Chinese and Japanese adults in last 20 years, however the rates and demographic patterns of such increase in overweight and obesity may differ for China and Japan.

[Keyword]: Body mass index; Overweight; Obesity

中日兒童青少年生長發育長期變化比較研究

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Comparison research on growth change between Chinese and Japanese adult children

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摘要

研究背景：最近 100 多年以來，世界上多數國家兒童青少年，身材一代比一代長得高大，性發育明顯提前，學者們將這種現象稱為生長發育的長期變化。生長發育的長期變化表現為：1、各年齡組兒童少年發育水平提高，成年身高也相應增高；2、青春期開始和結束時間均提前，突出表現為女孩月經初潮年齡的提前；3、其他方面：生長發育的長期變化在很多方面都有明顯的表現。如同齡者的腦重有隨年代而增長的變化；兒童第一恒磨牙的萌出時間提前；骨齡發育提前；運動能力、腦力工作能力也有明顯的增長。生長發育長期變化與多種因素有關，主要與營養和社會經濟條件的改善以及遠緣婚配的遺傳因素有關。

中日兩國國民同處亞洲地區、同為黃色人種，在遺傳背景、地理氣候等方面有諸多相似之處，兒童青少年生長發育水平、身體形態及體型特點等方面存在較強的可比性，因此歷史上曾有一些不同規模的中日國民體質比較研究。1985 年中日兩國體育界人士曾就 7-20 歲兒童青少年的體質狀況進行聯合調查，時隔 20 年之後，2005 年兩國又開展了 3-74 歲國民體質狀況比較研究。本文對兩次兒童青少年比較研究結果及兩國有關青少年體質歷史數據進行剖析，旨在探討不同社會經濟文化背景下兩國青少年生長發育的長期變化及國民體質水平的差異，進一步揭示亞洲人群生長發育規律及體質特點，為兩國制定國民體質發展戰略提供科學依據，為體質人類學研究做出貢獻。

研究方法：1985 年的兒童青少年體質聯合調查中國取樣城市為北京，日本為東京。2005 年中國取樣城市為上海，日本仍為東京。7-19 歲兒童青少年為兩次研究均涉及到的人群。本文主要對兩次比較研究的形態數據及兩國有關青少年生長發育的歷史數據進行分析。中國由於兩次取樣城市不同，因此還增加了對 1985 年上海市兒童青少年生長發育數據的分析。

主要研究結果

1、兩次比較研究主要結果

1985 年比較研究表明：中國兒童青少年身體長度指標多超過日本；而日本青少年身體充實度明顯高於中國，表現為圍度、寬圍度、皮褶厚度日本整體高於中國；中國青少年生長期長，形態指標青春期發育速度快；日本青少年青春發育突增期骨齡發育快；總體特徵表現為：中國青少年細長，日本矮粗。1985-2005 年日本青少年生長發育水平仍有所增長，但幅度很小，已趨於穩定，而中國青少年正處於生長發育的長期加速期。隨著中國國民經濟、營養狀況的改善和生活方式的改變，目前（2005 年）中國青少年身體長度指標仍大於日本，身體充實度有了很大增長，表現為體重、BMI 等增長幅度大，圍度指標（上臂圍、小腿圍）、各部位皮褶厚度顯著增長。肩寬等與日本接近甚至有反超的趨勢。

2、中日兩國兒童青少年生長發育的長期變化

對歷史數據的分析表明：1957 年-1977 年的 20 年為日本青少年生長發育加速最明顯的時期。20 年中日本 7-17 歲男女青少年身高平均增長值分別為 7.05 和 5.89cm，18-24 歲成年人身高分別增長 3.56 和 2.06cm。生長發育的加速趨勢十分明顯。1985-2005 年的 20 年日本 7-17 歲男女青少年身高平均增長值分別為 1.30 和 0.71cm，18-20 歲成年人身高分別增長 0.93 和 0.77cm；體重平均增長值分別為 1.6 和 0.5kg， 18-20 歲成年人體重分別增長 0.7 和 0.4kg。生長發育仍呈現加速趨勢，但幅度很小。1985-2005 年 20 年中中國 7-17 歲男女兒童青少年身高分別增長 5.2 和 3.6cm，體重分別增長 7.5 和 4.6kg，生長發育加速趨勢非常明顯，與日本 1957-1977 年的變化相似，但身高增長幅度比後者小。同時，此 20 年中 18-22 歲青年學生身高分別增長 1.7 和 1.3cm。中國兒童青少年生長發育加速最明顯的時期為 1985-1995 年，男女青少年身高分別增長 3.2 和 2.4cm，18-22 歲青年學生身高增長最快的時期為 1995-2005 年，男女分別增長 1.3 和 1.1cm。目前中國兒童青少年仍處於生長發育長期加速期。

3、1985 年——2005 年東京、上海兩市兒童青少年生長發育的長期變化

1985——2005 年的 20 年東京青少年生長發育水平變化與日本全國青少年生長發育長期變化的趨勢相一致，各年齡組各形態指標增長甚微，有的甚至有下降。如 7-17 歲青少年身高平均增長值男性為 0.55cm,女性為（-0.05）cm；坐高平均增長值男性為 0.71cm,女性為 0.59cm；體重均增長值男性為 0.81kg,女性為（-0.05）kg。而上海 1985 年-2005 年 20 年間 7-17 歲男女青少年生長發育變化趨勢也與全國數據相一致，身高平均增長值分別為 5.8cm 和 4.8cm；體重平均增長值分別為 7.5kg 和 5.2kg。遠大于東京同期的增長。

4、中日青少年性發育的長期變化

（1）中國：中國青少年形態發育長期變化的同時，性發育也呈現提前的趨勢，並與國民經濟發展和營養改善狀況密切相關。如呈現女孩月經初潮年齡城市早於農村，大城市更為提前的趨勢。我國北京、上海和武漢等大城市少女的月經初潮年齡從 1960 年的 14-15 歲，提前到 1990 年的 12-13 歲。如北京城區女童 1962 年月經初潮平均年齡為 14.16 歲，1985 年為 12.62 歲，2005 年為 12.24 歲，43

年提前了 2.08 歲，平均每 10 年提前 0.49 歲。

全國數據：1985 年中國城市女孩月經初潮年齡為 13.17 歲，1995 年為 13.08 歲，2000 年為 12.73 歲，2005 年為 12.64 歲，20 年提前了 0.53 歲。

1985 年中日聯合調查：中國 15 歲以上女孩初潮平均年齡在 13.01-13.05 之間。2005 年中日聯合調查中國女孩月經初潮中位年齡仍為 13 歲，未見明顯提前。

（2）日本女孩的月經初潮年齡曾因戰爭造成的國民生活貧困一度推遲到 14.5 歲（1950 年），隨著戰後 20 世紀 60-70 年代的經濟飛越發展，1980 年東京女孩的月經初潮年齡已提前到 12.4 歲。1985 年中日聯合調查：13 歲以上女孩初潮平均年齡在 12.04-12.08 之間，波動範圍較窄。2005 年中日聯合調查：日本女孩月經初潮中位年齡為 12 歲，與 1985 年相比並無提前。

5、中日青少年生長發育長期變化特徵比較：

（1）生長發育長期變化與社會經濟發展密切相關。如 1957 年——1977 年的 20 年為日本青少年生長發育加速最明顯的時期，與日本戰後經濟騰飛時期相吻合。1985-1995 年為中國兒童青少年生長發育加速最快的時期，且目前仍處於生長發育長期加速期，與中國實行改革開放、經濟增長加速時期相一致。

（2）通過對兩國青少年突增特徵的分析表明：中日兩國兒童青少年生長發育長期變化表現為時間上的差異，但規律基本相似：即主要表現為遺傳潛能的發揮所致生命早期發育水平的提高、青春期發育的提前，體重的長期變化還表現為青春期突增幅度的增長；

（3）目前日本青少年生長發育已趨於穩定，中國青少年仍處於生長發育的長期加速期。

結論：中日兒童青少年中日兩國生長發育長期變化表現為時間上的差異，長期加速最明顯的時期與各國經濟發展飛躍時期相一致。長期變化規律基本相似：即主要表現為遺傳潛能的發揮所致生命早期發育水平的提高、青春期發育的提前，體重的長期變化還表現為青春期突增幅度的增長；目前日本青少年生長發育已趨於穩定，中國青少年仍處於生長發育的長期加速期。

關鍵詞：　中國，　日本，　生長發育長期變化，比較研究

山東省 40-59 歲成年人不同 BMI 值對應形態、機能及素質的特徵分析

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Characteristics of the different body mass index corresponding to body shape, function and fitness in adults aged 50-59 in Shandong province

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摘要

1、目的

選擇山東省 2005 年國民體質監測成年乙組 1091 個樣本作為研究對象，通過探索不同 BMI 值對應 40-59 歲年齡段形態、機能及素質的特徵，提高該年齡段人群的健康水平和運動品質，同時為相關測試和研究提供理論依據，以適應我國全民健身計畫實施與深化的需要。

2、方法

監測器材、測試方法均按 2005 年國家國民體質監測相關規定執行，採用 SPSS10.0 統計軟體對成年乙組的身體形態、機能及素質指標進行統計分析，並計算其 BMI 值作為分類標準；且對高血壓發生率進行率的比較和檢驗。

3、結果

3.1 不同 BMI 值的形態特徵

隨著 BMI 的增大，男女各形態指標 (除身高)呈明顯的升高趨勢，且各形態指標間存在非常顯著性差異 ($p<0.01$)。身體圍度指標中，腰圍的增長幅度最大。2 度肥胖組腰圍值最大，該組患高血壓的可能性較大。根據腰臀比可以判斷，內臟脂肪型肥胖類型在山東省該年齡段人群中更為常見，且最具有心血管病、糖尿病、腦中風發病率高的危險因素。

3.2 不同 BMI 值的機能特徵

男女體重正常組和肥胖前期組的總體機能水平好於肥胖組，且 2 度肥胖組高血壓的發生率為最高。男女安靜脈搏、肺活量/體重及臺階指數均隨著 BMI 的增大有下降的趨勢，說明男女體重正常組的心血管機能水平較好。

3.3 不同 BMI 值的素質特徵

隨著 BMI 的增大，男女坐位體前屈、閉眼單腳站立指標水平逐漸下降；握力逐漸增大；選擇反應時呈現無規律變化。男女坐位體前屈、閉眼單腳站立 2 度肥胖組最差，可能是因為過大的體重對柔韌素質、平衡能力產生了一定程度的

負面影響；絕對力量肥胖組好于體重正常組和肥胖前期組；選擇反應時可能受心理、熟練程度等外界因素的影響，變化無規律。

4、 結論及建議

4.1 在本次體質測試 40-59 歲的人群中，男女肥胖率為 55.91%,其中，2 度肥胖人群占 9.17%,

這種高肥胖率發生的現象,應引起整個社會的高度重視。

4.2 在形態指標中，隨著 BMI 值的升高，形態指標（除身高外）呈持續上升的趨勢，特別是腰圍增大明顯。只有通過加強體育鍛煉，才可以減少體內脂肪的堆積，使脂肪分佈更為均勻，降低內臟脂肪的比例，減少如高血壓等與肥胖相關疾病的發生機率。

4.3 在機能指標中，總體趨勢是正常體重組與肥胖前期組好於肥胖組。2 度肥胖組最差，而且該組高血壓的發生率最高。

4.4 在素質指標中，柔韌素質、平衡能力水平正常體重組和肥胖前期組高於肥胖組，力量素質肥胖組較好，選擇反應時變化無規律。

[關鍵詞]：體質指數 體質 成年人

Abstract

OBJECTIVE

This paper explores the characteristics of the different body mass index corresponding to body shape, function and fitness with 1091 samples of adults aged 40-59 from Shandong national physical fitness surveillance 2005 as subjects, to improve their health level and the qualities of motion, and to provide a theoretical basis for the test and research, so as to meet the need of the implementation and deepen of national fitness programs.

METHODS

The monitor instrument and tests methods were carried out based on the regulation of the national physical fitness surveillance in 2005. Taking BMI as classified standard, it analyzed the index of body shape, function and fitness in aged 40-59 by adopting the spass10.0 and comparing the incidence of hypertension.

RESULTS

1. Characters of body shape for different BMI

When BMI increased, the indexes of male and female body shapes except body height increased obviously and showed significant difference ($p<0.01$) among them. Waist circumference increased the highest in the indexes of body circumference, 2-degree

obesity groups with the biggest waist circumference had a higher incidence of hypertension. Judging by WHR, android-type obesity was often seen in aged 40-59 in Shandong province and had risk factors on the incidence of cardiovascular, diabetes and cerebrrascual infaction.

2. Characters of function for different BMI

The general physiological fitness level of normal weight cases and overweight case was better than that of obesity cases and the incidence of hypertension of 2-degree obesity cases was highest of all. When BMI increased, the level of resting pulse, vital capacity/weight and steps index had a declined trend, it showed the level of cardiacvascvasclar function was better in normal weight cases of male and female.

3. Characters of fitness for different BMI

When BMI increased, the level of sit-and-reach and stork stand with eye closed of male and female gradually declined, the handgrip strength increased, the change of reaction time was irregular. The level of sit-and-reach and stork stand with eye closed of male and female was the worst in 2-degree obesity groups, perhaps the overweight was of negative effects on flexibility and balance. The absolute strength of obesity groups was better than the normal weight cases and overweight cases. The reaction time may be effected by psychology, practiced degree and some other exoteric factors, so its change was irregular.

CONCLUSION AND SUGGESTION

1. The obesity rate of aged 40-59 in this constitution testing was 55.91%.Among them, the rate of 2-degree obesity groups was 9.17%.The whole society should pay high attention to the phenomena of the high obesity rate.

2. In the indexes of anthropometry, the indexes of body shape of male and female except body height increased gradually and especially, the waist circumference increased obviously. Only through reinforcing physical exercise, can it reduce fattiness in the body and distribute equality the proportion of visceral fat in order to reduce the incidence of hypertension and other diseases correlative with obesity.

3. In the indexes of physiological fitness, the general trend of normal weight cases and overweight cases was better than that of obesity groups, the worst in 2-degree obesity groups and the highest incidence of hypertension among them.

4. In the indexes of physical activity, the level of flexibility and balance of normal weight cases and overweight cases was better than that of obesity groups, but handgrip was better in obesity groups and the change of the reaction time was irregular.

Key words： body mass index: physical fitness: adults

山東省成年人不同職業人群體質狀況的研究

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Physical fitness for adults of different occupations in Shandong province

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摘要

為探討不同職業人群體質特徵，科學指導全民健身運動，本研究按照《2005年國民體質監測工作手冊》的要求，對山東省年滿20至59周歲的男性20387人，女性20350人進行了體質測試，並對監測數據進行了多重比較研究，發現身高、體重、肺活量和握力存在著明顯的城鄉差異，城市高於鄉村，體力勞動者的肺活量小於非體力勞動者，表明體力勞動不能代替體育鍛煉，體育鍛煉只有建立在適宜運動強度、全身關節參與、持之以恒鍛煉、膳食營養平衡的基礎上才更有效果。男性BMI值和體重超重率高於女性，說明女性形體鍛煉意識高於男性，專業技術人員BMI值和體重超重率居中，表明文化程度可影響體育價值觀和體質健康，男性機關企事業負責人BMI值和體重超重率最高，應成為肥胖防治的重點人群。不同職業人群坐位體前屈差異較小，提示柔韌素質與職業無關。建議體育鍛煉時選擇適宜運動強度，增加柔韌素質和力量素質鍛煉內容，避免營養不足和營養過剩，提高對膳食營養平衡重要性的科學認識，並能持之以恒，促進科學健康生活方式的養成。

關鍵詞：成年人；職業；體質；山東省

Abstract

In order to find out the characteristics of physical fitness for adults of different occupations and supply theoretical help and guides in their exercising, it has taken a test for them(male totaled 20387,female totaled 20350, aged between 20 and 59 years

old) according to "working handbook of national physical fitness surveillance in 2005" in Shandong Province. By using multiple comparison researches and mathematic process, the testing results were compared. It has been shown that the height, weight, vital capacity and handgrip strength of the urban adults obviously higher than those of the rural adults. The vital capacity of labor workers obviously smaller than that of non-labor workers. These results indicate that physical labour can not replace physical exercise. Based on proper intensity, participation of all physical joints, consistency and nutritious balance, physical exercising seems to be the most effective for promoting health. The BMI value and overweight rate of male are higher than those of female; the cause is that the female extremely note anthropometry training. BMI value and weight overload rate of technical personnel are in the middle, indicating the level of education can affect sports values and physical health. BMI value and weight overload rate of male managers are the highest. The facts suggest that they are the priority crowd of fat prevention and cure. It has suggested that people should choose the proper intensity of exercise and increasing flexibility exercise and resistance exercise in their regular physical exercise. People understand the importance of physical exercise and nutrition balance to promote their healthy life-style.

Key words: adult: occupation: physical fitness: Shandong province

西安與澳門 70 歲以上老年人生活狀況及體質水平的比較研究

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The Research on Living Conditions and Physical Fitness of Elderly over 70 between Xi'an and Macao

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摘要

研究目的：

為瞭解西安與澳門地區 70 歲以上老年人生活狀況及體質水平的情況，以便為指導老年群眾體育與科學健身提供服務，為政府職能部門制定相關決策提供參考依據。

研究方法：

以 70 歲以上生活可以自理，無重大疾病的城市老年人 466 人（西安：男 83 人，女 75 人；澳門：男 93 人，女 215 人）為研究對象，五歲分為一個年齡組，男女各三個年齡組，共 6 組。兩地體質測試分別於 2002 年 6 月進行。

對研究對象進行體質測試與問卷調查。體質測試指標共 11 項，涉及身體形態、機能、素質三個方面。問卷調查主要對老年人生活基本情況、生活習慣、健身活動參與狀況、經濟狀況滿意程度等問題進行調查。

使用統計軟體 SPSS10.0 進行數據處理，結果用平均數±標準差表示，採用獨立樣本 T 檢驗，並以 $P<0.05$ 作為差異顯著性水平。

研究結果：

1　戶居狀況調查顯示，老年空巢家庭（西安 44.3%，澳門 23.8%）與獨居者（西安 6.3%，澳門 31.6%）逐漸增多。

2　半數老年人的身體健康狀況一般；澳門有 66.4%，西安有 15.8%的人定期體檢，兩地約 80%的人每天堅持鍛煉，對有組織的群體活動表現出較高的熱情。

3　人際關係感覺非常好與不好的均為澳門高於西安。經濟狀況大多數人滿意程度為一般，不滿意與非常不滿意者澳門所占比例較高（25.7%），西安相對較低（7.6%）。

4　老年人的身高與體重兩地之間差異顯著，體脂率男女均超標，澳門高於西安。
5　80 歲以上組身體素質下降幅度較大，男女的握力、3 分鐘快走、縱跳均為西安高於澳門，兩腳開合澳門高於西安。

研究結論：

1　老年空巢家庭與獨居者逐漸增多。
2　約半數老年人的身體健康狀況一般，生活均較規律，約 80%的人每天體育健身。
3　人際關係方面，西安一般，澳門非常好與不好比例較高。經濟狀況大多數人滿意程度為一般，澳門不滿意比例較高。
4　兩地男女體脂率均超標，老年人的肥胖問題已引起社會的普遍關注。
5　老年人體質狀況基本穩定，身體素質隨年齡的增長呈下降趨勢，80 歲以上組下降幅度較大，身體素質總體結果西安優於澳門。

關鍵詞：老年人；生活狀況；體質；比較

Abstracts

Objectives: The purpose of this research is to understand the living conditions and physical fitness of elderly over 70 in Xi'an and Macao region.

Methods: 466 elderly over 70 without major diseases were measured as subjects during 2002. There existed altogether 6 groups with 5-years as a stage of age in men and women. 11 indexes of physical fitness test and a questionnaire survey were done. SPSS 10.0 statistical software used for data processing.

Results: 1. The survey shows that older empty nest households (44.3 % in Xi'an, Macao, 23.8%) and those who live alone (6.3% in Xi'an, Macao 31.6%) increased gradually.2. The state of health of the half of elderly is general; The elderly of Macao (66.4%) and Xi'an(15.8%) take periodic examinations, About 80% people in two region is exercises daily.3. The good and bad interpersonal in Macao are higher than Xi'an. Most people satisfied with the economic situation is general, Not satisfied with economic situation in Macao(25.7%) is higher than Xi'an（7.6%）. 4. There were significant difference between the two places of the height and weight, the rate of body fat both men and women are beyond normal. 5.The physical fitness of elderly over 80 group declined obviously, The index of grip strength, 3 minute 10 m shuttle walk and vertical jump in Xi'an were higher than Macao, The index of 20s stepping Macao is higher.

Conclusions: 1. The empty nest families and the elderly living alone has gradually increased. 2. The state of health of the half of elderly is general, About 80% people is exercises daily. 3. The good and bad interpersonal in Macao are higher Xi'an. Most people satisfied with the economic situation is general, Not satisfied with economic situation in Macao is higher than Xi'an. 4. The rate of body fat both men and women are beyond normal. 5. The situation of elderly physical fitness keeps stable and have a downward trend with age increased, The physical fitness of elderly over 80 group declined obviously, the overall results of Xi'an superior Macao.

Key words: Elderly; Living Conditions; Physical Fitness; Comparison

農民工的體質狀況研究

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The Study of Peasant-Workers'physical fitness Status

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摘要

為探討農民工的體質現狀，本文以不同行業的農民工為研究對象，分別對農民工身體、身體機能和身體素質進行測試，結果發現：(1).農民工總的體質狀況令人擔憂，處於優良水平的人不到 10%，而不合格的人達到 25.4%.(2).農民工的體質具有顯著性的行業差異；重工業的農民工體質相對其他三個行業來說，體質合格的人較多，優良率低，體脂百分比低和微循環較差；建築業的農民工體質最差，不合格率高達 36.8%，而且心肺功能水平在測試行業中最差;高新電子行業和服務業農民工的脂肪含量和心率相對較高；高新電子行業的體質女性好於男性，服務業男性好於女性。

關鍵詞：農民工　身體形態　身體機能　身體素質

Abstract

This paper study different industry **peasant**-Workers. To research **peasant**-Workers'constitution Status, separate test body **physique**, **physical functions** and physical quality. Result:(1). **peasant**-Workers'constitution Status is

misgivings, they have shortage **10%** in choiceness level, and that **disqualification** have 25.4%.(2). **peasant-**Workers'constitution have significance industry difference; heavy industry **peasant-**Workers'constitution is compared other three industry, eligible rate more, but choiceness rate lowness, body fat percent lower and microcirculation lower; **architecture industry peasant-**Workers'constitution is worst **disqualification** have 36.8%.and that cardio-pulmonary function is worst in three industry; high and new electro industry and service trade **peasant-**Workers'fat, heart rate comparatively higher; female worker constitution is better than male in high and new electro industry. however male worker constitution is better than female in service trade.

Key words: peasant-Workers body physique, physical functions, physical quality

體重指數、腰圍與高脂血症相關性的研究

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The Relationship between Body Mass Index, Waist Circumference and Hyperlipidemia

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摘要

目的：探討體重指數（BMI）、腰圍（WC）與血膽固醇（TC）、甘油三酯（TG）的相關關係。方法：對 616 名 20-59 歲上海市民（男 406，女 210）進行體質指數、腰圍與 TC、TG 的相關分析結果：男性：116 人超重，占 28.6%，165 人肥胖，占 40.6%；BMI 值越高，TC（r=0.213，P=0.032）、TG（r=0.185，P=0.048）的含量越高；WC 值越高，TC（r=0.411，P=0.015）、TG（r=0.326，P=0.021）的含量越高。女性：40 人超重，占 19%，31 人肥胖，占 15%; BMI 值越高，TC（r=0.196，P=0.047）、TG（r=0.204，P=0.035）的含量越高；WC 值越高，TC（r=0.409，P=0.017）、TG（r=0.318，P=0.025）的含量越高。結論：體重指數、腰圍與血膽固醇、甘油三酯具有顯著的正相關性。

關鍵詞：體重指數；腰圍；血膽固醇；甘油三酯

Abstract

Objective: To investigate the relationship between body mass index (BMI), waist circumference (WC) and the serum TC and TG. Methods: 616 healthy Shanghai 20-to 59-year-old adults (406 male and 210 female) in China were enrolled in this study. Height, weight, the serum TC and TG were determined. Results: In men, the proportion of people with over body weight or obesity was 28.6% and 40.6% respectively. In women was 19% and 15%. The serum TC and TG increased gradually as BMI and WC increased. Conclusion: BMI and WC correlated with the serum TC and TG positively.

Key words: body mass index; waist circumference; total cholesterin; triacylglycerol

2000-2005年內蒙古自治區成年人體質的動態分析

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Dynamic Analysis of the Inner Mongolia Autonomous Region Adult Physical Fitness

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摘要

研究目的:本研究對內蒙古自治區不同年齡、不同性別成年人的體質變化規律及特點，結合 2000-2005 年的縱向分析，為自治區政府改進體育宏觀管理和實施有效的決策提供參考依據。

研究對象與方法:

測試對象 在內蒙古中、東、西部的呼和浩特市、赤峰市、烏海市隨機整群抽樣構成測試樣本，選取年齡 20-59 歲的成年人共 5569 人，其中男性 2767 人，女性 2802 人。

測試指標 採用《2005 年國民體質監測工作方案》的測試指標。根據國民體質監測的統一要求，在體質測試的同時，對生活習慣、鍛煉時間、影響因素等 20 個問題即時進行問卷調查。

測試方法 按《2005 年國民體質監測工作方案》規定的年齡段分組測定項目和評價方法進行測定與評定。

研究結果

研究結果顯示：自治區成年人體質總體水平比 2000 年有所提高。他們的體質優秀率為 24.2%，比 2000 年增加了 13.2 個百分點，比國家高出 8.7 個百分點；良好率為 29.5%，比 2000 年增加了 5.3 個百分點，比國家高出 3.7 個百分點；合格率為 39.2%，比 2000 年減少了 10 個百分點，比國家低 6.3 個百分點；不合格率為 7.1%，比 2000 年減少了 8.5 個百分點，比國家低 6.1 個百分點。城鄉體質等級差異明顯，城市好於鄉村。

身體形態水平成年男女甲組身高有所增長，體重男子增長幅度較大。男女隨年齡的變化趨勢與肥胖率相同，城市肥胖率高於鄉村檢出率。

與 2000 年相比，我區成年甲組的身體素質水平明顯提高。男女甲組背力、縱跳、俯臥撐（男）、仰臥起坐（女）、選擇反應時四項指標較 2000 年均有明顯提高；握力指標男女甲組有所下降；坐位體前屈指標女子甲乙組均有所提高，男子甲組有所下降；閉眼單腳站立指標男女甲組均有所提高，乙組的男子和女子年齡段有所下降。城鄉間各項身體素質有顯著性差異。

身體機能方面，成年男子的肺活量較 2000 年有所提高；女子的肺活量有所下降。臺階指數男子各年齡段均低於 2000 年指數，女子乙組 45-59 歲年齡段較 2000 年有所提高。男女甲組的臺階指數低於乙組，均有明顯的下滑，應引起注意。從調查表中可以看出，甲組參加鍛煉的人數僅占 27.3%，而乙組參加鍛煉的人數占 45.9%，統計顯示參加鍛煉與不鍛煉差異具有高度顯著性，這個結果說明雖然 40 歲以後是處於生理性衰老的開始階段，但是參加體育鍛煉可以延緩衰老，成年甲組的人群如果不注意體育鍛煉體質將會下滑。建議有關部門採取加強對全民健身的內容和體育鍛煉進行有針對性的干預，以提高內蒙古自治區成年人身體素質的整體水平。

關鍵詞：內蒙古　成年人　體質　動態分析

Abstract

Introduction: This article has studied the adult's physical changes and features in Inner Mongolia Autonomous Region. Regarding 2000-2005 year longitudinal analysis, it provides the reference to the autonomous region government and improves the sports macroscopic management and the implementation effective decision-making.

Methods: The research and test in Huhhot City, Chifeng City, Wuhai City in Inner Mongolia constitutes random sampling test samples, a total of 5,569 selected adults aged 20-59 years. 2,767 were male, 2,802 were female.

Using the "2005 National Physique monitoring program" test indicators. Under the unified national body to monitor the fitness test at the same time, living habits, exercise, factors affecting 20 conducted a questionnaire survey on the problem immediately.

According to the "2005 National Physique monitoring program," the determination of the age of a project with the determination and evaluation methods classified.

Results: The general level of the adult physical fitness than in 2000 has increased.

They rate their health as excellent 24.2%, an increase of 13.2% over 2000. 8.7 percentage points higher than the state; Good rate of 29.5%, an increase of 5.3 percentage points over 2000. 3.7 percentage points higher than the state; a pass rate of 39.2%, a decrease of 10 percentage points over 2000. 6.3 percentage point lower than the state; a failure rate of 7.1%, a decrease of 8.5 percentage points over 2000. 6.1 percentage points lower than the state. Physical Fitness difference between urban and rural areas, cities well in the villages.

Groups of adult male and female body shape are the level of growth, the growth rate greater weight men. And the trend of changes in obesity rates between men and women the same age, obesity rates than urban village detection rate: Compared with 2000, our region has a remarkable increase in the level of physical fitness of adults in groups. Groups of men and women back, vertical jump, push-ups (men), sit-ups (female). Choice reaction time than the 2000 average of the four indicators have markedly improved; Groups of men and women holding indicators have declined. Sit-and-reach target group consists of women has increased, men in groups has declined. Groups of men and women stand on one leg with eyes closed indicators have been enhanced, B of the men and women of age declined. Physical and villages all have significant differences.

Bodily functions, the FVC adult men has increased over 2000; FVC woman declined. Men of all ages index level below 2000 index, B women aged 45-59 has increased over 2000. Category B for men and women below the index level, there has been an obvious decline, and we should pay attention. As can be seen from the survey, the number is only 27.3% in group exercise participants. B accounted for 45.9% and the number of participants and training, training and non-training statistics indicate significant differences, although the results indicate that after 40 years of physiological aging is at the beginning stage. But aging can be retarded to participate in physical training, adult training in group sports physical neglect will decline if the crowd. Recommendations to the relevant authorities to strengthen the national fitness and sports training for targeted interventions. Inner Mongolia adults should be improved the over all physical fitness level.

Key Words : Inner Mongolia, Adult, Physical fitness, Dynamic analysis

內蒙古自治區3-6歲兒童身體素質的現狀分析與研究

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Analysis and Study of the Current Physical Ability of 3 to 6 – year Children in Inner Mongolia

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摘要

本文採用了文獻數據法、檢測調查法和數理統計法，對內蒙古自治區第二次體質監測中6項身體素質指標進行研究，旨在瞭解內蒙古地區兒童身體素質發展的現狀及其變化規律。得出以下結論：

1.內蒙男女童立定跳遠的能力隨年齡的增長而逐漸提高；男童下肢肌肉力量的發展水平好于女童；各個年齡組城鄉男女童立定跳遠能力均表現出城市好於鄉村。

2.內蒙男女童網球擲遠的能力隨年齡的增長而逐漸提高；上肢肌肉力量的發展水平，男童好于女童；城鄉男童網球擲遠能力，除3歲組城市男童好于鄉村男童外，其餘3個年齡組均是鄉村好於城市；城鄉女童網球擲遠能力，3歲、6歲組城市女童好于鄉村女童，4歲組城鄉女童一致，5歲組鄉村女童好于城市女童。

3.內蒙3-6歲男童坐位體前屈的均值變化是隨著年齡的增長逐漸下降，而女童是3-5歲時逐年升高，5-6歲有所下降；分析表明，女童的柔韌性好于男童；各個年齡組男女童的柔韌性均表現出城市好於鄉村。

4.內蒙男女童10米折返跑的速度是隨年齡增加而不斷提高的；3-6歲年齡段女童速度素質的發展要快于男童；4歲組城市男女童成績均低於鄉村男女童，其餘組別都是城市好於鄉村，但差異不明顯。

5.內蒙男女童完成走平衡木動作的時間逐年縮短，走平衡木的能力隨年齡的增長而逐漸提高；3-6歲年齡段，兒童平衡能力的發展是不均衡的；走平衡木的能力，除了5歲組城市女童好于鄉村女童（但差異不明顯），其餘組別都是鄉村好於城市。

6.內蒙男女童雙腳連續跳的能力是隨年齡的增長而逐漸提高的；3-6歲年齡段，協調性的發展水平男女童基本相同；雙腳連續跳成績，除了4歲組城市男童低於鄉村男童外，其餘組別都是城市好於鄉村。

關鍵詞：內蒙古，兒童，身體素質

Abstract

References, testing, and statistics are employed to study the six standards during the second Inner Mongolia physical ability monitoring in order to master the current situation and the changing law of children' s physical ability in Inner Mongolia. The following conclusions are drawn:

1. Children' s ability of standing long jump is increasing with age; boys' power in legs develops better than girls' ; in each age group children' s ability of standing long jump is better in city than that in the countryside.

2. Children' s ability of throwing tennis is increasing with age; boys' power in arms develops better than girls' ; except 3-year groups children' s ability of throwing tennis is better in the countryside than that that in city; the girls of 3-year groups and 6-year groups in city show better than those in the countryside in ability of throwing tennis, while the results between the girls of 4-year groups both in city and countryside agree , and the girls of 4-year groups in the countryside get abler than those in city in throwing tennis.

3. The boys from 3 to 6 decline in average of fore bend in sitting position with age increasing, while this ability of the girls from 3 to 5 gets better and decreases among those from 5-6; the analysis indicates the flexibility of the children in city is better than those in the countryside.

4. The children' s soeed in 10-meter back-and-forth running increses with age;the girls within 3 to 6 years develop better than boys in running speed; the average results of the children of 4 in city are lower then the children in the countryside, and in the other age groups the results are just opposite but the difference is not obvious.

5. The time taken in walking through the balance beam shortens with the age increasing, and the ability is increasing. The balance ability develops in an unbalanced way among the children; except that the ability in walking on a balance beam of girls of 5 shows slightly better, the other groups indicate that the children in the countryside perform better than those in city.

6. Children' s ability of continuous jump on both feet is increasing with age; boys' power in legs develops better than girls' ; in each age group children' s ability of standing long jump is better in city than that in the countryside. Both boys and girls develop in coordinating ability at almost the same level; the results of continuous jump on both feet of the 4-year boy s in the countryside are better than those in city, while the opposite results show in other age groups.

Key words: Inner Mongolia: children: physical ability

2000～2005年青島市幼兒體質狀況的動態分析

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THE DEVELOPING ANALYSE OF CONSTITUTION SITUATION OF INFANTS IN QINGDAO FROM 2000 TO 2005

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摘 要

運用文獻數據、體質測試以及數理統計等研究方法，對青島市幼兒身體形態和身體素質等指標進行動態分析。結果表明：幼兒在身體形態方面如身高、體重和胸圍都呈上升趨勢，身體生長發育勻稱度有較大改善，身體素質發展不平衡，其中，平衡木完成時間增長較快，立定跳遠、10米折返跑和雙腳連續起跳同2000年相比都有不同程度的提高，而上肢肌肉的絕對力量卻出現大幅度下降。

關鍵詞：體質；幼兒；青島市

Abstract

Apply some research methods such as documents, physical constitution tests and data statistics to analyse the figures and physical constitutions of teenagers in Qingdao. The results show that: figures of infants, such as height, weight and chest measurement are in an uptrend, the symmetry of the body growth has got a big improvement, but the physical constitution is losing balance now. Among them, compared to the year 2000,the time to finish balance beam is increased, standing long jump,10-metre cycle running and jumping indicate various degrees of improvement, while the absolute strength of upper limb muscle is decreased by a wide margin.

Key Words: Constitution: Infants: Qingdao

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中日大城市人群的體質特徵

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Characteristic of physique of Japanese and Chinese living in a metropolitan area

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Abstract

Introduction

In Japan and China, the public health and the physical fitness problem become common, however both countries has a lot of problems of the endemic. The example is that the obesity rate of adults living in urban area is increasing year by year and that child's physical fitness is decreasing. Therefore, Japan and China executed the cooperative investigation research concerning people's physical fitness in 2005-2006. It is very important and indispensable to investigate people's physical fitness regularly to settle on the guideline for the health promotion program of the country. Moreover, it is necessary as basic material for the making of the education program.

We investigated people's various items containing their daily life from the child to the elderly in this cooperative research. They are divided roughly into three; anthropological measurements, physical fitness test, and questionnaire concerning daily life. Here, we focus on only anthropological measurements to clear the differences in physique between both countries and will examine from various view points such as auxology, health sciences, and so on.

Subjects and methods

Subject: Japanese, 2920 males and 2750 females, lived in Tokyo or Tokyo outskirts and Chinese, 2913 males and 2907 females, lived in Shanghai. The age of subjects ranges from 6 to 74 years old. All surveys including anthropological measurements, fitness test and questionnaire concerning daily life were conducted from September, 2005 to April, 2006.

Anthropological measurements: anthropological measurement items to analysis in this study were height, sitting height, length of upper limb, weight, girth of upper arm, girth of calf, biacromial breadth, skinfold(arm), skinfold(back), skinfold(abdomen), girth of waist and girth of hip. And then body mass index and waist to hip girth ratio were calculated from the first data such as height, weight, girth of waist and girth of hip. The measurements were carried out based on Martin-Saller and skinfold sickness was measured with a caliper.

Results and discussion

Height, sitting height and length of upper limb; generally, young male and female Chinese have larger values in three items than Japanese. And older male and female Chinese have also larger in height and sitting height than Japanese. There are secular changing points in height at around 17-18 year old for Chinese and over 50 years old for Japanese.

Weight; young male and female Chinese and adult female Chinese have larger value than Japanese. It is remarked that the differences in adult female is wider and wider with the age.

Girth of upper arm and girth of calf; generally the values in girth of upper arm are roughly the same at the growth period for two countries. Adult male and female Chinese, however, have larger values than Japanese and this fact is especially clear in the female over 20 years old. Young male and female Chinese have larger values in girth of calf. On the contrary older male and female Japanese have larger values.

Biacromial breadth; though young male and female Chinese have larger values in biacromial breadth than Japanese, these are roughly the same for two countries over 20 years old.

Skinfold (arm, back, and abdomen); the age-related changes of female skinfold (arm, back and abdomen) traces the same process. That is, young female Japanese have larger values than Chinese and then the fact become opposite, Chinese over 20 years old have larger than Japanese. But the age-related changes of male skinfold (arm, back and abdomen) traces a different respectively process. That is, Young Japanese have larger value in skinfold (arm) than Chinese、Chinese over 20 years old have larger value in skinfold (back) than Japanese, and the values in skinfold (abdomen) are roughly the same from child to elderly.

Girth of waist and girth of hip; male and female Chinese at all the ages have larger values in girth of waist than Japanese, the fact is clearly in the female over 20 years

old. Though the values in girth of hip are roughly the same in male, female Chinese aged over 20 years old have larger than Japanese.

To compare the values of anthropological measurement of both countries' people, there are many differences between Japanese and Chinese. And a lot of results make us interesting, for example, Why is the value of girth of waist in female Chinese at all the ages larger than Japanese? Here, it is necessary to summarize the results to clear the point of discussion as follows.

There are the secular changing points in height at around 17-18 year old for Chinese and over 50 years old for Japanese. It is sure that nourishment at person's stage of growth influences his final height most. It suggests a dramatic change occurs in the amount of the intake caloric for both countries.

Male and female Chinese at all the ages have larger values in girth of waist than Japanese. Though the possible reason would be found about the difference at the adult, the difference at the child could be explained well. It suggests that a racial difference might be reflected.

Female Chinese over 20 years old have larger values in many measurements such as weight, girth of arm, skinfold (back and abdomen), girth of waist and girth of hip. These results hint that the heart attack rate in China will be higher than now before long because the rate correlates highly with overweight.

Young male and female Japanese have larger values in skinfold (arm) than Chinese. Generally, skinfold sickness of child would be thin because they move actively. Unfortunately a clear reason is not found here. All things considered it is important to teach the child the importance of eating and to provide for them enough time to play.

日本老年運動人群的體質特徵及相關影響因素

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Characteristics of physical fitness and health-related factors in the active Japanese elderly

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Abstract

BACKGROUND: Exercise improves the quality of life for the elderly. Also exercise is effective for reducing the risk of many chronic diseases including cardiovascular diseases, diabetes mellitus, obesity, osteoporosis and certain types of cancer. Physical activity is related to not only numerous health benefits, but also physical fitness. Lack of habitual physical activity, furthermore, is linked to premature death. Consequently, it is considered that physical activity is very important to improve health-related factors. Some researches reported that exercise intervention can improve the health and wellness of many human beings and simultaneously reduce health-care costs. To our knowledge, however, the active elderly does not always maintain health benefits and physical fitness. In previous our research (not published yet) and/or in practice, these elderly have some health risk factors in spite of habitual physical activity. Therefore, we considered that the evaluation of physical fitness, physical activity level and health-related factors would be needed not only in inactive elderly, but also in active one.

PURPOSE: We examined that characteristics of physical fitness and health-related risks, and relationship between physical fitness and health-related factors to evaluate physical fitness and health-related factors in the regular active elderly.

METHODS: This study was approved by the Institutional Review Board of Sendai University.

Our study population was comprised of subjects aged 65 -74 years in habitual physical activities (those mean more than 30 minutes workout, 2 times per week, throughout one year) and the elderly who were living in the Shibata rural area of

Miyagi prefecture in Japan. One hundred fifty-two elderly (male = 75, female = 77) were participated in this study. We invited these individuals to participate in a comprehensive geriatric assessment, which included medical status, physical function and physical fitness. All of them has done and the informed consent of all subjects were received for analysis of the data. We measured anthropometric data (height, body weight, abdominal circumstance) which were recorded by a standardized protocol. Body mass index was also calculated. Blood pressure (BP) was measured using the cuff-oscillometric method to generate a digital display of systolic and diastolic blood pressures (SBP and DBP). Blood samples were drawn from the antecubital vein of the seated subject with minimal tourniquet use. Triglycerides (TG), high-density lipoprotein cholesterol (HDL-C) levels and blood glucose levels were measured by enzymatic methods. Japan Fitness Test, since 1998 included assessment of strength (handgrip strength, 30 seconds sit-ups), flexibility (sitting trunk flexion), balance (one-leg standing balance with eyes opened), skill (10-meter obstacle walking), and endurance (6-minutes walking). For detail analyze data, subjects divided into three groups from physical fitness test results. That is, high fitness level group (HF), middle fitness group (MF) and low fitness group (LF). All data are presented as means±SD. Repeated one-way ANOVA was used to determine the statistical significance of a factor (group). When a significant F ratio was detected, Tukey-Kramer test was performed a post-hoc, and $p<0.05$ was considered as statistically significant.

RESULTS: Strength and balance in both male and female were higher than that of standard value in Japanese elderly generation. Flexibility in female was also higher than that of standard value. The results of other parameter in physical fitness test were similar to standard values. TG, HDL-C and blood glucose in this study of population were good compare with the standard in elderly generation. When we analyzed to health-related factors including anthropometric measures and blood parameters in three groups, there are no significantly differences in all parameter. But, height was tendency to low with the decreasing of fitness level. BMI and abdominal circumstance were gradually increased with the decreasing of fitness level. And, there were also similarly tendency in resting HR and blood pressure. In blood parameters, TG of HF group in female was lower than that of both MF and LF groups. HF group in both male and female was high HDL-C value compare with both MF and LF group.

DISCUSION & CONCLUSION: Physical activity is one of the most important modifiable risk factors for health benefits. It is well known that the active lifestyle can reduce cardiovascular disease and metabolic syndrome; in particular, regular physical

activity reduces these risk factors. Our main results are that regular physical activity maintains the favorable values of TG, HDL-C and blood glucose for health-related factors, on the other hand, we could not find the obviously superior results of physical fitness test in this population. Furthermore, these health-related factors are effected by physical fitness levels in well-active elderly populations. Although we could not clear that regular physical activity was enhance physical fitness in this study, we speculate that contents of physical activity, including exercise mode, duration, intensity may have influenced physical fitness. Interestingly, in this study population, hand-grip as strength and one-leg standing balance with eyes opened as balance were better. One of reasons for good strength and balance may arise from lifestyle condition, especially rural and urban community. There are several limitations in the present study and sample that warrant caution when we interpret and apply these data to other communities. Characteristics of participants do not match the general people. We did not measure inactive population in same area. To clear these problems, more research is needed in future study.

六分鐘步行的可靠性研究及回歸方程的建立

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The Reliability and Validity of 6-min Walk Test and the Foundation of Regression Equations in Health Adults

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摘要

為了研究 6 分鐘步行實驗測量上海健康成人心肺機能的有效性和可行性，從上海某 2 個區隨機抽取 40-69 歲健康成人 1404 人（男 647 人，女 757 人），進行身高、體重、用力肺活量、最大攝氧量和六分鐘步行的測試。結果顯示，6MWD 與最大攝氧量相關度較高（男 r=0.515　p<0.01，女 r=0.472　p<0.01）；年齡、身高、體重等因素對 6MWD 有較大的影響；以身高、體重、用力肺活量和年齡為變數建立了回歸方程：

男性 6MWD=432.800+1.085*Height-0.268*Weight+0.017*FVC-0.574*Age；

女性 6MWD=454.044+1.377*Height-1.060*Weight+0.013* FVC-0.758*Age

關鍵詞：6 分鐘步行；6 分鐘步行距離；心肺機能

Abstract

In order to research the reliability and validity of the 6-min walk test on cardiopulmonary fitness in healthy adults, we administered the standardized 6-min walk test to 1404 people (647men, and 757 women), aged 40 to 69 yr from two districts in Shanghai. Height, weight, forcibly vital capacity (FVC), and max VO_2 were determined before the test. And a linear regression model to determine the correlates of 6MWD. We found that there is significant difference between max VO_2 and 6MWD. Age, height, and weight also have big inference to 6MWD.The resulting gender-specific regression equations are as follows using the variables of height, weight, age, and FVC: for men, 6MWD=432.800m + $1.085\times Height_{cm} - 0.268\times Weight_{kg} + 0.017\times FVC_{ml} - 0.574\times Age$, and for women, 6MWD=454.044m+ $1.377\times Height_{cm} - 1.060\times Weight_{kg} + 0.013\times FVC_{ml} - 0.758\times Age$. In this study.

Key Word: 6-min walk test; 6-min walk test distance; cardiopulmonary fitness.

對成年人臺階試驗測量與評價的有效性研究

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The Survey of the effectiveness of the adult sidestep test and appraises

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摘要

臺階試驗是我國成年人體質監測的測試指標之一，有人對採用臺階試驗測評心血管系統機能的有效性提出了疑問。本文以 2005 年湖北省國民體質監測為例，採用走訪調查法和數理統計法對臺階試驗進行分析和探討。結果表明：臺階試驗過程中缺失值情況較為嚴重，但不是完全隨機缺失。因臺階指數缺失，最後參與體質綜合評定男性成年人的比例為 88.8%，女性為 85.6%，不利於對成年人體質總體情況的分析與把握。在對參與測試的工作人員走訪調查中瞭解到，該指標缺失主要是由以下三方面的原因造成的：一是在組織測試過程中，因受測對象主觀原因沒有完成測試，二是在測試過程中因為儀器本身原因或操作不太規範造成的數據缺失,三是在數據校核中對異常值和可疑數據進行了剔除。臺階指數隨年齡增長其變化幅度不大，用臺階指數來反映以最大耗氧量和最大心輸出量為代表的心臟功能增齡性規律及其性別差異，效果有限。臺階指數與身高、體重存在弱的線性相關，身高、體重的不同會對臺階指數產生一定的影響。臺階指數與安靜脈搏、血壓存在弱的線性相關，呈負相關；與肺活量相關性不大，尤其是男性。建議在有條件情況下，可以考慮對臺階試驗這種定量負荷方法進行改進，研製更為適合的心率測量儀器，降低測試過程中的數據缺失。

關鍵詞：體質；成年人；臺階試驗

Abstract

The sidestep test is one of our country's test targets of adult constitution monitor, someone proposes the question of the validity of the sidestep test on evaluating cardiovascular system function. This article takes the Hubei Province national physique monitor in the year of 2005 as an example, analyzes and discusses the results of the sidestep test with the methods of interview and the mathematical statistics. The result indicated that, there are many missing values in the sidestep testing, but not missing completely at random. Because of missing values, at last, participates in the physique synthesis evaluation masculine adult's proportion is 88.8%, the female is 85.6%, does not favor to the adult physique overall situation analysis and the assurance. After interviewing the surveyors we know that, the missing values are mainly created by following three main reasons: first, in the process of the test, some of the testers have not complete the test because of the subjective reasons; second, the missing values are also created because of the instrument itself or unmoral operation; third, we have get rid of the unusual value and the suspicious data when proofreading. The sidestep index changes little with age, if we use the sidestep index to reflect the age rule and the sex difference of heart function, which is represented by the biggest cardiac output and the maximum oxygen consumption, the effect is limited. The sidestep index and the height, the weight have weak linear correlation, the difference in height and weight can have certain influence to the index. The index and the peaceful pulse, the blood pressure has weak and minus linear correlation; it does not have heavy correlation with the lung capacity, particularly for male. The article suggests to improve the sidestep test, develop more suitable heart-rate-metering equipment under the right condition, then reduce the missing values in the test process.

Keywords：constitution；adult；sidestep test

31 名普通大學生登樓梯有氧健身運動強度與能量代謝量的研究

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Study on the Intensity and Energy Expenditure Of Stair Aerobics About 31 University Students

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摘要

本研究目的是採用能量消耗間接測試法，測定健康普通大學生上、下樓梯時的能量消耗量，以得出登樓梯健身運動適宜負荷強度，為普通市民體育健身提供科學指導。本研究的受試對象為 31 名普通健康大學生，首先採用 MAX-II 運動心肺功能測試系統，求得每個人運動時心率與攝氧量之間線性回歸方程，然後通過 POLAR 遙測心率儀記錄上、下樓梯運動達到穩態後（>3min）的即時心率（bpm）代入能量消耗與心率之間關係的回歸方程，獲得相應的氧耗量、能量消耗量。實驗結果顯示，上樓梯是中等強度運動，可以改善身體機能，屬於有氧健身運動。

關鍵詞：登樓梯；能量代謝；運動負荷；有氧健身

Abstract

The purpose of this study was to estimate the intensity and energy expenditure of stairs exercise and to supply science references for public fitness and health promotion. *We* used MAX-II Model Computer Controlled Cardio-pulmonary Function Surveying Instrument to get the linear relationship between heart rates and VO_2 about each of 31 healthy university students who are all freshmen of Exercise & Sport Science Department of Shanghai University of Sport. We projected two exercise burdens and tested the instant heart rates when every exercise burthen was finished. And then we analyzed intensity and figured out the relevant energy expenditure. The results of the study shows that the metabolic way of upstairs exercise is aerobics, as it is a middle intensity sport and it can improve physical fitness and health.

Key words：upstairs exercise; energy expenditure; exercise burthen; aerobics

運動對防治骨質疏鬆的動物實驗研究

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Animal Experimental Research of Exercise to Preventing and Curing Osteoporosis

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摘要

研究目的：通過動物實驗的方法研究運動對防治骨質疏鬆的效果，為人體運動防治骨質疏鬆提供實驗依據，達到運動健身、改善國民體質的目的。

方法：清潔級6月齡SD大鼠[5]36只，體重260±20g。隨機分成6組：基礎組（CON，N=12只），去勢組（OVX，N=12只），懸吊[6]組（SUS，N=12只），去勢加運動組（OVX+EX，N=12只），懸吊加運動組（SUS+EX，N=12只）。在去勢手術後一周開始實驗，對OVX+EX、SUS+EX在我課題組自行研製的動態活體載入裝置上進行頻率5Hz，載荷2N，每天15分鐘，每週5天，持續8周的運動。通過生化指標（血清鹼性磷酸酶ALP、血清鈣離子Ca）、生物力學性能（脛骨壓縮破壞載荷F、脛骨的彈性模量E）、形態計量學（骨礦化沉積率MAR、標記周長百分數%L.Pm、骨形成率BFR/BS、BFR/BV）三種方面對運動效果進行測定。各組數據以均值±標準差表示，採用軟體SPSS13. 0 進行統計分析。組間差異顯著性採用方差分析的LSD (ONE2WAY ANOVA) 進行分析,以$P < 0.05$為顯著性標準。

結果： SUS+EX、OVX+EX的生化指標與CON相比較，ALP略有升高，Ca略有降低，說明通過8周的運動，骨生成有所提高，且鈣吸收較多；

在生物力學性能方面，SUS、OVX的F較同期的CON組約低19.92%、17.23%，E較同期的CON組約低6.88%、21.25%，SUS+EX、OVX+EX組的F較同期的CON組約高15.9%，7.10%，E較同期的CON組約高11.08%，5.49%；SUS+EX、OVX+EX

組的F較同期的SUS、OVX組約高30.92%、22.58%，E較同期的30.92%、22.58%組約高9.97%、5.2%，說明通過8周的運動脛骨的生物力學性能有明顯的改善；

在形態計量學方面，SUS+EX、OVX+EX組的各項指標（MAR、%L.Pm、BFR/BS、BFR/BV）基本與CON組持平，與SUS、OVX組同期比較MAR分別升高38.15%、30.49%，%L.Pm分別降低36.22%、41.18%，BFR/BS分別降低56.76%、50.98%，BFR/BV分別降低56.45%、57.57%，說明經過8周的運動不僅能抑制骨丟失，且能促進骨生成，從而防治骨質疏鬆。

結論：本實驗結果顯示經過8周的持續運動不僅能夠改善骨的量（MAR、%L.Pm、BFR/BS、BFR/BV），並且使骨的質（F、E）得到改善，有效的抑制骨質疏鬆的發展，並能促進骨的生成，為運動防治骨質疏鬆提供了實驗依據，達到了運動健身、改善國民體質的目的。

關鍵詞：運動;骨質疏鬆;大鼠;生化指標;力學性能;形態計量學

Abstract

Purpose: This study tries to find out the effects of exercise on preventing and curing osteoporosis by animal experimental research, which can offer scientific experimental data for certain aims, and improve people's physical condition by exercise and fitness as well.

Method: Take 36 cleaning mice, which are 6-month old and weigh 260±20g, and divide them into 6 groups at random (CON, N=12; OVX, N=12; SUS, N=12; OVX+EX, N=12; SUS+EX, N=12). The experiment starts one week later after gelding. OVX+EX and SUS+EX are put on the dynamic alive loading equipment which developed by our research team to have exercises (frequency:5Hz, load:2N) for 8 weeks (each week 5 days and each day 15 minutes). The result is measured by the data of biochemical target (ALP and Ca), biomechanics property (F and E) and morphometry (MAR, %L.Pm, and BFR/BS, BFR/BV). The data is analyzed by the software SPSS13.0 and marked by standard figure with (±)。The typical differences are analyzed by LSD(ONE2WAY ANOVA), which is standardized by $P< 0.05$.

Result: When biochemical targets of SUS+EX and OVX+EX are compared with that of CON, the result gives that ALP is a little higher and Ca is a little lower, which shows 8-week exercises improve the development of bone and Ca is absorbed much more than before.

From the aspect of biomechanics property, it shows that F in SUS and OVX is 19.92% and 17.23% lower than that of CON, E is 6.88% and 21.25% lower as well. F in SUS+EX and OVX+EX is 15.9% and 7.10% higher than that of CON, while E is 11.08% and 5.49% higher. F in SUS+EX and OVX+EX is 30.92% and 22.58% higher than that in SUS and OVX, while E is 9.97% and 5.2% higher. The data obviously says that biomechanics property of shinbone has been improved through 8 weeks' exercises.

From the aspect of morphometry, each target in SUS+EX and OVX+EX is the same as that in CON. When it is compared with that in SUS and OVX, the data shows MAR is 38.15% and 30.49% higher, %L.Pm is 36.22% and 41.18% lower, BFR/BS is 56.76% and 50.98% lower, and BFR/BV is 56.45% and 57.57% lower respectively. So it is well seen that 8-week exercises can constrain the losing of bone effectively and further the development of new bone, which can prevent and cure osteoporosis.

Conclusion: The result of the research shows that 8-week lasting exercises can

improve not only the quantity of bone (MAR, %L.Pm, BFR/BS and BFR/BV), but also the quality of bone (F and E), which prevents the development of osteoporosis, and stimulates the formation of new bone as well. At the same time it offers data for the research on preventing and curing osteoporosis and is expected to achieve the goal of improving the national fitness campaign.

Key words: exercise: osteoporosis: mouse: biochemical target : mechanics property : morphometry

最大攝氧量和中國優秀青年足球運動員 Hoff 和 YoYo 體能測試的關係

Relative maximal oxygen consumption correlates with Hoff test and YoYo test among chinese elite youth soccer players

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INTRODUCTION

Soccer (association football) is one of the most popular sports throughout the world, with more than 240 million players worldwide (Wong & Hong, 2005). During the game, more than 90% of a competition is performed by aerobic metabolism (Bangsbo, 1994) and improved aerobic fitness of soccer players would improve their field performance, such as increased distance coverage, more involvement with the ball, similar technical performance despite significantly higher exercise intensity, and increased number of sprints (Helgerud et al., 2001).

The golden standard to assess player's VO2max is the use of metabolic device when player is running on a motorized treadmill (Stolen et al., 2005). However, the metabolic measurement device is expensive and may not be available to every soccer team/club. Therefore, some field tests such as YoYo intermittent endurance test (YoYo test) (Metaxas et al., 2005) and Hoff test (Hoff et al., 2002) have been developed to assess and train players' VO2max. However, these studies employed adult and professional players, and none of these studies have been conducted on elite youth soccer player.

Therefore, the purpose of this study is to examine the relationship between VO2max and performances in YoYo test and Hoff test among elite youth soccer player. Another purpose is to investigate if elite youth soccer player who has higher VO2max value would perform better in YoYo test and Hoff test.

METHOD

Subject

46 elite youth soccer players participated in the study. Their age, soccer experience, mass, height, and BMI were 13.57 ± 0.62 yr, 5.15 ± 1.83 yr, 52.5±9.5kg, 1.65±0.09m, and 19.09 ±0.09kg/m^2, respectively. They have one competition every week and receive soccer training twice a week with each last for 2hrs.

VO2max

The VO2max protocol has been previously used in soccer research (Chamari *et al.*, 2005b). Briefly, each player ran on a 5.5% slope motorized treadmill for four minutes at 7 km/h, followed by a 1 km/h increment every minute until exhaustion, which occurred within 10–15 minutes for all players. Oxygen consumption was determined using a breath by breath system (MetaMax, Cortex, Leipzig, Germany) which recorded once every 5 seconds. Additionally, blood sample was drawn from the fingertip 3.5-min after the VO2max test and blood lactate concentration was determined immediately by patented immobilized enzyme technology (Lactate analyzer, Model 1500, YSI, Yellow Springs, OH). The following criteria were met by all players when testing VO2max: (a) a levelling off of VO2 despite treadmill speed increase; (b) a respiratory gas exchange ratio >1.1; and (c) post-running blood lactate concentration >6 mmol/L.

YoYo test

The player performed repeated 20m shuttle runs interspersed with 5s rest between each shuttle which the player jogged until exhaustion (Metaxas et al., 2005). The player began to run forward 20m at the time of the first signal. The running speed had to be adjusted so that player could reach the 20m marker exactly at the time of the next signal. The goal of the player was to perform as many 2 x 20m intervals as possible.

Hoff test

The Hoff test is a soccer-specific dribbling test which consist of turning, jumping, forward and backward running (Hoff et al., 2002). The Hoff track distances have been modified to reach a total distance of exactly 290m per lap. Players have to dribble as fast as they can and the distance covered in 10mins was recorded for analysis (Chamari et al., 2005a).

Statistical analysis

The software package SPSS 12.0 was employed in the data analysis. The level of significance was set at the alpha level of 0.05. Pearson correlation was used to examine the relationship between VO2max, YoYo test, and Hoff test. Independent t-test was used to examine the difference of distance covered in YoYo test and Hoff test between low VO2max group and high VO2max group.

RESULT

Results show that VO2max when express relative to players' body mass (i.e. ml/min/kg), is significantly correlate with distance covered in YoYo test (r=0.42, p<0.01) and Hoff test (r=0.46, p<0.01) (Table 1). We further divided players into 2 groups, namely low VO2max group and high VO2max group. The former group consisted of players with VO2max value lower than 60ml/min/kg (range 41.4–59.8 ml/min/kg), whereas the latter group consisted of players with VO2max value higher than 60ml/min/kg (range 60-69.1 ml/min/kg). Independent t-test show that the high VO2max group (n=22) perform significantly better than the low VO2max group (n=24) in YoYo test (2525± 668m vs 1958±626m, p<0.01) and Hoff test (1499±174m vs 1405±153m, p<0.01) (Figure 1).

Table 1. Correlations between VO2max, YoYo test, and Hoff test.

	YoYo test	Hoff test
VO2max (ml/min)	0.08	0.11
VO2max (ml/min/kg)	0.42**	0.46**

** p < 0.01.

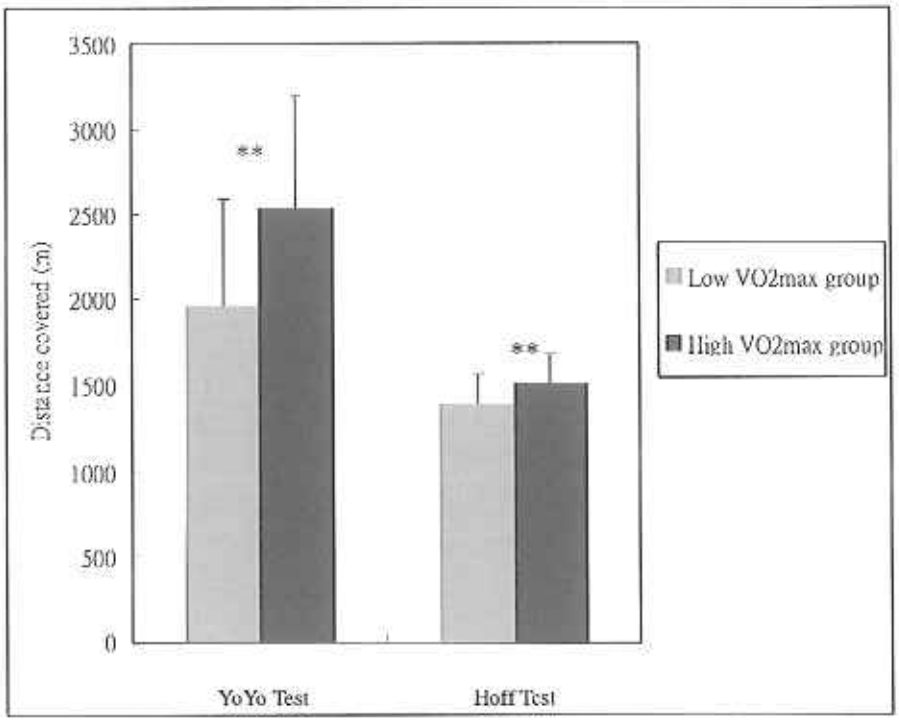

Figure 1. Comparison of distance covered in YoYo test and Hoff test between players in low and high VO2max group.

** p < 0.01.

DISCUSSION

Result show that absolute VO2max (i.e. ml/min) does not correlate with distance covered in both YoYo test and Hoff test ($p>0.05$). However when VO2max value is expressed relative to player's body mass (i.e. ml/min/kg), the value is significantly correlate with the YoYo (0.42, $p<0.01$) and Hoff (0.46, $p<0.01$) performances. This indicates that YoYo test and Hoff test is better use for the assessment of players' relative VO2max value, but not absolute VO2max value.

In this study we found that elite youth soccer player who has higher relative VO2max value perform significantly better in YoYo test ($p<0.01$) and Hoff test ($p<0.01$). This means higher relative VO2max value is necessary for endurance running and dribbling among elite youth soccer players. The result is in agreement with previous study of adult soccer players which reported that improvement in aerobic fitness would enhance soccer players' field performances, such as increased distance coverage, and more involvement with the ball (Helgerud et al., 2001).

In conclusion, YoYo test and Hoff test is better use for the assessment of players' relative VO2max value, but not absolute VO2max value. In addition, higher relative VO2max value is necessary for endurance running and dribbling among elite youth soccer players.

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絕對性柔韌素質測量有效性的實驗研究

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Experimental research on measure validity of absolute flexibility quality

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摘要

1　研究目的：對坐位體前屈、立位體前屈和俯臥背伸三種測量方法的測量次數及取值方法的確定來提高測量的有效性、可靠性。

2　研究方法：測量法；數理統計法和比較研究法。

3　研究結果

3.1 以重複測量三次，取最大值來確定標準觀測值，坐位體前屈、立位體前屈和俯臥背伸測量可靠性不同，坐位體前屈（r=0.8721）和立位體前屈（r=0.9100）重複測量的可靠性較高，而俯臥背伸（r　0.7644）相對較低。

3.2　重複測量二次、三次和五次中，五次測量可靠性最高，略高於三次，而明顯高於二次。

3.3　對重複測量三次測量值中取最大值作為標準觀測值，其可靠性明顯高於取平均值。

3.4　三種測量方法結果的相關分析發現，坐位體前屈和立位體前屈呈現高度相關，與俯臥背伸的相關較低，表明坐位體前屈和立位體前屈可選擇其一，它們與俯臥背伸的測試屬性不同，根據不同測試要求選擇適合的測試方法。

4　研究結論

4.1　測試柔韌性素質的測量次數採用三次較好，並取三次成績的最佳成績為標準觀測值，符合測量的要求。

4.2　測試有效性須根據測試目的選擇合適的測試方法，在體質測試中通常選擇立位體前屈和坐位體前屈任選其一，符合測量的可靠性和可操作性的要求。

Abstract

Using measurement and mathematical statistical methods, the research shows that it is better that the measure times is three, and it is standard observation to take the best record, according with measurement theory, and select suitable measure method for measuring validity, and usually select to stand position body before bend not to seat body before bend in fitness measurement according with the requirement of the reliability of measure.

Key words: Flexibility quality; Measurement reliability; Measurement validity; Experiment

體能參數間接測算中的普適性公式系列及其應用研究

李　放

湖南岳陽花板橋恒輝電氣設備廠

Study on the general formulas of physical energy parameter and their applications by using indirect measuring method.

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Qiqo, Yueyang Hunan

摘要

本文旨在實現以下目的：為群眾性體能監測、定量運動健身、定量運動訓練，提供量化規範；為專業教學、科研提供參考；為專用產品功能設置提供依據。作者根據熱能代謝平衡原理，論證了表述體能概念的標準公式組：體力，E=350Vo_{2m}瓦；極限體力，Em=0.35(Vo_{2m}+Vo_{2n}/t')千瓦；最大機械功，M=0.112Vo_2+0.052Vo_{2n}/t'千瓦；最大攝氧量，$Vo_{2m}=\frac{1.68P+42}{f-60}$ x (1.25 − 0.01A) 升/分；$Vo_{2m}\%=Em\%=\frac{f-60}{140}\times\frac{1}{1.25-0.01A}$；最大氧債 Vo_{2n}=30Pot 升；極限耐力運動強度，Pm=71Vo_{2m}瓦。人機效率 η=P/(4.2P+105)等，以上 Vo_2 和 Vo_{2m} 分別為運動中的攝氧量和最大攝氧量，升/分；Vo_{2n} 為最大氧債，升；t'為運動時間，分；P 及 Po 為運動強度，瓦；f 為運動心率；次/分；A 為年齡。

作為以上方程解的實際應用，作者提出了一種與活動跑道等效，但 具有計量功能的全體位元運動設備。

關 鍵 詞：體力、極限體力、最大攝氧量、氧債

Abstract:

The aims of this research are: providing quantitative criterions for mass exercises, athletic training and physical energy test, offering reference for scientific research and specialized teaching, and supplying a basis especially for the design of products used in mass exercises and athletic training.

According to the metabolism equilibrium of thermal energy, the author has demonstrated the standard equations describing physical energy: physical power $E=350V_{o2}$(W), utmost physical power $E_m=0.35(Vo_{2m}+Vo_{2n}/t')$(kw), mechanical power of physical exercise $M=0.112Vo_2+0.052Vo_{2n}/t'$(kw), maximal oxygen uptake $Vo_{2m}=\frac{1.68P+42}{f-60}\times(1.25-0.01A)$(L/min)

$Vo_{2m}\%=Em\%=\frac{f-60}{140}\times\frac{1}{1.25-0.01A}$,maximal oxygen Debt $Vo_{2n}=30Pot'$ utmost endurance workload $Pm=71Vo_{2m}$(W),and physical mechanical efficiency of workload $\eta=P/(4.2P+105)$etc. Where $Vo_2$and $Vo_{2m}$are the oxygen uptake and maximal oxygen uptake respectively in physical exercise, L/min, Vo_{2n} are the maximal oxygen debt after physical exercise, L; t' is the time of physical exercise, min; Po is the workload, W; f is the heart rate in physical exercise, beats/min; A is the age.

As the application of these equations, the author has developed a whole-body cycling ergometer equipment with multi-parameters measuring system, which has similar effectiveness with treadmill.

Keywords : physical power, utmost physical power, maximal oxygen uptake, maximal xygen debt.

甘肅省成年人體育行為研究

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Sport behavior research of Gan su province adult

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摘要

1 研究目的

本文通過對甘肅省成年人體育行為調查的分析和研究，旨在瞭解甘肅省成年人參加體育鍛煉的狀況、體育活動的頻度、鍛煉時間、鍛煉目的以及喜愛的項目等，為政府及社會體育組織有針對性的開展和指導成年人參加體育活動提供科學依據。

2 研究對象和方法

研究對象為甘肅省蘭州、天水、武威、酒泉、慶陽、臨夏六個市州 20～59 歲的成年人，共發放問卷 10225 份，收回有效問卷 10023 份，有效率為 98%。

主要研究方法為問卷調查法，數據統計法。

3 結果與分析

3.1 體育鍛煉的頻度

調查統計表明，甘肅省有 42.5%的成年人平均每週參加過 1 次以上的體育鍛煉，有 51.7%的成年人沒有參加體育鍛煉。在參加體育鍛煉的人群中，選擇每週鍛煉 5 次以上的比例最高，男女分別占調查人數的 17.2%和 16.7%。其次是 1～2 次，男女所占比例分別為 17.6%和 13.1%。選擇 3～4 次的，男女的比例分別為 11.2%和 9.2%。

3.2 體育鍛煉的時間

在參加體育鍛煉的人群中，每次鍛煉時間在 30～60min，男性占 34.0%，女性占 28.1%。60min 以上的，男女分別占 26.6%和 32.8%。鍛煉時間不足 30min 的，男性占 39.4%，女性占 39.1%。

3.3 堅持體育鍛煉的時間

在堅持體育鍛煉的成年人中，堅持體育鍛煉時間在 5 年以上占的比例最大，男女占的比例分別為 37.6%和 29.7%。其次為 6 個月以下，1～3 年，6～12 個月，3～5 年。

3.4 參加體育鍛煉的目的

統計結果顯示，甘肅成年男性選擇參加體育鍛煉的主要目的依次為防病治病（31.3%）、提高運動能力（27.9%）、減輕壓力調節情緒（25.2%），女性為防病

治病（31.4%）、減輕壓力調節情緒（23.9%）、提高運動能力（21.4%）。

3.5 體育鍛煉的主要項目

在調查的9個體育項目中，成年男性參加的人數比例列在前四位的是步行（27.0%）、球類活動(19.6%)、跑步（17.7%）、自行車（11.6%）。女性比例列在前四位的是步行（30.9%）、健身操（舞）秧歌（12.7%）、跑步（12.1%）、球類活動（11.0%）。

3.6 影響人們參加體育鍛煉的主要障礙

調查結果顯示，影響甘肅成年男性參加體育鍛煉的主要障礙是工作忙無時間（19.6%），家務忙無時間（12.7%），惰性（12.2%），缺場地（12.1%）。影響女性的主要障礙是家務忙無時間(24.7%)，工作忙無時間(15.9%)，缺場地(9.7%)，惰性（9.4%）。

4 小結

從總體上看，甘肅省成年人參與體育活動的意識不強，有一半以上的成年人沒有參加過體育活動，體育人口較少，僅占總人數的27.1%；成年人參加體育鍛煉的目的性十分明確，防病治病是人們參加體育鍛煉的首要目的，其次為提高運動能力，減輕壓力調節情緒；在體育鍛煉項目的選擇上，不同年齡段人群、男性與女性之間存在一定的差異性，年輕人比較喜歡參加運動強度較大，娛樂性強的項目，而年長者喜愛鍛煉強度相對較小的步行等項目，就性別而言，男性喜愛選擇跑步和球類項目，而女性則對健身操（舞）、秧歌尤為青睞；影響成年人參加體育鍛煉的主要障礙是家務忙、工作忙、缺少運動場地和惰性。

我國社會經濟發展對國民體質影響的研究

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Impact of social and economic development on physical fitness

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摘要

1. 前言

一個國家國民體質的整體水平,與其所處社會經濟發展水平有著一定的關係,國民體質整體水平的提高有利於社會經濟的發展。體質本身的定義也明確指出了人的體質受到遺傳及其後天生存環境的雙重影響。其體質強弱的現實性則更多地依賴于後天的生存環境。如自然環境、社會經濟環境、營養及體育鍛煉等。

文獻研究表明：近年來國內學者對體質問題的研究大多數是圍繞體質理論、體質現狀、體質發展變化規律及體質評價等方面就人體的測量數據本身展開論述，對影響這種測量結果的外在因素尤其是社會經濟的發展變化對體質造成的影響研究不多。

本文將從社會經濟發展與體質關係的角度著重探討：1、社會經濟發展對人們體質存在影響的基本理論:2、社會經濟發展與國民體質之間相關關係.3、社會經濟發展對體質影響的方式

2. 研究方法

我們以 2005 年國民體質監測中 31 省（區、市）的監測城市 3-6 歲幼兒體質綜合指數、分類指數（形態指數、機能指數和素質指數）和部分單項測試指標以及相關社會經濟信息作為研究內容，借助國民體質綜合指數這一全新的體質評價方法平臺；探討體質水平與社會經濟因素間的關係，為今後國家社會經濟發展評價指標作進一步充實和完善。

體質指標數據來源《第二次國民體質監測公報》。社會經濟指標來源《中國統計年鑒 2006》、《中國人口統計年鑒 2005》以及中國國家統計局和各省（區、市）統計網站發佈的 2005 年國民經濟和社會發展統計公報等統計年鑒數據。

主要運用文獻調研、統計分析、邏輯推理的研究方法，所有數據均使用 SPSS11.5 for windows 和 Microsoft Excel 套裝軟體進行統計學處理。分析步驟：為了研究的需要，我們設定社會經濟指標為引數，體質指標為因變數，體質指數進行分層聚類，擬將全國範圍內的體質水平分為幾個區；同時對我國 31 個省（區、市）的社會經濟發展基本情況進行調查，運用統計描述、t 檢驗、相關分

析和方差分析等統計方法對體質與社會經濟發展的關係進行探討。

基於獲取數據的局限性，本研究使用省（區、市）來表示區域概念。具體經濟指標：(1) 宏觀經濟指標：GDP、人均 GDP、05 年地區 GDP 指數；(2) 消費水平：城鎮消費支出、恩格爾係數；(3) 物價總指數：消費價格總指數；(4) 收入水平：城鎮可支配收入、農民人均純收入、在崗職工平均工資。

3. 研究結果

3.1 通過綜合閱覽國內外的文獻，從社會學的角度看，社會經濟發展對人們體質的影響是通過對決定體質發展的後天因素的改變而實現的。

3.2 通過體質指數、體質分類指數與社會經濟重點指標的排序發現，大體趨勢是，社會經濟好的省份，體質指數及體質分類指數的排名也靠前。

3.3 通過社會經濟重點指標與幼兒單指標的相關分析，發現社會經濟對身體形態的影響的深度與廣度要大於對身體機能和身體素質的影響。

3.4 通過社會經濟指標與幼兒體質指數及體質分類指數的分析，發現社會經濟對其影響存在著城鄉、東西部的差異，以及自身量上的變化規律---邊際效應遞減規律。

4. 結論

4.1 社會經濟發展帶來人民生活水平的提高是國民體質健康發生變化的重要原因，社會經濟發展為國民的身體形態生長變化提供物質保障。

4.2 社會經濟發展對體質有重要的影響，但對體質的組成成份的影響程度存在差異性。形態> 機能、素質。

4.3 社會經濟發展對體質水平的影響並不是兩者相應的成比例的直線上升，而是具有階段性等特點。

5.4 社會經濟重點指標對體質水平的影響具有經濟學上的“邊際效應遞減規律”。

中國城鄉人群體質水平差異狀況及相關因素分析

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The Gap of Physical Fitness between the Urban and the Rural People in China and the Related Factors

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摘要

按照2005年我國國民體質監測抽樣方案，採用多階段分層整群隨機抽樣，從全國31個省（區市）城區抽取229768人作為樣本，其中男性占50.3%，女性占49.7%；城鎮人群占61.8%，鄉村人群占38.2%。採用體質測量和問卷調查等方法展開研究。

結果發現：（1）2005 年我國城鄉人群體質綜合指數存在明顯差異；在 3 種不同類型的體質指標中，以身體素質的城鄉差異最大，其次是身體機能，再次是身體形態。（2）我國城鄉人群體質各評定等級人數分佈的差異具有顯著性（$p<0.01$），男女均表現為城鎮人群合格以上等級的人數比率高於鄉村人群（$p<0.01$），且女子體質合格率的城鄉差異大於男子。（3）我國城鄉人群體質綜合指數的差異值隨年齡段的升高而增大，呈現隨年齡增長城鄉差異逐漸增大的趨勢；隨年齡段的升高，身體素質的城鄉差異變化最大，其次是身體機能，再次是身體形態。（4）各年齡段人群（幼兒、成年人、老年人）體質總分的城鄉差異隨年齡增長而增大；在身體形態、身體機能和身體素質 3 類指標中，城鄉人群得分差異最大的是身體素質指標，其次是身體機能，差異最小的是身體形態；各年齡組中，男子 30～34 歲、女子 45～49 歲年齡組的差異最大；各類指標均是女子的城鄉差異大於男。（5）我國城鄉人群體質水平的差異狀況呈現一定的區域特點，體質綜合指數和體質總分均表現出北方的差異大於南方，東部大於中部和西部，東北、華北、華東和西北的差異大於中南和西南。（6）從 2000 年至 2005 年各年齡段城鄉人群體質得分的差異呈增大趨勢。（7）城鄉人群體質水平的差異與他們的社會生活環境因素和個體生活方式因素上的差異有關。

結論：（1）我國城鄉人群體質水平存在明顯差異，城鄉差異呈現隨年齡的升高而增大的趨勢，女子體質水平的城鄉差異大於男子；（2）在 3 種不同類型的體質指標中，身體素質的城鄉差異最明顯，其次是身體機能，再次是身體形態；隨

年齡段的升高，身體素質的城鄉差異變化最大，其次是身體機能，再次是身體形態；女子的城鄉差異的增齡性變化較男子明顯；(3) 城鄉人群體質水平的差異狀況具有區域特點，表現為北方的差異大於南方，東部大於中部和西部，東北、華北、華東和西北的差異大於中南和西南；(4) 從2000年至2005年城鄉人群體質水平的差異呈增大趨勢；(5) 城鄉人群體質水平的差異與他們的社會生活環境因素和個體生活方式因素的差異有關。

關鍵詞：城鄉差異；體質綜合指數；體質得分；體質評定等級

Abstract

This thesis, putting its very ground on national sampling frame of physical fitness surveillance in 2005,takes the approach of the methodology of random classify cluster sampling by stage and takes 229768 subjects (50.3% of male, 49.7% of female; 61.8% of urban people , 38.2% of rural people) from 31 provinces, municipalities and autonomous regions throughout the country. On the base of questionnaire investigating and physical fitness testing, it has analyzed the gap of physical fitness between urban and rural people in China and related factors.

The results were summarized as following:

(1) There was an obvious gap of the composite indexes of physical fitness between urban and rural people. It was the most different between the urban and rural composite index of physical activity among the 3 types of items, the second was physiological function composite index, and the least was anthropometry composite index.

(2) The population distribution difference of different grade of physical fitness was significant between the urban and rural ($p<0.01$) . The rate of people achieving upper average among the urban was higher than the rural ($p<0.01$) , both the males and the females. The rate difference between the urban and rural in the females was more.

(3) The difference of the composite indexes grew wider as the age increased between the urban and the rural. As the increased, the difference of physical activity index got most, the second was physiological function index, and the least was anthropometry index.

(4) The scores' difference of physical fitness between the urban and the rural grew wider as the age increased. Among the score of the 3 types of items, the difference of the score of physical activity was most. The difference for aged 30 to 34 of the male and aged 45 to 49 of the female was most among all age groups. The difference of the female was more than the male.

(5) There were certain regional features in the gap of physical fitness between the urban and the rural. The differences of the composite index and the score in the north were more than in the south. And the difference in the east was more than in the west. The differences in the northeast, in north China, in the east China, and in the northwest were more than in the middle south and the southwest.

(6) The difference of the score between the urban and rural has been more in all age groups from 2000 to 2005.

(7) The gap of physical fitness between the urban and rural has related to the differences of geographical and social living environmental factors and the individual lifestyle factors

It has drawn conclusions as following: (1) There has obvious gap of physical fitness the urban and the rural people. The difference grew wider as the age increased. And the difference of the female was more than the male. (2) The gap of physical activity was most obvious among the 3 types of items, the second was physiological function, and the least was anthropometry. The gap has gotten more obvious as the age increased. As the increased, the difference of physical activity got most among the 3 types of items. The aged change of the gap in the females was more obvious than the males'. (3) There were certain regional features in the gap. (4) The gap of physical fitness between the urban and rural has grown wider from 2000 to 2005proportion. (5) The gap has related to the differences of geographical and social living environmental factors and the individual lifestyle factors

Keywords：gap between the urban and rural; the composite indexes of physical fitness; score of physical fitness; grades of physical fitness

湖北省成、老年人體育鍛煉與體型及體質狀況的相關研究

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The comparative analysis on the adult and eldly in Hubei province among physical fitness、BMI and the coefficient of training

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摘要

研究目的

通過對 2005 年湖北省體質調研數據進行相關分析，揭示湖北省成、老年人體育鍛煉對體質狀況的影響，以及體質達標和鍛煉人群的體型分佈，為大眾健身及政府制訂相關政策提供理論依據。

研究方法

參加體質及問卷調查的對象為湖北省 16 個地市的 20～69 歲成、老年人，樣本量共計 38760 人，採用 SPSS 統計軟體，對湖北省成、老年人體型（指體型指數 BMI）及體質狀況（指體質總評達成率）與鍛煉率（指鍛煉人群人數占總有效樣本的百分比）進行相關分析。

研究結果

湖北省 20～69 歲人群體質不合格率主要集中在肥胖和低體重群體。男性 20～、25～及女性 20～出現體質達成率的低谷；總體鍛煉率男性大於女性，其中男性鍛煉率低谷在 40～歲、鍛煉率高峰在 20～和 60～歲，女性鍛煉率低谷在 35～歲、鍛煉率高峰在 45～歲。參加鍛煉人群 BMI 大於不鍛煉人群，BMI 較低人群參加鍛煉情況不容樂觀。

結論與建議

1、湖北省成、老年人體質現狀表明男性 20～、25～及女性 20～這幾個年齡段出現體質達成率的低谷。因此，應將這 3 個年齡段作為主要社會動員目標。通過宣傳，讓他們認識到鍛煉不僅促進身體的健康而且有益於緩解心理壓力。

2、從體型上看，湖北省 2005 年成、老年人男性肥胖和超重率明顯高於 2000 年，女性 “肥胖率” 則沒有增加的趨勢，無論男女體質不合格率都主要集中在肥胖和低體重群體，因此，對男性人群應著重通過體育鍛煉來防止超重、肥胖的發生，而對於 “體重過輕” 如過度減肥人群則應在增加膳食營養基礎上加強體育鍛煉來防止營養不良和低體重。

3、湖北省成、老年人總體鍛煉率男性大於女性，男性鍛煉率低谷在 40～歲、

女性鍛煉率低谷35～歲。可以通過擴大家政、飲食、學生課外輔導等社會服務，讓女性從繁重的家務勞動中解脫出來，投入到全民健身的人群中，同時開展各種適合40～歲男性的社區體育休閒活動，讓他們走出工作、家庭壓力的陰影，達到改善體質，提高生活品質的目的。

4、體重過輕人群體質不合格率的明顯增高應引起足夠重視，參加鍛煉人群的BMI大於不鍛煉人群，反映BMI較低人群的體育鍛煉情況不容樂觀。很多人認為自己體型正常、甚至偏瘦，不需要體育鍛煉，這個誤區值得關注。

關鍵詞：體質；體型指數；鍛煉率；對象

Abstract

Objectives: Based on the investigation data of adult and eldly physical fitness in 2005 in Hubei province, This paper makes comparative analysis on physical fitness、BMI and the coefficient of training.Suggestions for developing our physical fitness are put forwarded.

Methods: By using the method of mathematical statistics, This paper makes comparative analysis for 38760 adult and eldly among physical fitness、BMI and the coefficient.The data is analyzed in variance.

Results: The result shows that the coefficient of physical fitness fail is more in corpulence and wastage, the coefficient of physical fitness fail is top in the youth at 20~25 year; The man's coefficient of training is lowest at 40 year, The woman's coefficient of training is lowest at 35 year,The BMI is biger of the people who joins in taking exercise than the people who doesn't join in taking exercise.

Conclusioas: It suggests that corroborating research subjects are the youth at 20~25 year, and the adult at 40 year and the women at 35 year, and Strengthening the spread of exercise and physical activity for them.are the main methods to solve the problem.

Key words: physical fitness; BMI; coefficient of training; subjects cular function; old people

心率變異性檢測在老年人體質評價中的應用

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Application of HRV Examination in Physical Fitness Evaluation of old people

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摘要

為實現國民體質監測工作中對老年人心血管功能的安全有效評價。本研究以70名61～70歲身體基本健康的婦女為研究對象，以體質、坐站試驗、心率變異性（heart rate variability, HRV）、心臟功能能力（function capacity，FC）為主要測試指標。在數據統計分析過程中，首先應用樣品聚類分析法，根據體質監測數據將全部受試者劃分為3組，通過比較各組之間的體質差異，驗證聚類分析的效果。然後，分別比較坐站試驗指數、FC和HRV的在3組不同體質等級受試者之間的差異，以驗證坐站試驗指數、FC、HRV能否有效地區分不同等級體質個體之間的心血管功能差異。最後，通過分析FC和HRV（聚類分析後的等級指標）之間的相關性，評價FC和HRV在評價心血管功能方面的等效性。研究結果發現，體質各分項目在3組不同體質等級受試者之間具有明顯的差異，說明聚類分析結果可以有效區分該人群的體質狀況。3組不同體質等級受試者之間的坐站指數未發現明顯差異，而FC和HRV存在明顯差異，並且FC和HRV之間的相關係數r為-0.873（$P<0.01$），說明FC和HRV均可以有效地反映不同體質等級個體之間的心血管功能差異，並且二者具有高度的相關性。上述研究結果提示，HRV可實現對老年人心血管功能的安全有效評價，建議在國民體質監測工作中推廣使用。

關鍵詞：心率變異性、體質、心血管功能、老年人

Abstract

To safely and effectively evaluate cardiovascular function of old people, physical fitness, sit-stand test, heart rate variability (HRV), and function capacity (FC) were measured in 70 healthy women aged 61~70 were studied. Firstly, all subjects were divided 3 groups used cluster analysis method according on physical fitness. Secondly, sit-stand's index, FC and HRV were compared in 3 groups respectively. Finally, correlation between FC and HRV were analyzed. The results found that the most item of physical fitness had significant difference, which indicate cluster analysis can effectively distinguish physical fitness. FC and HRV had significant difference in 3 groups, while FC and HRV were not, which indicate that FC and HRV can effective distinguish difference of cardiovascular function in different physical fitness groups. Correlation analysis found that r is equal to -0.873($P<0.01$)between FC and HRV. All above results indicated that HRV can safely and effectively evaluate cardiovascular function of old people. HRV can be used in evaluation of physical fitness.

Key words: Heart Rate Variability (HRV); physical fitness; cardiovas

廣東省學生身體形態特點的研究

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Research into the body shape features of students of Guangdong province

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摘要

按《2005 年全國學生體質健康調查研究實施方案》，對廣東省觀測點校共 17005 名在校學生的身體形態指標進行分析，並與 2000 年廣東省和全國的體質調研的數據進行分析比較。

結果表明：我省學生的身體形態發育符合兒童青少年發育的一般規律，生長發育的增長趨勢繼續存在。城鄉差異依然存在，城市學生優於鄉村。與 2000 年相比，城市男生的身高處於增長的態勢，城市男、女生和鄉村男生的胸圍指標均值有所增加。身體發育勻稱度和體型有較大改善，但廣東省學生的身體充實度仍屬“偏瘦”型。突增期的增長速度繼 2000 年後再次出現“緩慢”現象，意味著我省學生生長發育已進入由快速向緩慢增長轉變的階段。

關鍵詞：學生；身體發育；形態；趨勢

Abstract

17005 students, conducting morphological investigation and study, from the samples of several national supervision spots in Guangdong province were the subjects of this research. At the same time, a comparison and analysis were taken between the results of 2000 and 2005. The results showed: the students were in their normal morphological growth period and all in common level. There were still morphological differences between the city students and countryside students. (The city students' morphological status was better than that of the countryside students). Compared with the investigation results of 2000, the level of height (male, city) and the level of the chest circumference had been improved, and so was the well-balanced level of body. But the speed of the morphological growth trended to slow down.

Key words: students; morphological growth; figures; developing trend

對江蘇省幼兒體質影響因素的邏輯回歸分析

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Binary Logistic Regression Analysis on the Influence Factors to Physical Fitness of Jiangsu Preschool Children

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摘要

研究目的：利用 2005 年江蘇省幼兒體質監測的體質測試數據和問卷調查數據，運用二項邏輯回歸分析法在江蘇省幼兒體質總體狀況和問卷調查所涉及的主要詢問指標間建立統計學聯繫，研究不同影響因素對幼兒體質的影響作用。

研究對象與方法：

1、研究對象：參加 2005 年江蘇幼兒體質監測的 3—6 歲幼兒 8628 名，其中男孩 4318 人，女孩 4310 人。

2、研究方法：二項邏輯回歸法

其中因變數為體質等級，將原來的四分類變數（優秀、良好、合格、不合格）轉化為二分變數，即 1、不合格，2、達標（由合格以上三等級合併）。引數為調查問卷涉及的非多選項的 22 個分類變數，作為對體質狀況的影響因素。第一步，分別對各引數因素下的分類等級的達標狀況進行 χ^2 檢驗，檢驗其顯著性效果。第二步，選用 χ^2 檢驗 p 值小於 0.05 的影響因數進一步納入多元邏輯回歸分析，運用向後逐步剔除方法建立邏輯回歸模型，將變數剔除出模型的依據是條件參數估計似然比統計量的概率值≥0.10。

3、統計工具：SPSS11.5 統計套裝軟體

研究結果：

單因素卡方檢驗後 $p<0.05$、且按其顯著性程度的大小依次有上幼稚園情況、戶外運動、室內娛樂、父親鍛煉次數、城鄉種類、母親鍛煉次數、出生身高。將這些因素一次性進入多元邏輯回歸過程，通過向後逐步回歸的方法，"父親鍛煉次數"這一變數被剔除，最終進入回歸方程並根據 Ex(B)值大小的變數依次為上幼稚園情況、城鄉種類、出生身高、戶外運動、室內娛樂、母親鍛煉次數。

結論：

較為系統、正規的幼稚教育背景、幼兒家庭的城鄉身份差異仍然是決定幼兒體質狀況的最主要因素，同時嬰兒期的體格基礎、幼兒的自主鍛煉和娛樂因素也

相當重要，相對來說，父母親的體育態度雖然對幼兒的體質有一定的影響，但影響作用是間接和有限的。幼兒生長階段的特殊性決定了各種因素對體質的影響作用的大小和力度同成年人是有所不同的。其一，幼兒處於人體生長發育的初期，可能相較于成年人而言，遺傳性在其體質的發展過程中會起到相對更大的作用；其二，幼兒因年齡較小而缺乏自主意識，因此其自覺改善體質的作用相對有限，此時家庭的收入背景、家長的教育素養以及幼稚園的教育環境和條件等外部因素起到了更為至關重要的作用；其三，幼兒處於快速生長期，但又遠離青春期，體質尚未定型且能力較弱，因此相對于成年人而言，純粹體育鍛煉對加強體質的作用並不顯得那麼重要，而通過適合幼兒心理、生理特點的遊戲、娛樂活動，結合加強營養，提高免疫力等其他手段，才是改善其體質的更為有效的方式。

關鍵詞：二項邏輯回歸，幼兒，體質，影響因素

Abstract

Objectives: To explore the statistic relationship between the physical fitness of Jiangsu preschool children and the influence factors using the data disclosed in 2005 Jiangsu children's physical fitness survey and related questionnaire.

Participants: 8628 3-6 years old preschool children randomly sampled in 2005 Jiangsu children's physical fitness survey, including 4318 boys and 4310 girls.

Methods: Binary logistic regression, with fitness classification as dependent and 22 categorized variables as covariates. The first step, respectively making χ^2 test on the relationship between the fitness classification and the covariates; secondly, putting the variables with chi-square $p<0.05$ into the logistic regression process at a time, building a logistic regression equation with backward stepwise exclusion.

Results: The variables remained after χ^2 test, orderly according to the significance, are as follows: the status of kindergarten education, outdoor exercises, indoor entertainment, frequency of fathers' exercises, urban and rural classification, frequency of mothers' exercises and after-birth body length. Logistic regression was made on those variables. During the process, the variable "frequency of fathers' exercises" was excluded. According to the descending order of value Ex(B), following variables were finally accepted into the equation: the status of kindergarten education, urban and rural classification, after-birth body length, outdoor exercises, indoor entertainment and frequency of mothers' exercises.

Conclusions: The status of children's physical fitness is mainly affected by such

backgrounds as systematic, standard preschool education and urban-rural difference. Meanwhile, the factors such as the growth status in infant stage, children's exercise and entertainment are also quite important. Relatively, parents' sports attitude plays an indirect and limited role. The influence extent of factors to children's physical fitness is quite different compared with that to adults'. Firstly, heredity may play more important role in the growth of children. Secondly, due to children's immature mentality and therefore the lack of exercise initiative, the exterior environment and conditions may be more important to the improvement of children's physical fitness. Finally, preschool children grow fast but are far from puberty stage, their constitutions are unstable and their physical power quite weak, therefore simple sports exercises may not help so much to children as to adults. Only through multiple means can children's physical fitness be effectively improved.

Key words: binary logistic regression, preschool children, physical fitness, influence factors

流行性肥胖的理論和方法

朱為模

New Theory and Method for Obesity Epidemic Modeling

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Introduction

The prevalence of obesity in the United States continued to grow during the 1990s, representing a serious public health threat to millions of Americans. More than 50% of US adults are now overweight, based on a body mass index (BMI) of 25 or more. Furthermore, 22% of the US adult population is obese, based on a BMI of 30 or more, which is equivalent to being approximately 13.5 kg (30 lb) overweight. Three percent of US adults have a BMI of 40 or more, which represents excess weight of approximately 45 kg, or 100 lb (Flegal, Carroll, Kuczmarski, & Johnson, 1998). According to the Centers for Disease Control and Prevention (CDC) research published in the October 27, 1999 issue of the *Journal of the American Medical Association*, the obesity epidemic spread rapidly during the 1990s across all states, regions, and demographic groups in the United States. Obesity in the population increased from 12% in 1991 to 17.9% in 1998. Certain subgroups and regions had increases in obesity that exceeded the national rate. The highest increase occurred among the younger people (18- to 29-year-olds), people with some college education, and people of Hispanic ethnicity. By region, the largest increases were seen in the South, with a 67% increase in the number of obese people. Georgia had the largest increase (101%). These data, self-reported prevalence of obesity, are derived from the Behavioral Risk Factor Surveillance System (BRFSS), a standardized telephone survey conducted by state health agencies in collaboration with the CDC. In 1999, a total of nearly 150,000 individuals from all states completed the BRFSS survey. The same growth trend has been observed around the world during the same period, including China.

The health and economic consequences of the obesity epidemic have been well documented. Almost 80% of obese adults have diabetes, high blood cholesterol levels, high blood pressure, coronary heart disease, gallbladder disease, or

osteoarthritis, and almost 40% have two or more of these co-morbidities. For example, the CDC recently reported that diabetes increased by 33% among adults during the 1990s, which reflects the surge in the obesity epidemic during that same period. Based on a study by Allison and colleagues (1999), only smoking exceeds obesity in its contribution to total mortality rates in the United States. It has been estimated that the direct and indirect costs of obesity in the US approximated 10% of the total national healthcare budget, which underscores why the nation can no longer afford to ignore obesity as a major medical problem (Colditz, 1999; Philipson et al., 2004). In 1996 alone, it is estimated that about 4.19 million cardiovascular disease cases were associated with obesity, which led to about $22.17 billion in direct medical costs in that year (Wang et al., 2002).

Many factors, or correlates, are believed to contribute to the current obesity epidemic, which can be considered as simple or complex. From a simple point of view, excess energy (caloric) intake and/or insufficient energy expenditure contributes to an energy imbalance, which results in obesity. From a complex point of view, no single factor can explain what caused the obesity epidemic. Although behavioral/psychological (e.g., Stunkard & Wadden, 1993; Andersen, 2003) and genetic (Shell, 2002; Stunkard & Wadden, 1993) factors, even an obesity virus (see www.worldhealth.net/p/%20286,1615.html), have been believed to contribute to the obesity epidemic, it is generally agreed that rapid changes in the environment is the major contributor (Jeffery & Utter, 2003).

Changes in the Built Environment and its Impact. Built environment, as defined by the call-for-proposal of this grant, is "all buildings, spaces and products that are created, or modified, by people." The industrial revolution brought major modernization and urbanization in industrialized, or developed, countries during the 20th Century, represented by rapid suburbanization, urban sprawl, increased automobile dependence, and the abandonment of compact communities (Morris, 2002). Unfortunately, modernization, especially the development of automobiles, urban sprawl, and automation in our daily lives, has had a significant negative impact on public health, including an increase in air pollution, heat-island effect, car crashes, pedestrian injuries, and a decrease in water quality, mental health, social capital, and physical activity. Among these negative impacts, the decrease in physical activity is perhaps the most substantial. Since the early 1980s, for example, measures of self-reported participation in leisure time physical activity have been used in population surveys in several economically developed countries, such as the United

States, Canada, England, and Australia (Caspersen & Merritt, 1995; Caspersen, Merritt, & Stephens, 1994; Sallis & Owen, 1999). It was found from these surveys that about one-quarter to one-third of adults in the United States, Canada, England, and Australia could be characterized as being sedentary in their leisure time physical activity habits, and only 10% to 15% of adults report that they engage in regular vigorous exercise (Sallis & Owen, 1999). The popularity of automobiles and automobile-oriented neighborhoods (Cervero & Radisch, 1996) has also significantly changed people's travel behavior. Instead of traveling by bicycle or walking, as in the old days, most people travel in automobiles or other motorized conveyances. According to a recent population survey (Eyler et al., 2003), for example, only 34% were regular walkers (walking 30 min five times/wk), 45.6% were occasional walkers (walked, but did not meet PA recommendations) and 20.7% never walked. The results of the 2001 National Household Travel Survey indicated that "walk" accounted for only 8.6% of the total travel modes (see http://nhts.ornl.gov/2001/index.shtml). From 1977 to 1995, walking trips decreased from 9.3% to 5.5%. Physical inactivity is clearly not merely about individual behavior. Crowding, crime, traffic, poor air quality, a lack of parks, sports and recreational facilities and sidewalks make physical activity a difficult choice for many people (Frank, Engelke & Schmid, 2003).

Changes in the Food Environment and its Impact. From the excess energy intake side, many environmental changes that foster eating more frequently have occurred, e.g., the availability of more food and foods with higher energy content, the growth of the fast-food industry, the increased numbers and marketing of snack foods, and an increase in the amount of available time for socializing, along with the custom of socializing with food and drink. According to surveys conducted between 1977 and 1978 and 1994 and 1996, reported daily energy intake increased from 9404 kJ (2239 kcal) to 10311 kJ (2455 kcal) for men and from 6443 (1534) to 6913 Kj (1646 kcal) for women (FASEB, 1995; Frazao, 1999). Fast food, large portion size, and the high price of vegetables have often led to poor eating choices among our citizens. In fact, today's food environment has been called a "toxic environment" (Brownell, 2004). One area that continues to be investigated is the prevalence of television viewing and its impact on body weight (e.g., the "couch-potato" syndrome) Hernandez et al., 1999; Crawford et al., 1999; Janz et al., 2002). Another area is the increasing frequency of eating away from home (Binkley et al., 2000). Food availability has also changed with, for instance, many more liters of soft drinks being consumed than ever before. Some believe the increased intake of high-fructose corn syrup (HFCS) from soft drinks is an environmental insult contributing to the rise in obesity (Bray, 2004). Food companies

are developing more "ready-to-eat" foods and are marketing food choices through increasingly more powerful communications (Tillotson, 2004). In addition, alcohol intake correlates well with BMI and socializing enhances alcohol intake (Yeomans, 2004).

Commonly Used Behavioral Theories

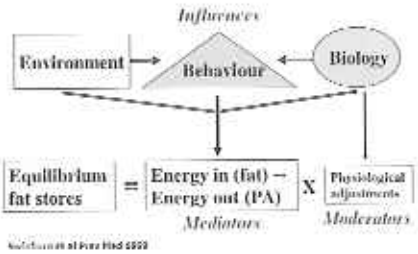
Numerical behavior, or health-behavior (Elder, 2001), theories have been developed or explored to explain the relationships between obesity and related factors, as well as the relationships among the factors themselves, which are briefly described below (see Sallis & Owen, 1999; Glanz, Lewis, & Rimer, 1997; and Elder, Geller, Hovell, & Mayer, 1994 for more details):

1. **Health Belief Model**: This is one of the oldest theories (Becker & Maiman, 1975), which posits that only psychological variables influence physical activity behaviors. This theory is widely applied in developing knowledge-based interventions for health education, including health-risk appraisals.
2. **Theory of Planned Behavior**: The theory of planned behavior (Ajzen, 1985) is also almost a completely psychologically oriented theory. The only exception is that perceptions of the beliefs of significant others about the behavior are hypothesized to be influential. Social norm is often considered as an important element in this theory (Sallis & Owen, 1999), which has been applied in mass communication interventions to change the general public' attitude.
3. **Transtheoretical Model**: Known as the "stages of change" model, is primarily psychological. However, some of the specific processes of change, measures of perceived benefits ("pros"), and measures of perceived barriers ("cons"), include social and physical environment factors (Prochaska & Marcus, 1994).
4. **Social Cognitive Theory**: This is one of the broadest models (Bandura, 1986). It highlights the interactions between intra-personal, social, and physical environment influences on behavior. It is the most popular behavior model being used in PA behavior research and a wide range of effective cognitive behavior modification intervention approaches have been developed from this theory.

The Ecological Model: A New Theory

Because studies and interventions based only on psychological theories/models have not produced impressive or long-term increases in physical activity on a large scale (Dishman & Sallis, 1994), researchers started to explore other, more effective, models. The **Ecological Model** is one that has earned some significant attention. The ecological model was originally developed by Kurt Lewin, who coined the term "ecological psychology" to describe the study of the influence of the outside environment on the person (Lewin, 1936). The model was further developed in Roger Baker's long-term observational studies of children in their everyday environment (1968). Baker developed the concept of the "behavior setting," which referred to the social and physical aspects of the environment, and he concluded that the characteristics of behavior settings were strongly associated with a wide range of psychological states and behaviors. The major principles of the ecological model to health behavior change include: (a) Multiple dimensions of influence on behavior; (b) Interactions of influences across dimensions; (c) Multiple levels of environmental influences; (d) Environments directly influence behaviors; and (e) Behavior-specific ecological models. Under this model, many factors at different levels may influence individuals' health behavior simultaneously and interactively. Using physical activity as an example, factors such as individuals' background (e.g., age, gender, race, education, health beliefs, etc.) and their surroundings (e.g., street network characteristics, land-use mix, street design, site design, density and crime/safety, etc.) may all have an influence on their decision to walk or bicycle (Frank & Engelke, 2000). The model has been extended to the concept of social ecology (Stokols, 1992) and is being widely applied to health promotion and research (Swartz & Martin, 1997; Schoggen, 1989). An ecological model for obesity, in fact, has been proposed (Egger & Swinburn, 1997; Swinburn et al., 1999). That model is shown in Figure 1. Basically, there are three influences on the equilibrium level of body fat: biological, behavioral, and environmental. The equilibrium is mediated through energy intake or expenditure, but moderated by physiological adjustments during energy imbalance. No empirical evidence has been published to verify the model.

Ecological model for obesity



Complex Relationship between Obesity and Environment

While previous studies have helped to improve our understanding of the impact of environment, the complex relationship between obesity and the environment is still unknown. Largely, this is due to four major limitations associated with previous studies:

1. **Over-simplification for the complex relationship.** Most published studies examined only a few correlates of obesity, e.g., urban sprawl or neighborhood design, and the linear relationship between the variables was often assumed. This is not correct, since many of these correlates are confounded to each other and their relationships with obesity and among them are usually not linear. For example, individuals who live in a low socio-economic, high-density area may walk more than their counterparts living a high socio-economic, low-density area, but vegetable prices in their neighborhood are much higher, which often forces them to consume more fast foods.

2. **Inappropriate statistical methods.** Most linear statistical methods employed in these studies, including some sophisticated statistical measures (e.g., hierarchical linear model), cannot handle the complex relationship among the variables examined. This is because the data involved in these studies often come from different sources, and assumptions required by these statistical methods often cannot be met.

3. **Lack of theoretical models.** Few published studies derive their study design and analysis based on a theoretical model. And even if a theoretical model is mentioned in the study, the data analysis is rarely conducted to confirm the relationship defined in the model.

4. **Little use in solving practical problems.** Because of a lack of understanding of the complex relationship between obesity and environment, findings from those studies are often useless in an obesity intervention practice. In fact, interventions based on such studies are often useless and it is not uncommon to hear that a state/community invested millions of dollars to build a physical activity facility, only to have few people using it.

Fortunately, these limitations can be eliminated by applying agent-based modeling

(ABM) under the theoretical framework of the ecological model. Note: ABM is also referred to as "agent-based modeling and simulation" (ABMS). Both acronyms will be used in this proposal.

Agent-Based Modeling and Simulation (ABMS)

To help to fully understand ABMS and its potential for obesity and environmental research, a few key terms and concepts will be defined. After a brief introduction of the history of ABMS research, critical components and procedure of ABMS will be described.

Key terms, concepts and features of ABMS. The heart of ABMS is the "agent," the subject/individual with a set of characteristics or attributes. An agent's behaviors, e.g., how he/she responds to the environment or interacts with other agents in the system, is determined by a set of rules governing its decision-making and protocols for communication. Since agents are people in this case, agents are diverse and respond both predictably and unpredictably to their environment. This can complicate studies designed to explain how humans interact with their environment. ABMS belongs to a simulation technique. A simulation is a computer model of a phenomenon that occurs over time. ABM models are ubiquitous in the "hard sciences", such as engineering, that use the technique to model various systems from the best design of air ducts in a luxury automobile to the probable state of the universe billions of years ago. A specific branch of simulation examines how objects interact with each other and with the environment. These types of simulations, called force-on-force simulations, were pioneered by systems analysts and computer scientists interested in military outcomes. Since terrain is a key feature of military engagements, military simulations have grown to feature highly detailed terrain databases containing elevations, road networks, waterways, foliage, building schematics, weather patterns, and ocean currents. Simulated objects interact with the environment and each other in increasingly complex manners. An agent-based simulation consists of a set of agents, a set of agent relationships, and a framework for simulating decisions and interaction. Unlike traditional modeling techniques, agent-based simulation begins and ends with the agent's perspective. ABMS seeks to create electronic laboratories that allow experimentation with simulated complex systems. Based on simple types of rules, ABMS can be used to study how system-level and individual-level patterns emerge from rules at the individual level. In this study, we propose to use ABMS to examine the complex relationship between the obesity epidemic and the built environment.

ABMS provides three strong and unique properties that can help us address the complex relationship between environment and obesity:

- **No linearity property**: Components or agents in a system exchange resources or information in ways that are not simply additive. For example, the benefit from exercise is not three times greater when comparing a person who walks three times a week with a person who walks once a week.
- **Diversity property**: Agents or groups of agents differentiate from one another over time. For example, the data clearly showed certain subgroups in the population were hit more hardly in the obesity epidemic that other groups.
- **Aggregation property**: A group of agents is treated as a single agent at a higher level. For example, the community culture has been showed to have significant impact on health beliefs and behaviors in a community.

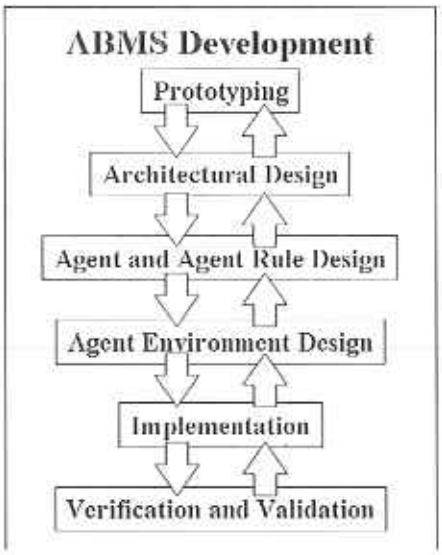
Historical perspective of ABMS. In the 1960s, the U.S. Army developed a simulation called CARMONET that featured simple objects operating over low fidelity terrain. Human operators tightly scripted objects' behaviors at the beginning of the game. They had no real behaviors during the game beyond a few, basic probabilistic events that ruled actions such as target detection. This approach gave way in the 1970s to simulations that were operated by humans in real time. The first of these, JANUS, developed by the Lawrence Livermore National Laboratory (LLNL), was soon adopted by the U.S. Army and other military services throughout the world. JANUS permitted objects to be manipulated as the simulation progressed, thereby giving them the appearance of rational behavior. Still, objects themselves possessed only the most rudimentary autonomic behaviors such as firing at a foe or slowing down when hill- climbing. The requirement for more autonomous objects became apparent with the advent of the Defense Advanced Research Projects Agency (DARPA) networked training simulation called SIMNET. SIMNET comprised a large number of manned simulators operating within a virtual environment. Manufacturing and manning hundreds of these systems was an expensive proposition, but it was still short of the tens of thousands of objects involved in the types of simulations of most interest. For this, DARPA explored a new type of simulation called a Semi-Automated Force (SAF). ModSAF, developed by BBN, was the first SAF widely used by the military. SAF models are distinguished by the largely autonomous behaviors of virtual objects such as vehicles, people, and aircraft. These objects are designed to react to battlefield conditions in a manner that would be reasonable for human operators, thereby greatly decreasing the cost of running large simulations with thousands of objects. SAF systems consume enormous amounts of

computer resources and are constrained to run in real time. Thus, it is very difficult to examine large parameter spaces with SAI²-like simulations. The research that developed these simulations has lead directly to Agent Based Modeling (ABM). ABMS is a simulation methodology that couples software objects, called "Intelligent Agents," with behaviors and rudimentary reasoning ability (DeAngelis & Gross, 1972). These simulations are used to study social patterns (Kohler & Gumerman, 2000), military operations (Tidhar et al., 1996) and many other fields (Gimblett, 2002).

Other parallel developments of ABMS include the development of the cellular automata in the 1940s and the genetic algorithms by Holland in the 1980s. In 1984, the Santa Fe Institute was established with a focus on ABM. The concept of artificial life was developed by Langton in 1987. In the 1990s, the ABMS was extended to include artificial societies (Epstein & Axtell, 1996). In the 2000s, StephenWolfram's book, \"A New Kind of Science," described the potential impact of ABM. Today, ABMS has been applied to many research areas: economics, organizations, supply chains, electric power market restructuring, transportation, human movements (evacuation model), societies/cultures, terrorism, military, consumer markets, and biological processes (Gimblett, 2002; Kohler & Gumerman, 2000; Macal & Sallach, 1999, 2002; Sallach & Wolsko, 2000).

How does ABMS function? In contrast to traditional equation-based, top-down modeling, ABMS grows a simulated complex adaptive system from the bottom up; individual agents make up the system, and they interact among themselves and with the environment according to rules governing behavior and environmental interactions. ABMS best addresses problems with many interacting, intelligent objects. For example, an ABMS applied to urban transportation activities would begin by defining a street grid (the environment), and driver agents with scenario guiding roles for these agents – commuters, students with flexible schedules, deliverymen, etc. Each agent would seek to accomplish its goal, such as arriving to work on time, by adjusting its driving patterns to accommodate the environment and other agents. A given agent will learn over time which route is the fastest and alter its behavior accordingly. Agent-based modeling and simulation (ABMS) development can be described using a structured process. There are usually six steps in this process (see Figure 2):

Figure 2: ABMS Development Steps



This process should be customized to match the specific requirements of each project. In practice, the steps are highly fluid:

- Large amounts of feedback and iteration often occurs between the steps.
- The feedback loops often reach backward, across many steps.
- Work often can, and sometimes must, proceed simultaneously on several steps, with appropriate feedback between steps.

These steps describe the core requirements for ABMS development and use. They are not intended to suggest a rigid process, but rather they are intended to provide a solid conceptual framework for understanding ABMS development. Each step can be described using three items:

- "Before" items are required preconditions for a given step to be successful.
- "During" items are expected actions to be completed within a given step.
- "After" items are expected outcomes from a given step.

A general description of the six-step process is listed below (Note: Repast 3.0 is the ABMS software to be used for this study):

Step 1: Prototyping Allows Alternative ABMS Formulations to Be Considered

- Before (Potential questions or areas of concern to be addressed have been identified. In the case of population obesity, there is a need to identify the specific research questions to be initially answered. Once the model is developed, questions may also be addressed, but there is a need to start with specific question to make the model development process efficient.)
- During (Overall ABMS approaches to the issue are tested in outline form. Several decisions are made, e.g., whether or not to use ABMS is decided; If ABMS is to be used, an ABMS approach is selected.)
- After (An ABMS approach has been specified and tested in outline form.)

Step 2: Architectural Design Defines the Foundation to be Used for Later Implementation

- Before (An ABMS approach has been specified and tested in outline form)

- During (ABMS tools, general software tools, and hardware that may be used are considered and selected. The structure of the application is considered and defined. A software with built-in geographical information systems and social networking tools is needed for an environmental related study.)
- After (Implementation tools are specified. The overall structure of the application is specified.)

Step 3: Agent and Agent Rule Design

- Before (Implementation tools and platforms are specified. The overall structure of the application is specified.)
- During (Possible agents are considered and selected. Possible rules for agent behavior are considered and selected. For population obesity, it is natural to model agents as being either individual people, or households.)
- After (The agents for the model are specified. Behavior rules for each agent are specified.)

Step 4: Agent Environment Design Focuses on the Specification of the Agent's World

- Before (The agents for the ABMS are specified. Behavior rules for each agent are specified.)
- During (An appropriate agent world is considered and selected. Appropriate data structures and algorithms to support the specified agent world are considered and selected. A geographical information systems approach using census and other data on real maps is a good candidate. An example of interface, database and output from Repast 3.0 is shown in Figure 3).
- After (An agent world is specified. Data structures and algorithms to support the specified agent world are specified.)

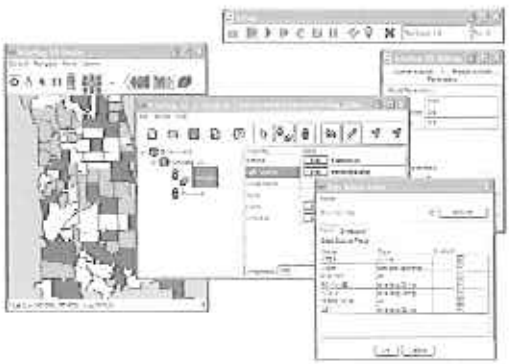


Figure 3: Repast 3.0

Step 5. Implementation Converts Designs Into Working Software

- Before (An architectural design is specified. Agents and their rules are specified. An agent environment is specified.)
- During (Software is written to match the architectural design, agent and agent rule design, and the agent environment design. If Repast is chosen, then Java is the implementation language of choice.)
- After (ABMS software is available for verification and validation.)

Step 6. Verification and Validation Checks ABMS Software Against Both its Design and Reality

- Before (ABMS software is available for verification and validation.)
- During (The ABMS software is tested to verify that it matches the designs (verification). The ABMS software is tested to validate that it matches the real world issues of interest (validation). Specific data will need to be identified for both model verification and validation.)
- After (The ABMS software has been verified to match its design and validated to match the real world issues of interest. The ABMS software is ready for use.)

Difference from traditional modeling techniques. One nature question about ABMS is its difference from traditional statistical and analytical modeling techniques. A quick summary of the difference is included below. More detailed information can be found in Bonabeau (2002) and Bonabeau, Hunt & Gaudiano (2003):

1. **ABMS represents systems form the group up using individual-level rules:**

- Top strength: Trying together micro-level behavior with macro level effects
- Top weakness: A significant amount details may be required to properly represent systems and the resulting model may be stochastic
- Relation with others: Complementary to traditional modeling techniques

2. **Statistical modeling rigorously specifies how outputs depend on inputs:**

- Top strength: The uncertainty in the results is rigorously bounded
- Top weakness: Systems are represented as a "black boxes," with little explanation of why things happen and limited ability to extrapolate; everything becomes "significant" when the data size is large
- Relation with others: Can analyze inputs and outputs

3. **Systems dynamics modeling represents processes as flows over specialized networks:**

- Top strength: Clear and simple system-level specification
- Top weakness: Limited ability to represent complicated, heterogonous, and individual processes
- Relation with others: Can provide agent behaviors and bound system behavior

Summary

The rapidly spreading obesity epidemic is a major health threat to millions of people around the world now. The environment that led to an energy imbalance is believed to be the major trigger for the epidemic. While evidence of the impact of the environment on the epidemic is accumulating, many past studies were not based upon a strong theoretical framework, the complex relationship between the environmental correlates and obesity was not adequately addressed and little practical information is available to guide states and communities' environment intervention efforts. The problems and limitations can be addressed by employing ABM(S) developed on the ecological model.

上海市部分藝術專業學生體質調查報告

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Physical fitness investigation of part art major university students in Shanghai

Zhuang jie

摘要

目的：通過對上海戲劇學院戲曲、芭蕾專業部分在校學員的身體形態、機能及身體素質指標的測試，並將測試結果與 2005 年國民體質監測報告中同齡人體質數據進行比較，從而得出戲曲芭蕾專業人員特有的體質特點，並通過對早熟型、晚熟型和發育正常的學生的體質指標觀察，以期發現他們體質參數的變化規律，為國人體質研究提供相應參數。

方法：對上海市戲劇學院 98 名戲曲、芭蕾專業的學生進行以下三方面指標體質測試：(1) 形態指標：身高、體重、體脂率肢體長度、圍度等；(2) 機能指標：肺活量；(3) 素質指標：握力、坐位體前屈、反應時、下肢爆發力等。採用文獻法將測試結果與 2005 年國民體質監測報告中同齡人體質數據進行比較。所有數據均採用 SPSS11.0 套裝軟體統計處理。

結果：

1．戲曲、芭蕾專業學生身高、坐位體前屈水平高於全國平均水平，體重、握力、克托萊指數低於全國平均水平。

2．戲曲、芭蕾專業學生在大部分形態指標上具有顯著性差異($p<0.05$)，在身體素質指標上不具有明顯差異。

3．不同發育類型的戲曲專業少年體質水平有所不同，早熟型學生在形態發育上占明顯優勢，機能水平較好，運動能力也相對較強。

結論與建議：

1．芭蕾專業學生比戲曲專業學生身材更纖細些，充實度指數偏低，力量素質較差，建議今後保持良好身材的同時要注意合理營養和適當的力量訓練。

2．戲曲專業學生應保持良好的體質狀況，適當的增加力量練習。

3．不同發育類型的學生在生長發育過程中有其不同表現特徵的體質指標，建議在今後戲曲、舞蹈專業學生的體質評價和選材中應予以注意。

關鍵詞：藝術專業 學生體質 體質測評

Abstract

Purpose:

The purpose of this study was to measure apart of shanghai drama and ballet students' physical fitness.Hope can get the drama and ballet students'physical and functional characteristics,and was attempt to develope effects on the drama culture and ballet selection and training.

Method:

98drama and ballet students were measured physical fitness which included body foam,bodycomposition,function and sport ability by using PFT fitness station(COMBI Wellness Corporation).Biology age (bone age) was measured by F30-III-2 X –ray.

Result:

The results showed that the ballet students have higher level on height and trunk flexion than our national average level, and have lower level on weight, BMI index, grip, and Quetlet index.

The drama students have higher level on height andtrunk flexion than our country's average level, and the other indexes is similar to our country's average level.

The type of prematurestudents have high level on body foam , function and sport ability than the type of late mature and normal mature students.

Conclusion:

The ballet students are higher than the same age people of our national average level.They have good flexibility, but the weight and strength were lower.It was suggested that the ballet student should pay attention to nutrition balance and strength training.

It was suggested that the different characteristics of different mature types should be noticed in drama students' selection and fitness evaluation.

澳門小學生的用眼習慣與視力低下的相關分析

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Analysis of the Correlation between Visual Habit and Impaired Vision of the Macao Primary Students

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摘要

前言

視力低下是中國、亞洲和世界許多地區兒童青少年的常見病及多發病之一，對於兒童青少年的身心健康有嚴重的影響，並且對青少年日後升學及工作選擇有一定的限制。視力低下可分為近視眼、遠視眼和其他眼疾(伍國典、張程立, 2005)。根據流行病學的調查，兒童青少年階段的視力不良主要以近視為主(陳政友, 2001)。小學生學業負擔重，長時間持續用眼、讀書寫字長期處於不正確姿勢；光線太強或太弱、長時間玩遊戲機、上網、看電視等也是導致近視發生的主要因素。兒童青少年視力低下已成為現今的社會問題，值得政府和大眾的關注和重視。澳門屬於現代化的城市，文化和生活習慣與鄰近地區的香港、臺灣相若，參考亞洲和鄰近地區兒童青少年視力低下的發展趨勢報告，本澳小學生視力低下是否與用眼衛生習慣有關？此問題值得關注。然而，本澳相關研究數據較為缺乏，因此，本文分析澳門小學生的用眼習慣與視力低下的關係，可為今後制定健康教育計畫提供依據。

研究方法

本研究是採用描述性研究方法，通過問卷調查、視力檢查等方式收集數據，本文的數據是取自澳門特別行政區政府教育暨青年局委託澳門鏡湖護理學院進行的 "澳門小學生視力狀況及相關因素調查" 數據庫。該研究採用單純隨機抽樣與整群隨機抽樣方法於2005年9月至10月期間在澳門14間小學對2381位小學生進行問卷調查及視力檢查。問卷內容包括基本數據、個人習慣(包括：有否在躺著、乘車或行走、燈光不足情況下看書)；家庭數據(包括：有否看電視、玩電腦、遊戲機等)。視力檢查包括檢驗裸眼視力、電腦驗光及插鏡片檢查。數據

登錄電腦以 SPSS 11.0 for Windows 統計軟體進行統計分析。

結果與討論

結果顯示是次調查澳門 2381 名小學生中，平均年齡為 8.9 歲，男生比女生多，男的有 1304 人（54.8%），女的有 1077 人（45.2%）。91.8%是中國人，8.2%為外國人。根據卡方檢驗及方差分析結果顯示小學生的看電視及玩遊戲機情況與視力狀況無顯著相關，但不良的用眼習慣:如躺著閱讀、行走或乘車時看書、在光源不足環境下閱讀、近距離寫字、常用電腦與小學生的屈光狀態呈現極顯著相關；這些不良的用眼習慣導致正視率下降，近視率上升。隨著年齡的增長、班級的升高，情況愈為嚴重。研究結果基本上與其他研究一致。小學生身處於生長發育期，若繼續不注意用眼衛生，就會引起眼球充血，眼壓增高，組織變軟，加上閱讀書寫時兩眼的輻輳作用，造成眼外肌被壓，使眼球外層組織發生變化，眼軸變長，最終發展為近視（劉寶林，1993）。如能及時採取有效保護視力的措施，消除引起睫狀肌緊張的因素，可預防視力低下的發生。

結論

為了保護眼睛，要培養學生具有良好的用眼習慣，生活作息正常，勿長時間使用電腦，多利用假日到戶外活動，眺望遠處，使眼部肌肉放鬆。希望學校、家長、老師、醫務人員及社會等共同關注我們的孩子，教導及培養他們提高自我保護視力的意識，建立良好的生活習慣及健康行為，預防近視的發生。

關鍵詞：澳門小學生，用眼習慣，視力低下

Abstract

Introduction

Impaired vision is one of the common and frequently-occurring disorders in children and teenagers around China, Asia and many other countries of the world, which has critically affected the health of body and mind of the children and teenagers, giving certain limit to their future studies and career options. Impaired vision may be classified into categories as myopic eye and hyperopic eye as well as other eye disorders (Wu & zhang, 2005). With reference to the epidemiological investigation, the subnormal vision during childhood and teenage is mostly myopia (Chen, 2001). The primary students' study in oppressive burdens, persistent using of their eyes for a long time, reading or writing in wrong posture and in the light either too bright or too

poor, playing computer games, surfing the net or watching TV for a long time, etc. are all the major factors leading to myopia. It is worth noticing and placing emphasis by the government and the public on the children's and teenagers' impaired vision since it has become a current social problem. Being a modern city, with her culture and living habit similar to the neighboring areas such as Hong Kong and Taiwan, Macao should have developed her own research into the issue whether the primary students' impaired vision is correlated with the hygienic habit of eye-using, by referring to certain reports on the development trend of the impaired vision in children and teenagers around Asia or the neighboring areas. This is an issue worth noticing, yet few related study materials have been provided domestically. Therefore, this article that analyzes the correlation between visual habit and impaired vision of the Macao primary students may offer a preliminary planning of health education projects in the future.

Methodology

The study was designed in a descriptive method and the data was collected in the ways of questionnaire survey and vision inspection. Statistics of this article were extracted from the data bank of a " The study of the visual abilities of Primary Students in Macao" conducted by Kiang Wu Nursing College of Macau, as commissioned by the Education and Youth Affairs Bureau of MSAR. During the study period of September to October, 2005, methods of simple random sampling and cluster random sampling were adopted, with 2381 students from 14 primary schools in Macao were invited to respond the questionnaire and participate in vision inspection. The content of questionnaire included demographic data and personal habit (including: whether reading books while lying, riding, walking or in a poor light); the family data (including: whether watching TV, doing computer work or playing electronic games, etc.) The vision inspection included naked-eye vision examination, computer optometry and lens-inserting examination. All the data input into the computer were under statistical analysis through the software of SPSS 11.0 for Windows.

Results and Discussion

The results revealed that among the 2381 Macao primary students having been investigated, the average age was 8.9; male students were more than female students with male 1304 (54.8%) and female 1077 (45.2%); Chinese 91.8% and foreigner 8.2%. The results from chi-square test and ANOVA showed that the situation of watching TV and playing computer games among the primary students was not

correlated obviously with their vision status, however, the unhealthy habits of using their eyes such as lying to read, reading books while walking or riding, reading under poor light condition, writing at short range or frequently using computer, etc. showed obvious correlation with the dioptric status of the primary students. These unhealthy visual habits would lead to decline of emmetropic rate and raise of myopic rate. And the situation would become even more critical with the growth of age and promotion of class. The study results were basically consistent with other researches. Being in the growth and development phase, the primary students that are persistent to neglect their eye-using health will incur critical consequences e.g. eyeball hyperemia, increasing intraocular pressure, tissue softened; besides, due to the influx actions on both eyes while reading and writing, it also will cause impacts on extraocular muscle, change of outer layer tissue of eyeball and lengthening of optical axis, which lead to final myopia (Liu, 1993). Therefore, we are in the position to prevent impaired vision provided that we take effective measures to protect our vision promptly and to eliminate factors that bring about nervous ciliary muscle.

Conclusion

In order to protect our children eyes we have to teach the students to develop good visual habits as well as working out a normal work-and-rest schedule without using the computer for a long time. They are strongly advised to increase outdoor activities during holidays for a broader view in the nature. It is hoped that the schools, parents, teachers, medical staff and the society will collaboratively pay more attention to our children. We should teach and train them how to strengthen the awareness of self-protection of their vision and to set up their good living habit and health behavior so as to prevent myopia.

Key words: the Macao Primary Students; Eye-Using Habit; impaired Vision.

澳門居家女性長者的生活方式與骨質疏鬆的相關分析

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Relationship between lifestyle and osteoporosis of home residential older women in Macao

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摘要

前言

骨質疏鬆是老年人常見的骨骼系統疾病，不同國家或地區的老年人的患病率由 11%~50%不等[1-5]。美國約 16%的停經婦女因骨質疏鬆而導致骨折，估計由此而造成的醫療費用每年為 50 億美元[6]，臺灣則約為 30 億台幣[3]，由此而導致的髖骨骨折者的致死率為 20%，其餘的大部份患者會因此造成永久的失能[7]，由此可見，骨質疏鬆對長者健康及生命安全造成重大的威脅，亦使各地政府承擔龐大的醫療支出。各地的調查均發現女性長者患有骨質疏鬆的機率明顯高於男性長者[2, 3, 5, 8]，提示女性長者的骨質疏鬆情況需要加強關注。然而本澳缺乏相關的數據，因此本文旨在分析澳門居家女性長者的生活方式與骨質疏鬆的關係，以作為相關機構制定健康教育計畫的依據。

研究方法

本文數據取自澳門特別行政區社會工作局委託澳門鏡湖護理學院進行的"澳門居家長者長期照顧服務需求評估研究"數據庫。該研究通過分層隨機抽樣的方式，於 2004 年 7-8 月期間對 2039 位 60 歲或以上的澳門居家長者進行上門訪談及評估，其中女性長者 1173 名；問卷內容包括基本數據、生活方式(包括：有否吸煙、飲酒，食用乳製品、豆製品的次數，從事低強度活動的次數)、是否被醫生確診患有骨質疏鬆等。以 SPSS 11.0 for Windows 統計軟體對女性長者的數據進行統計分析。

結果與討論

是次成功完成調查的 2039 位長者的平均年齡為 72 歲(60 歲~99 歲)。女性長者的骨質疏鬆的患病率為 9.0%，而男性則為 1.4%。根據卡方分析結果顯示年齡、吸煙次數、飲酒次數、食用乳製品次數與女性長者的骨質疏鬆不存在相關；而食

用豆製品的次數與從事低強度活動的次數與骨質疏鬆存在顯著性的相關。利用 Binary Logistic Regression 模式分析食用豆製品的次數與從事低強度活動的次數對骨質疏鬆發生的影響程度，結果顯示每週食用豆製品 4 次或以上者的骨質疏鬆的發生比只有 3 次或以下者的 28%(即發生比下降了 72%)，而每週從事低強度活動 4 次或以上者的骨質疏鬆的發生比只有 3 次或以下者的 55%(即發生比下降了 45%)。是次研究結果與鼓勵大眾多飲用牛奶藉以增加骨密度的觀點[9-11]不一致，而近期的研究亦指出缺乏證據支持多喝牛奶或進食乳製品能促進兒童與青少年的骨質健康[12]，此外，一長期追踪研究發現多喝牛奶並不會降低骨質疏鬆的骨折發生率[13]，主要原因是牛奶確實可以補充鈣質，但是攝取太多動物性蛋白(如牛奶)反而會加速骨鈣流失[14]；而多吃豆製品可以減少骨質疏鬆的發生的結果與李甯華等[9]的研究結果一致，由於豆製品中含鈣，而且其中富含的異黃酮素具有與雌激素相似的功能，能減少骨鈣的流失[5, 15]；是次同時發現運動是有效減少骨質疏鬆發生的因素，與其它的研究結果[2, 16]一致，適當的負重運動可以藉由機械應力而使骨的形成率增加，同時運動時會提高雌激素及睪酮的水平而使骨基質增加[17]。本次數據顯示吸煙、喝酒與女性長者的骨質疏鬆的發生在統計學上未存在顯著性的相關，這可能與調查對象中有吸煙或喝酒習慣的比例過小有關，這方面的關係需要進一步的研究。

結論

每週進食 4 次或以上的豆製品以及每週從事 4 次或以上的低強度活動，均可降低女性長者患上骨質疏鬆的風險，因此應在社區加強宣傳，鼓勵市民大眾(特別是女性)從年輕時即養成多吃豆製品及多運動的生活方式，以降低女性晚年時患上骨質疏鬆的機率。

關鍵詞：女性長者，生活方式，骨質疏鬆

Abstract

Introduction

Osteoporosis is quite a common skeletal disease in older people and the prevalence of the disease is 11% ~ 50% in various countries or regions [1-5]. About 16% of postmenopausal women have had a fracture due to osteoporosis, causing an annual medical cost of US$ 5 billion in the states [6] and NT$ 3 billion in Taiwan [3]. The mortality rate caused by hip fractures is 20% and others mostly remain permanently disabled [7]. Thus it is obvious that osteoporosis is a threat to health and safety of the aged population, and brings a big medical burden to the governments. According to the results of different surveys, it is noted that the probability of having osteoporosis

in older women is far greater than in older men [2, 3, 5, 8]. Thus, much concern should be paid to older women who have high risk in developing osteoporosis. There is not much of the relevant information found in Macao. Therefore, it is the aim of this article to analyse the relationship between lifestyle and osteoporosis of home residential older women in Macao, to provide the reference for the related organizations to establish the health education programme.

Research Method

The data was derived from the database of "The evaluation of the long term care needs of the home residential older people in Macao", which was done by Kiang Wu Nursing College of Macau and funded by Social Welfare Bureau of Macao. By stratified random sampling, 2039 persons aged 60 or above were selected for interview from July to August in 2004, 1173 of them were female. The questionnaires included the demographic data, lifestyle (including smoking, alcoholic drinking, frequency of dairy products taking and soya bean products taking, times of low intensity activities) and whether it is a confirmed case of osteoporosis. SPSS 11.0 for Windows was adapted for statistical analysis.

Result and Discussion

The average age of 2039 subjects was 72 (60 to 99 years old). The prevalence of osteoporosis was 9% in women and 1.4% in men. According to the results of Chi-square, the prevalence of osteoporosis in women was not significantly related to age, frequency of smoking, alcoholic drinking, nor dairy products taking, but it was significantly related to frequency of soya bean products taking and times of low intensity activities. The results of Binary Logistic Regression showed that the odds of having osteoporosis for those women who were taking soya bean products 4 times or more per week was lowered by 72% than those who were taking soya bean products 3 times or less per week, the odds of having osteoporosis for those women who were taking low intensity activities 4 times or more per week was lowered by 45% than those who were taking low intensity activities 3 times or less per week. The finding of this paper was inconsistent with other papers [9-11] which encouraged people to drink much milk to increase the bone density. Other recent study pointed out that it was no evidence to support the idea of taking much milk or dairy products would enhance the bone mass for children and adolescents [12]. Moreover, a longitudinal study has found that milk drinking did not lower the incidence rate of osteoporotic fractures [13]. The main reason is milk provides calcium supplement, however, too much animal protein (i.e. milk) quickens the loss of calcium in the bones [14]. On the other hand, taking

more of the soya bean products would lessen the events of osteoporosis was consistent with Lee's findings [9]. The soya bean products contain calcium, and rich in isoflavones which have effects similar to estrogen as they can reduce calcium loss from bones [5, 15]. At the same time, it is found that the physical activity is an effective factor to reduce the prevalence of osteoporosis, which is similar with other studies [2, 16]. The appropriate weight bearing exercises may increase the speed of bone formation through the mechanical stress, and enhance the level of estrogen and testosterone which can increase the bone matrix [17]. Smoking and alcoholic drinking have not yet proved to be related to the osteoporosis of older women in Macao. This may be due to the few subjects who were smoking and drinking in this study and it needs further study to explore.

Conclusion

Taking 4 times or more the soya bean products weekly and participating in low intensity activities 4 times or more per week may lessen the risk of having osteoporosis of older women in Macao. Therefore, it is important to propagate and encourage the general public (especially the female) to take more of the soya bean products and practice physical exercises to reduce the probability of having osteoporosis during the old age of the females.

Key words: older women, lifestyle, osteoporosis

牆報交流
Poster Session

2005 年衡陽市成年人體質監測研究分析報告

趙曉剛，奉慧鵬，楊小明，肖新才

衡陽市體育科研輔導站

2005 Hengyang adult physical monitoring result analyze report

Zhao Xiaogang

Hengyang Physical Edueation Scientific Rescarch Guidance station

摘要

本文意在對衡陽市成年人體質狀況，變化規律進行研究，為科學地指導廣大群眾健身鍛煉提供參考依據。本次國民體質監測，完全是按照總局制定的《監測工作手冊》中的要求進行的，按不同年齡、性別、工作種類分 48 個組別，每組 100 個樣本，共測得 4947 個樣本，此構成 2005 年衡陽市成年人體質監測基礎數據庫。根據不同地域，不同經濟發達水平，選取了長沙市、株洲市，自治州三地市體質監測數據進行對比研究。

研究結果顯示，衡陽市成年農民男性體型相對偏瘦、矮小、心肺功能較好，而身體素質較差；農民女性則體型粗壯矮小，心血管機能較好，而肺活量、身體素質較差;城市非體力勞動者男性體型相對高大、粗壯、體脂率較高，心肺機能較差，而身體素質較好，城市非體力勞動者女性體型細、高、瘦小、心血管機能較差，肺活量一般、素質較好；城市體力勞動者介於農民和城市非體力勞動者之間。

Abstract

This paper is about the research of Hengyang adult physical condition and varying regularity,providing the reference basis in order to scientificly direct the broad masses of the people to build and exercise body,This national physical measurement is completely conducted by the measuring work book,which is drawn up by the general bureau, sorting out 48 groups varying from ages,sexes an work,100 samples each group,all together 4947 samples,so.forming the basic date base of 2005 hengyang dault physical measurement,according to different atreas and economic developed levels,We chose changsha,Zhuzhou and autonomous Prefecture as the comparative research objects.

The research result shows that the Physical shapes of Hengyang adult peasants males are relatively thinner,shorter and the cardiopulmonary functions are better while the physical functions are worse;the peasant females are stronger and shorter,the cardiovascular functions are better while the vital capacity and physical functions are worse;the urban non –physical labores(malse) are relatively taller,stronger and the physical fat rate is higher,while the cardiopulmonary functions are worse ,The better physical functional and urban non-physical laborers(females) are thinner,taller,slimmer and the cardiovascular functions are worse but the vital capacity is common and physical functions are better;and the urban physical laborers are between the peasants and the urban non-physical laborers.

運動配合飲食控制指導肥胖青少年減肥的效果及對體質影響研究

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Study On Exercise and diet in treatment of adolescent obesity

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摘要

目的：觀察多項目中低強度運動配合低熱量飲食控制干預單純性肥胖青少年的效果和體質變化，研究該方案在青少年減肥中的積極意義。

方法：單純性肥胖青少年 35 名（男=23，女=12），年齡 10～18 歲。進行 4 周的集體封閉式運動飲食干預措施，作息時間統一。□運動處方內容：運動強度，最大氧消耗 50%-70%或最大心率 60%-80%。運動頻度，5h/d，6d/周。□飲食控制方案：3 餐熱量分配，早餐 25%，中餐 45%，晚餐 30%。食物類別比例：脂肪 25%~30%；蛋白質 20%~25%；糖類 (碳水化物)50%□測試指標：身高、體質量、體脂率、圍度、肺活量、血壓以及體質相關指標。

結果：35 名全部完成測試今年如結果分析。□體重下降：男，7.1±2.2kg；女，6.4±1.9kg。體脂下降：男，8.8±3.4kg；女，7.9±2.9kg。減肥效果明顯（$p<0.001$）。BMI、圍度（上臂圍、胸圍、臀圍、腰圍、大腿圍）明顯下降（$p<0.001$）；身體素質提高，血壓下降（$p<0.05$），多項指標有顯著提高（肺活量、握力、下肢爆發力，$p<0.05$）、其他有良性變化趨勢，但無統計學意義(坐位體前區、全身反應時、閉眼單腿站立、仰臥起坐，$p>0.05$)。

結論：該方案減肥效果明顯，在減去體質量、體脂、增加心肺功能的同時，體型有也明顯改善，增強了肥胖青少年的力量素質和整體活動能力，能夠幫助其最終建立健康的生活方式。

關鍵詞：減肥，運動處方，控制飲食，肥胖

ABSTRACT

AIM：Observing the effect of moderate athletics with low-medium caloric diet for juvenile simple obesity and the change of fitness index, to study the positive sense in

adolescent obesity of this program.

METHODS： All 35 simple obesity adolescents (boys=23, girls=12),aged from 10 to 18, were given 4 weeks low - medium caloric diet and moderate athletics. □Sports content: exercise density: 50%-70% maximum oxygen consumption and 60%-80% maximum heart rate for each child; exercise frequency:5 hour daily.6 days every week. □Nutrition control: The caloric content proportion for 3 meals: breakfast was 25%,lunch 45% and supper 30%. Food proportion:fat 25%-30%;protein 20%-25 %:sugar (carbohydrate)50%.□Test index:height, body mass, body fat percentage, body measurement, vital capacity, blood pressure, index on fitness of body.

RESULTS: All 35 children were involved in the result analysis. □Reduction of body mass:boys, 7.1±2.2kg;girls，6.4±1.9kg. Reduction of body fat: boys, 8.8±3.4kg;girls,7.9±2.9kg,obviously decreased than before treatment ($p<0.001$). □BMI, girth of the upper arm, chest circumference, hipline, waistline, maximum biceps circumference obviously decreased ($p<0.001$). □The fitness of body was improved, BP were obviously decreased ($p<0.05$) .Most of indexes were markedly improved(Vital capacity ,Grip strength,, Explosive force of legs, $p<0.05$), others became better,but not significance(Sitting trunk flexion，Body reaction time, Eye-closed and single-legged standing, Sitting up, $p>0.05$).

CONCLUSION: This program got evident purpose on losing weight. It not only reduced the body mass and body fat, but also improved cardiopulmonary function and the type of build. It can help obesity children reinforce the strength and exercise ability, and make them form a good habit of daily live at the end.

Key Words：loss weight, obesity, exercise therapy, diet

雲南佤族、漢族6-18歲兒童青少年營養狀況和體重比較研究

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Yunnan Province 6-18 year-old Wa national minority, the Han Nationality male and female adolescent's height, the body weight and the nutrition condition

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摘要

調查和比較研究雲南省6-18歲的佤族、漢族男女青少年的身高、體重和營養狀況。分析遺傳、生活方式、體育教育、健身鍛煉方式對佤族和漢族青少年身高、體重和營養狀況的影響。佤族男、女兒童青少年營養狀況好于漢族男兒童青少年，特別是在青春期；佤族男兒童青少年在青春期體重偏低者多與漢族兒童青少年；佤族男兒童青少年肥胖者遠遠低於漢族男兒童青少年；佤族女兒童青少年肥胖者除了青春期發育結束時與漢族女兒童青少年肥胖者檢出率相似。其他階段遠遠低於漢族女兒童青少年。

關鍵詞 佤族 漢族 學生 營養狀況 體重 比較

Abstract

This article investigated the Yunnan Province 6-18 year-old Wa national minority, the Han Nationality male and female adolescent's height, the body weight and the nutrition condition. We have conducted the comparison research to the test result and analyzed the heredity, the life style, the sports teaching, the healthy body exercise way to the Wa national minority and the Han Nationality adolescent influence of height, the body weight and the nutrition condition. The Wa national minority male, the female child and the adolescent's nutrition condition is good to the Han Nationality, specially in puberty; The Wa national minority male children and the adolescent "lower weight" picking out rate is very higher than the Han Nationality; The Wa national minority male children and the adolescent's obesity is lower than the Han Nationality; The Wa national minority feminine children and the adolescent's obesity is lower than the Han Nationality , except Last stage of puberty growth period .

Key word : Wa national minority Han Nationality Nutrition condition The body weight

陝西省成年人骨密度狀況及其體育鍛煉對骨密度影響

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Analysis of the current bone mineral density status of the adults in the Shaanxi province

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摘要

本文採用韓國生產的SONOST-2000超聲骨密度測試儀對陝西省成年人骨密度狀況進行分析研究。結果表明：1、陝西成年人女性缺鈣率大於50%，男性缺鈣率大於40%；2、同年齡段不同性別人群比較，女性缺鈣率均大於男性；女性骨質疏鬆發生率均大於男性。3、女性骨質疏鬆40歲以後變化較快。建議：積極參加健身運動，增強身體對骨質代謝能力，提高對無機鹽的吸收效果。

關鍵詞　陝西省　成年人　骨密度　體育鍛煉

Abstract

The paper adopts the SONOST-2000 ultrasound bone mineral density test set to the current bone mineral density(BMD) status of Shaanxi' adults to be underway to measure analysis.Result shows: 1. The Shaanxi female adults BMD level is lower than male adults, The female lack calcium rate is more than 50% and the male adults is more than 40%; 2. The same age set compares ,the female adult lack calcium and osteoporosis proportion rate is more than the male's; 3. The female osteoporosis proportion change fast after 40 years old. We think that the fit physical exercise is favorable of improving bone metabolize ability and raising BMD level.

Keyword: Shaanxi province, adults, BMD, physical exercise

預防老年人跌倒的運動干預研究

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Exercise in prevent older people's falls

Wu Yanqiang

摘要

跌倒已經成為威脅老年人生活品質的重大問題。跌倒是多種因素相互作用的結果，因此出現了不同領域預防跌倒的措施。在前人的研究基礎上，本文從老年人跌倒的危險因素、運動干預的措施等方面進行了論述，並提出了一些建議，旨在尋求預防老年人跌倒的新思路。

關鍵詞：老年人，跌倒，下肢肌力，平衡能力

Abstract

Falls have been a big problem that threatens older people's life quality .Falls are the result of the interaction of many different factors ,thus there are many articles in different fields reported many ways to prevent fall in older people .Based on reported articles ,this review stated several spaces , the risk facts of falls, exercise in preventing falls and so on. And the we propose a few suggestions , in order to found new ways of preventing older people's falls .

Keywords: older people; falls; muscles strength of the lower limbs; balance function

陝西省城市與農村男女力量素質差異對比研究

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Adult's strength diathesis conditions contrast analysis in the city and the village in the Shaanxi province

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摘要

本文主要對陝西省城市體力與非體力勞動者和農村農民力量素質狀況作了對比分析。結果表明：農村農民力量素質低於城市體力與非體力勞動者，農民力量素質整體水平與城市市民相比存在較大差異。城市體力勞動者與非體力勞動者力量素質比較：體力組優於非體力組的指標有：握力（男、女）、背力（男）、俯臥撐（男）；非體力組優於體力組的指標有：背力（女）、縱跳（男、女）、仰臥起坐（女）。

關鍵詞：陝西省　城市體力組　城市非體力組　農民組　力量素質

Abstract

This paper analyzes the strength diathesis condition of the physical strength citizen and non- physical strength citizen and the village farmer in the Shaanxi province. The results show: the farmer-set's strength diathesis indexes are lower than the city physical strength set and the non- physical strength set as a whole; the body- diathesis indexes that the physical strength set are better than the non-physical strength set in the city are: grip force(male, female), back strength (male), push-up(male); the body- diathesis indexes that the non-physical strength set are better than the physical strength set are: back strength (female), upright jump(male, female), the sit-up(female).

Keyword: the Shaanxi province, the physical strength citizen set, the non-physical strength citizen set, the farmer set, the strength diathesis

對高校女大學生健美訓練的研究

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Healthily trains to the universities female university students studies

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摘要

研究目的：針對身體各部位的形態結構基礎，科學地進行系統訓練，來有意識地鍛煉肌肉群以改善和保持女大學生的形體健美是當前高校女大學生形體教學的熱點問題。但目前對此研究的還不夠全面，本文通過對比實驗，對此進行初步的探索和研究，希望能為體育教學改革、提高學生體質提供一個較為客觀的依據。

研究方法：通過文獻數據法、實驗分析法、數理統計法，對 196 名女大學生進行研究。

結果：經過一年的鍛煉後，兩組女大學生的身體形態和身體素質都有改變。在身體素質方面，兩組女大學生都有顯著的變化($p<0.05$)，說明健美課和普通體育課在鍛煉女大學生的身體素質方面有著基本相同的功能。在身體形態方面，普通體育課的女大學生的胸圍、腰圍、臀圍無明顯變化($p>0.05$)，健美班的女大學生在胸圍、腰圍、臀圍有十分顯著的變化($p<0.05$)。腰臀比（WHR）是衡量腰部上下的脂肪分佈的客觀方法，這方法區分了女人的梨樣身材。胸、腰、臀三圍的比例應是：腰圍是臀圍的 2/3 或 7/10，胸圍基本與臀圍相等。健美班的女大學生在沒訓練之前的腰臀比和胸臀比(BIIR)分別為 0.786 和 0.94，在訓練之後的比值分別為 0.762 和 0.987，起其比例改變較明顯，分別改變 3．0%和 5．0%,且更靠

近理想比例。可以看出：健美班的女大學生在訓練之後不僅形態有改變，而且形態更加健康、比例更合理。而普通班的女大學生在上課之前的 WHR 和 BHR 分別為 0.786 和 0.937，在一年後的比值分別為 0.777 和 0.946，分別改變 1．1%和 0．9%,變化沒有健美班的變化大，形態基本沒有改變。

結論與建議：1 以無氧訓練為主的健美課和以有氧訓練為主的普通體育課都能明顯提高女大學生的身體素質，但是以無氧訓練為主的健美課能明顯的改變女大學生的形體，WHR、BHR 在訓練後更趨向於最佳值。2 在普通體育課中，應加強無氧訓練的比重，特別是力量練習的比重，使女大學生的形體得到改善。3 健美訓練中應根據女大學生的生理特點和實際情況，因人而異安排練習方式、組數、次數、重量和間隔，循序漸進，使女大學生的身體得到全面發展。4 改善體育教師的知識結構,提高教學、科研能力,增強體育教師的敬業精神,使學生身體得到全面發展,提高教學、訓練效果。5 高校應大力推廣女子健美課程，學校進一步加大資金投入,添置器械,為體育教學和女大學生健美鍛煉創造更有利的條件。

關鍵詞：女大學生；健美；無氧訓練

Abstract

Purpose: To study the morphological basis of various body parts, a scientific system for training to a conscious exercise to improve and maintain muscle mass aerobics is a female college student of physical education in colleges and universities Female College Student's Body Heat points. However, this study is not comprehensive enough, the paper experiments, conduct a preliminary exploration and research, Sports can hope for reforms, improve the physical fitness of students to provide a more objective basis.

Method: Using the method of document, laboratory analysis, mathematical statistics, the study of 196 female university students.

Results: After a year of training, physical fitness and body shape of two female college students has changed. In physique, two female university students have a significant change ($p < 0.05$). show that the aerobics class in physical education and physical training of female university students have the same basic functions. The body shape, physical education college girl's chest and waist. hip no significant changes ($P > 0.05$), the female students in aerobics classes chest, waist, hip is a very significant change ($p < 0.05$). Waist-hip ratio (WHR), waist measure levels of fat distribution is an objective, it is a distinction between the kind of women pears.

Thoracic, lumbar, buttocks story is waist-hip ratio should be : 7 out of 10 or two-thirds, chest and hip basically the same. Aerobics classes prior to the training of female students did not swing over the chest and waist-hip ratio (BHR) of 0.786 and 0.94 respectively , after training in the ratio of 0.762 and 0.987, respectively, since their ratio to change more obvious. change 3.0% and 5.0% respectively, as illustrated in near ideal ratio. Aerobics classes can be seen: the female students in the form of training has not changed, but a more healthy shape, the ratio is more reasonable. And the female students in regular classes before school WHR and BHR were 0.786 and 0.937. In 2001 the ratio of 0.777 and 0.946, respectively, 1.1% and 0.9% change. No changes in the changes in aerobics classes, the basic pattern has not changed.

Conclusions and recommendations: 1 to the anaerobic training, aerobic training, aerobics classes and the general physical education can significantly improve the physical-female college student quality, but mainly to the anaerobic training acrobics classes can be a noticeable change in a female college student body, WHR. BHR in training more inclined to the best value. 2 PE in general, should increase the proportion of anaerobic training, in particular, the proportion of strength exercises, female students of physical improvements. 3 acrobics training should be based on the physical characteristics of a female college student and the actual situation varies arrangement practitioners, a group, the number weight and spacing of gradual development of a comprehensive body of the female students. 4 PE teachers to improve the knowledge structure, and enhance teaching and research capabilities, and enhance the professionalism of PE teachers. good all round development of students, improving teaching, training results. Five colleges and universities should promote female bodybuilding courses in schools to further increase capital investment to install equipment, Female college students for teaching and training to create more favorable conditions.

Keywords: Female university students, aerobics, anaerobic training

內蒙古自治區老年人體育鍛煉現狀的調查研究

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A Research and Analysis of Constitution Status Quo of the Elderly in the Inner Mongolia Autonomous Region

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摘要

1 研究目的

隨著物質生活水平的提高，老年人追求健康、延年益壽的願望愈加強烈。參加體育鍛煉已成為老年人自我保健與修養，自我教育和豐富晚年生活的重要途徑和實際需要。通過體育鍛煉可提高老年人機體抗病能力，祛病強身、延緩衰老，擴大社會交往，尋找新的寄託，滿足身心健康和精神文明的需要。老年人口是體育人口的重要組成部分，也是全民健身中較穩定的群體。通過對內蒙古自治區老年人體育鍛煉現狀的調查，分析其鍛煉的特點及存在的問題，力圖尋找有效促進老年人健康水平的途徑，為推動我區全民健身運動的開展，科學指導老年人健身，提高老年人健康水平提供理論依據。

2 研究方法

問卷調查法，問卷指標採用 2005 年國民體質監測卡片中的問卷指標。數理統計法，文獻數據法。

3 結果

內蒙古自治區老年人體育鍛煉意識較強，但在選擇鍛煉時間、次數、鍛煉項目、影響鍛煉主要障礙上存在性別、年齡組、城鄉差異。老年人參加鍛煉的體質明顯優於不鍛煉者。

4 結論

4.1 內蒙古自治區老年人參與體育鍛煉意識較強，老年人參加體育鍛煉平均每週在 5 次及以上，每次鍛煉時間在 60 時分鐘以上、堅持鍛煉 5 年以上者居多，老年男性參加鍛煉者比例高於女性，城市高於鄉村，多數老年人能夠常年堅持鍛煉，且鄉村老年男性堅持鍛煉 5 年及以上的比例最高占 71.5%。

4.2 老年人參加體育鍛煉的目的主要以防病治病為主，其次是提高能力和調節情

緒。城鄉老年人體育鍛煉目的相同。

4.3 老年男女在選擇項目上存在年齡、性別、城鄉差異，隨著年齡的增長，步行作為一項簡便易行的有氧運動成為老年人健身的首選，其次老年男性喜愛球類、自行車，老年女性喜愛操舞秧歌、武術氣功。

4.4 不參加體育鍛煉老年人主要障礙在年齡組、性別之間存在差異，對體育鍛煉沒興趣是老年人的主要障礙，說明這部分老年人強身健體的意識還比較淡薄，沒有真正認識到體育鍛煉的重要性。

4.5 內蒙古自治區參加鍛煉的老年人體質優秀、良好比例遠遠高於不鍛煉者，而體質未合格者明顯低於不鍛煉者。

關鍵詞：老年人；體育鍛煉；內蒙古自治區；現狀調查

Abstract

1. Research Objective

Due to the trend of population aging, the whole society pays more and more attention to the health problem of the elderly.In 2005, the second national census on a large scale of the physique was conducted, according to the regulations on the inspection of the mass physique The Sports Law of The People's Republic of China and The Guideline of Mass Sports. The author objectively analyzes the status quo of physique of the elderly and the characteristics when changes occur by careful study. This article aims to provide some references for the legislature to make new policies. It also promotes the implementation of the mass sports policy and the improvement of living quality of the elderly. Furthermore, it provides theoretical references to lessen the physique difference between elderly in the city and those in the country.

2. Research Methods

2.1 Measure and Investigation

Test all indexes of research objects including their physical build, function and make-up, according to the test index standard of mass physique released in 2005.

2.2 Statistics

Compare and analyze the statistics, which are gained by software specialized for mass physique analysis in 2005, according to age group, sex, and location (city or country). T examination between the different groups is also conducted.

2.3 References

3. Results

According to the test results of different age groups of the elderly in the Inner Mongolia Autonomous Region, all indexes of their physical build, function, and

make-up is declining with age, among which the indexes of male elderly decline more obviously, especially their physical build and make-up. Male elderly do better in stand-on-one-foot with eyes shut and choice reflection than female, but their ability to bend while sitting declines faster than female. The physique of urban elderly and suburban elderly are quite different, but the evaluation of the physique of them as a whole is above the national level. In the suburban area, there are 6.9 percent more of elderly whose physique is below the average standard than 2000.

4. Conclusion

4.1 The physical build of the elderly in the Inner Mongolia Autonomous Region displays typical characteristics of the given age and sex. All indexes, of both male and female, decline with age but lean to be stable. Compared with females, the build of male elderly change more obviously.

4.2 The physical functions of elderly decline dramatically, especially the function of their respiration system.

4.3 The trend of declining exists in the strength, the deftness of muscles and joints, the flexibility, reaction of nerve muscles of the elderly. Their ability to bend while sitting and choice reflection decline dramatically. Female elderly remains more flexible than male, while male elderly is better in strength, balance and reflection speed. But in general, the physique of male elderly declines more obviously than females.

4.4 Huge physique difference exists between elderly in the city and those in the country, especially male. The average elderly in the country is lighter in weight, smaller in waist, and have less body fat under the skin. The elderly in the city have better physique and heart lung function than those in the country, which results from long years of exercises. However, the elderly in the city weigh more, have bigger waist and more body fat under skin than those in the country, which causes more cardiovascular disease among the city elderly than the country ones.

4.5 The general evaluation of physique of the elderly is above the national standard, but difference between the city and the country exists. In the suburban area, there are 6.9 percent more of elderly whose physique is below the average standard than 2000. More stress should be laid on the country mass sports policy to lessen the difference between the city and the country and to improve the health level of country elderly.

Key words: the elderly; physique; the Inner Mongolia Autonomous Region; survey

羌族國民體質現狀分析

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Analysis on Physical Fitness Status Quo of Qiang People

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摘要

研究目的：

旨在掌握和瞭解當代羌族人群及貧困邊遠地區國民體質現狀，為進一步推動少數民族全民健身活動的開展提供科學依據。

地理環境：

茂縣位於阿壩州藏族羌族自治州東南部。是全國羌族的主要聚居區，全縣總人口 104161 人，羌族人口 9.11 萬人，占總人口的 88%，約占全國羌族人口的 47%，農業人口占總人口的 85.8%。

研究方法：

監測對象為居住在茂縣的 20～69 周歲羌族居民，採用整群隨機抽樣方法，共獲取成年及老年人有效樣本為 3700 人。

監測器材採用國家體育總局審定的合格器材。監測指標按照《2005 國民體質監測工作手冊》的要求由身體形態、機能和素質組成。

測試數據按要求進行檢驗；數據統計使用 SPSS10.0 統計套裝軟體及《2005 年國民體質監測統計軟體》。數據比較採用阿壩州體育局公佈《2000 年阿壩州國民體質監測公報》和四川省體育局公佈《2005 年四川省國民體質監測報告》。

結果

1、羌族人群體質水平高於四川省平均值，體質合格率為 87.8%，比四川省高 4.9%，評價結果顯示羌族人群的優秀、良好等級分別超過四川省 6.5%和 5.5%。

2、羌族成年人和老年人身體形態指標均值略高於四川省和 2000 年阿壩州監測均值，並有明顯的城鄉差異，這與當地的自然環境、經濟條件、生活方式等因素有關，與四川省均值比較，特點為成年及老年人偏高偏壯，而與全國均值比較，則屬偏瘦偏矮型。

3、羌族成年人和老年人身體機能指標均值比四川省和 2000 年阿壩州監測的

均值都高。在肺活量均值上與四川省和全國的差異也較大，並且，肺活量隨年齡增長而下降較大，分析認為主要受海撥高度和缺氧等因素影響。

4、羌族成年人和老年人身體素質指標均值除選擇反應時比四川省均值稍差一點，其他指標均比四川省和 2000 年阿壩州監測均值高，其規律為力量性指標在 35 歲左右達到最大值，隨年齡增長而下降。其他指標在 20～25 歲達到最大值，隨年齡增長而下降。

結論：

羌族成年人和老年人體質等級評價、身體形態、身體機能、身體素質均值都高於四川省及阿壩州的均值，特別是心血管機能，整體比四川省要好。儘管處於比較惡劣的生存環境，但羌族仍是一個優秀的民族。

關鍵詞：羌族；成年人；老年人；體質；分析；監測

Abstract

Purpose:

Qiang People is a minority of Chinese nation and mainly lives in poor jumping-off area. To test and analyses the physical fitness status quo of Qiang People is help to understand the actuality of their physical fitness status and provide the scientific base for promoting the Fitness for All plan in minority and poor area.

Methods:

Mao County is the main living area of Qiang People in China, locating at southeastern A Ba Zang Qiang People Municipality. Qiang People there, about ninety thousands, is 47 percent of all Chinese Qiang People. Thirty seven hundreds Qiang adults and elders (20 to 69 years old) of Mao County were cluster sampled randomly for this study. The indexes of fitness measurement were according to 2005 Working Handbook of National Physical Fitness Monitor, combined with physique, physical function and fitness. And all the testing equipments were authorized by General Administration of Sports. The statistic of data was completed by SPSS10.0 software and statistical software of 2005 National Physical Fitness Monitor. And the data was compared with the data of 2000 Physical Fitness Status Report of A Ba Municipality People and 2005 Physical Fitness Status Report of Si Chuan Provincial People.

Results:

1.The evaluation results showed that the physical fitness status of Qiang People was better than Sichuan people, with 87.8% qualified rate，4.9% higher than Sichuan

people. Also, both the excellent and good rates were 6.5% and 5.5% over Sichuan People, respectively.

2. The physique indexes of Qiang adults and elders were a little bit higher than Sichuan people and A Ba people tested in 2000, with significant urban-rural difference. This may relate to the different natural environment, economic condition and life style. Although Qiang adults and elders were thinner and shorter than average Chinese, they were taller and stronger than those of Sichuan province.

3. The physical function indexes of Qiang adults and elders were higher than Sichuan people and A Ba people tested in 2000. The vital capacity of Qiang people was quite different from Sichuan people and other Chinese, it decreased greatly accompany with the aging. This may caused by the high altitude and hypoxia living area.

4. The physical fitness indexes of Qiang adults and elders were higher than Sichuan people and A Ba people tested in 2000, except the lower reaction time than Sichuan people. And the rule of physical fitness change was that the strength indexes reached to the maximum at about 35 years old, while other indexes at 20~25 years old, and all indexes decreased along with aging after then.

Conclusion:

The physique, physical function and fitness statuses of Qiang adults and elders are better than Sichuan people and A Ba people, especially the cardiopulmonary function. It shows that Qiang People still has good physical condition though living condition is poor.

Key words: Qiang People： adult：elder：physical fitness：monitor

無錫市國民體質狀況動態變化的研究

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The dynamic study of citizens' physique condition in Wuxi city

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摘要

為瞭解和掌握無錫市國民體質狀況的變化規律，本文運用文獻數據法、數理統計法、比較分析法、測量法、問卷調查法，對 2000 年、2005 年無錫市國民體質監測數據進行了對比研究。

結果表明，我市幼兒、成年人、老年人身體脂肪含量明顯上升，體形朝偏胖方向發展，成年人、老年人突出問題是腹部脂肪堆積較多，女性尤為嚴重。幼兒總體體質狀況不如 2000 年，老年人總體體質狀況要比 2000 年有顯著性提高。

分析認為，我市地處長三角地區，經濟水平發展較好，生活水平提高較快，但由於較多家長存在重智輕體、重營養輕鍛煉的意識，造成幼兒的體質狀況在這五年間呈下降的趨勢。成年人、老年人參與科學健身的意識不強，機能指標和素質指標略有上升，由於營養過剩情況普遍存在，體型朝偏胖方向發展。從反映體質綜合狀況的體質達成率上看，成年男子體質狀況比 2000 年有明顯上升，成年女子體質狀況無明顯差異，老年人的總體體質狀況要優於 2000 年，與老年人有較強意識且有較多時間參與鍛煉有關。

關鍵詞：動態；體質；幼兒；成年人；老年人；無錫；研究

Abstract

With the purpose of finding out the variation pattern of citizens' physique condition in Wuxi city, this essay makes a comparative study of the monitoring data of citizens' physique condition in the year 2000 and 2005 in Wuxi city by using documents, mathematical statistics, comparative analysis, measuring methods and questionnaires.

The result indicates that the fat content in the body of children, adults and the old

people increases a lot and they have the tendency of becoming a little obese. A big problem of adults and the old people (especially women) is that they have a lot fat in their bellies. The overall physique condition of children in the year 2005 is worse than that of the year 2000 whereas the overall physique condition of the old develops greatly.

The analysis shows that although people's living standard in Wuxi city increases rapidly because of its quick economic development resulted from the city's location in the triangle area of Yangtze River, the parents put more attention on children's intelligence development and nutrition but less attention on physical improvement and exercise which result in the decrease of children's physique condition in these five years. The adults and the old do not have a good sense of scientific exercise, so although their body function and quality develop a little, their figures intend to be fat because of too much nutrition. Judging from the physique condition standard-reaching ratio which indicates people's comprehensive physique condition, the physique condition of male adults develops greatly in these five years, the physique condition of female adults does not have noticeable change while the physique condition of the old people is better than that of the year 2000 due to more attention on and time in exercise.

Key Words: dynamic, physique condition, children, adults, the old, Wuxi city, study

2005 年湖南省國民體質(成年人)狀況調查與分析

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Investigation and Analysis on Physical Fitness of National (adults) in Hunan in 2005

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摘要

本文旨在全面瞭解湖南省成年人身體形態、機能和素質特徵，分析成年人各年齡段的體質特徵和變化規律。研究對象為湖南省長沙、湘潭、株洲、婁底、懷化、邵陽、衡陽、張家界、常德、益陽、自治州、永州、郴州、岳陽等 14 個地區，從事工業、農業、商業及服務業的體力勞動者以及科教人員、公務員和企事業單位管理人員等不同職業非體力勞動者。男性測試了 38172 人；女性共測試了 38165 人，均為具有從事體育活動能力的健康人。結果發現：1 湖南省成年人體質變化主要特徵，身體形態指標中：湖南省成年人男女身高隨年齡增長而下降，成年男子平均身高達到 167.40± 1.26CM，女子平均身高達到 156.47± 1.02CM；2005 年湖南省成年男女身高各年齡組低於全國成年男女各年齡組平均水平，高於 2000 年湖南省平均水平。男子體重平均為 65.59 ± 1.12KG，在 40~44 歲達到最大值後，呈下降趨勢；女子體重平均為 53.99± 1.89KG，體重變化隨年齡增長呈漸增趨勢，在 50~54 歲年齡達到峰值；克托萊指數男女都分別低於全國平均水平，湖南成年人體形低於全國水平，總體偏度小。2 機能指標中： 湖南省成年男、女肺活量均值分別為 3315.03 ±286.75ML 和 2292.96± 177.03ML，分別低於全國水平 44ML 和 54ML。男女肺活量均值隨年齡增長而下降，總體下降幅度分別為 20%和 16.73%。臺階指數湖南省成年男女都分別高於全國均值，男子平均為 56.88 ± 0.98，比全國均值高 0.22；女子平均為 59.60 ± 0.96，比全國均值高 1.86。3 湖南省成年人機能指標有隨年齡增長而下降的趨勢，總體下降幅度位置順序依次是，男子為：肺活量 20%、收縮壓 8.3%、舒張壓 6.55%；女子為：肺活量 16.73%、收縮壓 14.51%、舒張壓 9.0%。3 素質指標中：湖南省成年人柔韌

性、縱跳高度低於全國平均值，平衡能力、女子腰腹力量、男子肩、臂部力量等指標高於全國平均值。湖南省成年人身體素質指標隨年齡增長而總體下降幅度的順序是：(男)閉眼單腳站立 53.36%、反應時 27.9%、俯臥撐 22%、握力 12.7%、坐位體前屈 11.27%、縱跳 10.54%；(女)閉眼單腳站立 60%、坐位體前屈 48.4%、反應時 30.4%、仰臥起坐 24.8%、握力 13.5%、縱跳 13.04%。4 湖南省國民體質變化特徵：國民體質綜合指數顯示，湖南 2005 年國民體質總體水平比湖南省 2000 年體質總體水平略有提高；湖南省成年人國民體質綜合指數 40 歲以前各年齡組人群低於 2005 年全國平均水平，40 歲後各年齡組人群高於全國平均水平。

關鍵詞：國民； 體質；調查；湖南

Abstract

Through testing physical condition on 38172 male and 38165 female adults aged among 20-39 and 40-59 in Hunan in2005, this paper analyzes the physical ,function and fitness of Hunan province adult and difference between urban and rural area. Method: take out whole samples causally to from the main sample by referring to fixed method used in 2005 to investigate health condition. Results: 1. Average value of the height of the male adults of Hunan was 167.40± 1.26CM, while average value of the weight was 65.59 ± 1.12KG, average value of the weight of male adults tends to decrease after 40-44 years. Average value of the height of the female adults of Hunan was 156.47± 1.02CM, while average value of the weight was 53.99± 1.89KG , average value of the weight of female adults tends to decrease after 50-54 years . Average value of the weight of adults growth is in keeping with general rule of age growth.. Adults` anthropometry in Hunan is lower the average value of our country. 2. Physiological fitness index of adults in Hunan. Average value of Vital capacity of the male adults was 3315.03 ±286.75ML, a decrease of 20%, while average value of Vital capacity of female adults was 2292.96± 177.03ML,a decrease of 16% compared to that of our country in 2005 . Adults` Average value of Vital capacity in male and female growth shows age point, average value of Vital capacity tends decrease. Average value of Steps of the male and female adults in Hunan was 56.88 ± 0.98 and 59.60 ± 0.96, up by 0.22 % and 1.86% compared to that of our country in 2005. Adults` physical fitness of Hunan growth is in keeping with general rule of body growth, rapid growth shows age point. Physical fitness tends to decrease. The rule of site of a decrease in male were Vital capacity (20%), Systolic blood pressure(8.3%),Diastolic blood pressure(6.55%). The rule of site of a decrease in female were Vital capacity (16.73%), Systolic blood pressure (14.51%),Diastolic

blood pressure(9.0%). 3. .Adults` physical activity in Hunan, sit and reach and vertical jump were lower than that of our country, stork stand with eyes closed , bent-up sit-ups ( female)and push –up (male) were higher than that of our country. Adults` physical activity of Hunan growth is in keeping with general rule of body growth, rapid growth shows age point. Physical activity tends to decrease. The rule of site of a decrease in male were stork stand with eyes closed (53.35%),reaction time (27.9%),push-up (22%), handgrip strength (12.7%), sit-and-reach (11.27%) and vertical jump (10.54%). The rule of site of a decrease in female were stork stand with eyes closed (60%), sit-and-reach (48.4%), reaction time (30.4%),bent-knee sit-ups (24.8%),handgrip strength (13.3%) and vertical jump (13.04%). 4. Characteristics of national physical fitness in Hunan. The analysis of the composite index of national physical fitness indicated that there was a slight increase in national physical fitness as compared with that in Hunan in 2000. Average value of the composite index of national physical fitness before 40 years were lower, and higher after 40 years in Hunan than that of our country.

Key words: Nation; Physical fitness; Investigation; Hunan

山東省成年人體育鍛煉的現狀及對體質的影響

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Physical activity of Shandong adult and impact on physical fitness

Xu Hanpeng

摘要

研究目的：

人的體質狀況主要受先天遺傳和後天環境的影響。在後天環境中，體育鍛煉是影響體質的重要因素。適宜的體育鍛煉可以加強血液迴圈、加快新陳代謝、增強身體素質。為了全面瞭解山東省成年人的體育鍛煉狀況。本研究將以山東省成年人（20～59歲）為研究對象，以2005年國民體質監測成年人問卷調查中的體育鍛煉部分作為研究內容，在充分瞭解其現狀的基礎上，重點探討不同體育鍛煉行為對體質的影響，為山東省成年人增強體質、促進健康提供理論依據，為進一步深入研究運動健身指導方案奠定堅實的實踐基礎。

研究方法：

本研究採用文獻數據法、問卷調查法、體質測試法和數理統計法對山東省成年人體育鍛煉的現狀及對體質的影響進行分析研究。

研究結果：

1. 山東省成年人體育鍛煉的現狀：參加體育鍛煉的積極性較高，但經常參加體育鍛煉的人數比例較少。其中，有 41.1%的成年人參加體育鍛煉，而只有13.4%的成年人經常參加體育鍛煉，並且，25～39 歲年齡段的人群參加體育鍛煉的人數最少；參加體育鍛煉的目的主要集中在防病治病、提高運動能力和減輕壓力、調節情緒等方面。其中，女性為減肥、健美而參加體育鍛煉的人數比例明顯高於男性；參加體育鍛煉的項目主要以步行、跑步和球類為主。其中，男性喜愛球類和跑步的比例明顯高於比女性，而女性喜愛健身操、秧歌和步行的比例明顯高於男性；參加體育鍛煉的主要障礙有工作忙，缺少時間、家務忙，缺少時間、惰性和沒興趣等。其中，成年男性有 21.4%的人因工作忙，缺少時間不參加體育鍛煉，成年女性有 22.1%的人因家務忙，缺少時間不參加體育鍛煉。由於"工作忙，缺少時間"而不參加體育鍛煉的人群主要集中在 20～50 歲年齡段人群。

2. 經常參加體育鍛煉者與不鍛煉者體質的比較：經常鍛煉者的克托萊指數、體脂百分比和 BMI 均高於不鍛煉組，除少數年齡組外，差異均有顯著性；男女各年齡組的肺活量、肺活量/體重均值，經常鍛煉者明顯高於不鍛煉者，肺活量在各年齡組的差異均有顯著性，肺活量/體重只有部分年齡組的差異有顯著性；

經常鍛煉者的身體素質的各項指標明顯高於不鍛煉者。

研究結論：

1·山東省成年人體育鍛煉的現狀特點：山東省成年人體育人口的比例較低，參加體育鍛煉的意識淡薄。男女各年齡段參加體育鍛煉的人數比例不均衡；參加體育鍛煉的目的主要集中在防病治病、提高運動能力和減輕壓力、調節情緒等方面；參加體育鍛煉的項目主要以步行、跑步和球類為主；參加體育鍛煉的主要障礙有工作忙，缺少時間、家務忙，缺少時間、惰性和沒興趣等。

2·體育鍛煉對體質的影響表現為：經常鍛煉組人群的身體充實度、心肺功能和身體素質明顯好於不鍛煉組，這充分說明經常參加體育鍛煉將有效地增強體質。

關鍵詞：山東省；成年人；體質；體育鍛煉

大學生肥胖流行現狀及肥胖與體質健康的相關性研究

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An Investigation of Obesity in College Students and its Effect on their health conditions

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摘 要

研究目的

預防肥胖的流行已成為21世紀全球最重要的公共衛生研究課題之一。大量的流行病學研究表明肥胖不是僅限於營養狀況問題，而是一種嚴重危害人類健康的疾病。近年來，伴隨著我國經濟的迅速發展，肥胖患病率正以迅猛的速度上升。大學生正處於生長發育的最後階段，這個時期的生長發育是否正常、體形是否勻稱和健美、良好的生活習慣是否形成，將對其身體素質、心理素質、就業與擇業及以後的生活產生重要的影響。本研究旨在以1985－2005年間五次全國體質調查數據，分析與探討我國大學生20年來超重、肥胖的流行趨勢及超重、肥胖對大學生體質健康的相互關係。

研究方法

研究對象為1985、1991、1995、2000及2005年全國學生體質健康調查，按分層隨機整群抽樣原則選自全國28個省及直轄市19-22歲漢族男女大學生。其中1985年61,169人，1991年44,289人，1995年44,517人，2000年49,589人和2005年57,183人，共計256,747(男131864；女124883)名正常大學生。

研究結果

1. 男女大學生在體格上基本上仍然表現為城市大於農村，但是男生BMI城市大於農村，而女生則表現為農村大於城市。

2. 隨著年代的推移，無論城市組還是農村組超重及肥胖的發生率均逐漸增加，特別是與 1995 年相比，2000 年及 2005 年城市組的肥胖率分別高出 5.81,7.33 個百分點，而農村組則只分別高出 2.08,3.05 個百分點。

3. 男女生立定跳遠，耐力跑及肺活量指數各年代超重及肥胖組顯著性低於正常組，並且除了立定跳遠以外，隨著年代的推移，成績逐漸呈下降的趨勢。

結論

1.城鄉男女大學生超重及肥胖的比例均呈現快速增長的趨勢，造成這種現象的主要原因為快速的經濟發展與滯後的健康教育體制。

2.超重及肥胖對大學生的體質健康產生較大的負面影響。

關鍵詞: 肥胖，大學生，體質健康

Abstract

Objectives: The prevention of obesity has become one of the most important global public health concerns in the 21th century. Many epidemiological studies have shown that obesity is not only a problem caused by improper consumption of nutrients, but a kind of disease which endangers human health seriously. Obesity has rapidly spread with the quick economic growth in our country. College students are at the last growing period. Their normal growth, fine body figure and healthful eating habit will be greatly affecting their future physical and mental health, career selection and daily life. This investigation, based on the data collected from five nationwide physique surveys from 1985 to 2005 in China, analyzed and explored overweight and obesity trend in college students and its effect on their health conditions.

Method: The subjects are randomly sampled of nationwide college students at the age of 19-22 in the year of 1985, 1991, 1995, 2000 and 2005 (among them 61,169 students in 1985, 44,289 in 1991, 44,517 in 1995, 49,589 in 2000 and 57,183 in 2005, totally 256,747 students, including male 131,864 and female 124,883). The data are obtained from the physique surveys carried out among these students according to different birth places and genders of different groups.

Results: 1. Physique of urban students is generally stronger than that of rural students although the BMI of the urban male students is higher than that of the rural male students, and the BMI of the urban female students is lower than that of rural female

students. **2.** As time goes by, overweight and obesity is on the rise for college students regardless of their genders, compared with the year of 1995, especially the year of 2000 and 2005. In the urban male and female student groups, obesity rate rises 5.81% and 7.33% respectively while in the rural male and female student groups, it only rises 2.0% and 3.05% respectively. **3.** In contrast with the above results, the ability of male and female students for standing long jump, endurance running and lung capacity is remarkably lower in the experimental groups than in the control groups. Except for standing long jump, all other records are gradually falling.

Conclusion: 1. There is a rapidly spreading trend of overweight and obesity among male and female college students no matter in the urban or in the rural groups. The main cause of this might be that our health educational system is lagging behind the rapid economic development. **2.** Overweight and obesity will negatively affect the physique and health condition of college students.

Keywords: obesity, college students, physique health

關於體育鍛煉對山東省 20—39 歲城鎮非體力勞動者機能水平的分析

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Analysis On Physical Excise to Function Level of Cities Non-strong Worker of 20-39 Year Old In Shandong Province

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摘要

本研究通過對山東省 20-39 歲城鎮非體力勞動者體育鍛煉現狀的分析，引入體育人口定義，將該群體分成 3 組進行方差分析，發現體育鍛煉對機能水平的影響，以期為開展群眾體育事業、提高國民機能水平，推進國民經濟和社會穩步向前發展做出微薄之力。

關鍵詞：城鎮；非體力勞動者；體育人口；體育鍛煉；機能

Abstract

This research through to analysis on physical excise present situation of Shandong Province 20-39 year old of cities non-strong worker, divides into 3 groups to quote from sports population definition and then carry on the Analysis of Variance, discovers the influence of physical excise to the function level, As to develop of social sports enterprise and the national function level, advances the national economy and the society with steady steps contribute mine share.

Keywords: cities; non-strong worker; sports population; physical excise; function

雲南省 3-6 歲幼兒體質狀況及發展規律研究

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Research of 3~6 Year's old Preschooler's Constitution and Development Refularity of Yunnan Province

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摘要

本文抽取雲南省 2005 年國民體質監測中幼兒部分共 2737 人的監測數據，用 SPSS 軟體對其進行統計，分析討論雲南省 3~6 歲幼兒體質現狀和發展趨勢，瞭解其生長規律，發現優點和不足之處，提出相應建議。

結果表明：雲南省男女幼兒體質現狀遵循年齡特徵和性別特徵的發展變化規律，我省幼兒體質評定各等級所占百分比與全國相當，城鄉之間、地區之間存在差異，幼兒體質狀況較之 2000 年有明顯變化。

關鍵詞：幼兒體質；雲南省；城鄉；地域；2000 年；2005 年

Abstract

Research the data of preschooler's constitution of yunnan province, Analyse it by SPSS, Discuss the development refularity of preschooler's constitution of yunnan province.

As a result, the preschooler's constitution of different ages, of different sex, of city and country, of different zone has many distinctions. 2005 and 2000 has so many distinctions.

Key word: The preschooler's constitution:Yunnan province:City and country: twenty thousand:twenty thousand and five

2000-2005 年貴州省成年人心肺功能變化趨勢和特徵

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2000-2005 year Guizhou Province adult heart and lungs function change tendency and characteristic

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摘要

通過對貴州省 2000 年和 2005 年全省國民體質監測所獲得的成年人的脈搏、血壓、肺活量、及臺階指數等指標數據的統計分析，並與全國同期平均水平進行比較，2000 年至 2005 年我省成年人的心肺功能有以下的變化趨勢和特徵：(1) 心血管功能較 5 年前有所提高，並且明顯好于全國平均水平。但是仍需警惕血壓的增高趨勢。成年男性的安靜脈搏隨年齡增長出現的異常增高趨勢需要進一步的研究和探討。(2) 肺功能與全國平均水平仍然有較大差距，更為嚴重的是，成年女性的肺功能出現明顯下降，需要儘快採取有效措施加以糾正，提高人民的體質，有力地保障我省人民的身體健康。

關鍵詞：心血管　呼吸　功能　趨勢/特徵

Abstract

Through adult's pulse, blood pressure, vital capacity which in 2000 and in 2005 the entire province national physique monitor obtained to Guizhou Province, and target data and so on stair index statistical analyses, and the average level carried on the comparison same time with the nation, our province adult's cardiopulmonary function had following change tendency and the characteristic from 2000 to 2005: (1) Cardiovascular function 5 years ago have the enhancement, and obvious good in national average level. But still needed the vigilant blood pressure the markup tendency. The adult male peaceful pulse the exceptionally markup tendency which appears along with the age growth needs the further research and the discussion. (2) Our province adult lung function is lower than the national average level obviously. The adult female lung function appeared drops obviously, needed to take the effective action to correct as soon as possible, enhances people's physique, safeguarded our province people's health powerfully.

Key words : cardiovascular，breath，function，tendency /characteristic

2005年貴州省國民體質身體素質指標變化規律

屈　進

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Changes and regular patterns of physical quality items of Guizhou province National physical fitness in 2005

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摘要

體質是生命活力和勞動、工作、學習能力的物質基礎。身體素質是體質的一個重要組成部分，是評價體質強弱不可缺少的方面。

採取隨機整群抽樣原則在貴州省抽取監測對象，獲取有效樣本231500個；採用2005年國民體質監測數據錄入軟體和SPSS13.0統計軟體進行數據處理。

根據分析結果得到以下結論：

1　我省幼兒的身體素質，隨年齡的增大而得到一定的綜合提高。但男幼兒的坐位體前屈，隨年齡的增大而下降；農村男女各年齡組幼兒的平衡能力高於城市男女各年齡組幼兒；男幼兒2005年的各小年齡組身體素質均好於2000年的同組身體素質，大年齡組（6歲）均表現出2000年男幼兒的身體素質好於2005年男幼兒的身體素質。

2　成年人身體素質的峰值出現在30歲左右，在45歲以後表現出生理性快速下降趨勢。女性身體素質穩定期較長，男性身體素質衰減速度較快。成年農民身體素質的總體情況與其他人群相比有較大差距，城市非體力勞動者的身體素質相對較好，城市體力勞動者和城市非體力勞動者之間差異不明顯。成年甲組身體素質2000年好於2005年，呈非常顯著性水平。

3　貴州省老年人身體素質隨年齡的增長而下降，尤其是坐位體前屈和閉眼單腳站立。農村男老年人的坐位體前屈好於城市男老年人，其他身體素質城市男老年人明顯好於農村男老年人，農村女老年人各項身體素質指標都低於城市女老年人，差異具有非常顯著性水平。同時表現出老年人身體素質2000年好於2005年，呈非常顯著性水平。

4　我省農民組別各年齡段人群的身體素質大部分低於城市組別人群。經濟水平差、缺乏組織者、缺乏健身器材、缺乏身體活動時間是制約農民組別身體素質差的主要因素。

5　我省2000年身體素質與2005年身體素質比較，總體情況下降。我省群

眾對體育鍛煉的功能在深度和廣度的認識上有待提高，在宣傳的形式和內容上需加大科技含量；加大對體育設施建設的投入，多建小型、簡易、福利性體育設施；加強科學鍛煉的方法和手段，加強社會體育指導員的培養，使更多的體育鍛煉者掌握科學的健身方法。

6 建議各級政府部門全面瞭解掌握本地國民體質狀況，切實把加強國民體質與地方社會可持續發展聯繫起來，真正做到將國民體質監測作為國民資源、國家財富進行管理，縮小城鄉差異和地區差異，以提高整體國民身體素質水平。

關鍵詞：國民體質；身體素質；變化規律；貴州省

Abstract

Physical fitness is a basic of the life, labor and study ability. Physical quality is the most important component part of the physical fitness and the lackness aspect of apprising the strong or week of physical fitness.

231500 availability sample were random sample and measured according to common standard severely in Guizhou Province. All data were analyzed in SPSS 13.0.

The results indicated that the preschoolers physical quality in Guizhou Province obtains a fixed improvemt as the ages grow up; the peak value of physical quality for Guizhou adults appears about the 30 ages and shows the tendency of circadian high-speed drop after 45 ages; the seniors physical quality in Guizhou Province falls as the ages grow up; the physical quality by each aged of urban people in lower than that of rural people by each aged; compared with 2000, the general situation of physical quality in 2005 declines.

Therefore, the consciousness for Guizhou Province people to participate in exercises should be enhanced; to build more essential exercise construction, especially in countryside, guiding peasant to take part in exercise, improving their physical fitness; Moreover, people taking part in physical activities need pay more attention to scientific body-building methods to acquire better effects; Assessment of physical fitness should play a important service role. Through measure, assessment and guide improve the level of science and rationality of exercise.

Key words: National physical fitness; physical quality; Changes and regular patterns; Guizhou province

2005年國民體質監測中天津市高血壓檢出人群的分佈特徵與體質現狀分析

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The Distributed Characteristic and Physique Situation Analysis on Hypertension Crowd In Tianjin to Be Found through 2005 Physical Fitness General Monitoring Survey

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摘要

1.研究目的

天津屬於高血壓高發地區，並且近年來出現了高血壓患者年輕化和中重度高血壓患者增加的趨勢。本研究利用2005年天津市國民體質監測的數據，對20～69歲人群高血壓檢出率及其在性別、年齡、城鄉等方面的特徵以及對不同血壓類型人群的體質狀況進行分析。

2.研究對象與方法

天津市20～59歲的男、女成年人和60～69歲的男、女老年人的基礎數據，樣本總量為19087人。每5歲一個年齡段，並分為鄉村和城區兩類。依照世界衛生組織（WHO）1999年高血壓診斷標準，本研究將測試對象分為中重度高血壓、輕度高血壓、正常血壓和低血壓四組：輕度高血壓：140mmHg≤收縮壓<160mmHg或/和90mmHg≤舒張壓<100mmHg；中重度高血壓：收縮壓≥160mmHg或/和舒張壓≥100mmHg。

使用SPSS10.0統計軟體進行統計學分析。均值與率的差異分別採用t檢驗與U檢驗分析。用單因素方差分析和多重比較結果分析不同血壓類別的體質特點。

3.結果與分析

天津市成年人和老年人總體高血壓人群占 21.5%。高血壓檢出人群中，輕度者(16.8 %)大大高於中重度人群(4.7%)。男性輕度高血壓和中重度高血壓比例均高於女性（P<0.01）。輕度高血壓和中重度高血壓檢出率均大幅度增大，而中重度高血壓檢出率的增加幅度遠高於輕度高血壓。男性鄉村輕度和中重度高血壓檢出率分別高出城區 5.0%（P<0.01）和 1.0%，女性則分別高出 6.1%（P<0.01）和 1.7%（P<0.01）。中青年階段，鄉村檢出率高；老年人群中，城區的檢出率高於鄉村。

體質總分、機能能力和素質能力均呈現正常血壓人群＞輕度高血壓人群＞中重度高血壓人群的明顯趨勢（組間差異較大，多重比較均有統計學意義）；體重、體脂率、BMI 和圍度指標中，中重度高血壓組＞輕度高血壓組＞正常血壓組（組間差異較大，多重比較均有統計學意義）。

4. 結 論

1. 天津市高血壓患病人數有增加的趨勢，並且隨年齡的增加，中重度高血壓檢出人群呈現增加的趨勢。提示中年是高血壓病的高發年齡段，真正有效地預防工作應該從青年階段開始。

2. 高血壓檢出率呈現男性大於女性，與以往研究一致。高血壓檢出率出現鄉村大於城區，與以往研究不同，提示，近幾年來經濟和社會生活的巨大變化對鄉村中青年人群的影響較大。

3. 不同類型血壓人群具有鮮明的體質特徵，即高血壓檢出人群的總體體質狀況和身體成分、機能以及素質等水平明顯低於正常血壓人群。

關鍵詞: 體質監測; 高血壓; 檢出率; 分佈特徵

Abstract

1. **Objectiveness**

The occurrence rate of hypertension is much higher in Tianjin ,and it trends that hypertension has the high rate among young people and more serious , based on the data from the 2005 physical fitness general monitoring survey ,this research analyze the checking rate of the hypertension and features of group aging from 20 to 69 in terms of sex distinction , age and region .And it also analyze the physique situation of different blood type group .

2. **The objector and method**

Adult male and female aging 20 -59, senior male and female group aging 60-69, that is 19087 samples. They are divided into 2 groups by rural and urban sections in every

5-year age segment. According to the hypertension standard of WHO, the research will divide the objector into four groups ,that are moderate –deep hypertension group ,mild hypertension group, normal blood pressure group and low hypotension group . Mild hypertension group: 140mmHg≤Systolic pressure <160mmHg and /or 90mmHg≤diastolic pressure < 100mmHg; deep hypertension group : Systolic pressure ≥160mmHg or /and diastolic pressure≥160mmHg.

The research uses the SPSS10.0 software to go on the Statistics computation. The research use the t examination and the U examination to analyze the average value and the rate difference .With the single factor variance analysis and multiple comparison result are used to analyze physique characteristic of the different blood pressure category.

3. The result and finding

The adult and senior constitute the 21.5% in the total hypertension group .Among the hypertension checking crowd , mild hypertension constitute 16.8% ,largely higher than the deep hypertension group ,only 4.7% . Rates of the male in mild hypertension and moderate-deep hypertension are higher than these of female ($p < 0.01$).The checking rates of mild hypertension and moderate-deep hypertension have increased greatly while the checking rate of moderate-deep hypertension is much higher than that of mild hypertension. The rates of the mild hypertension and moderate-deep hypertension in male rural group are higher than these of the urban group 5.0 %($p<0.01$) and 1.0% respectively, while these becomes 6.1% ($p<0.01$) and 1.7 %($p<0.01$) in female group. Among the mid-young age group, the rate of checking hypertension is higher in rural group, while that is higher in urban group among the senior group.

In terms of the physique, the functional ability and the quality ability, the normal blood pressure crowd > the mild hypertension crowd> moderate-deep hypertension crowd, which is a obvious tendency(groups differ greatly , multiple companion has statistics significance);in terms of the body weight, the body fat rate, BMI and encircle , moderate-deep hypertension group > the mild hypertension group > the normal blood pressure group (groups differ greatly , multiple comparison has statistics significance).

4.Conclusion

(1) It had the increasing tendency of hypertension in Tianjin, and as age increases

the number of patients with moderate-deep hypertension tends to increase. The middle age group usually is the high peak of hypertension among all the age groups .So the truly effectively prevention should be taken on the youth stage .

(2) The male checking rate of hypertension presents is higher than that of the female, which consistent with the formerly study. Otherwise the rural checking rate of hypertension is higher than that of the urban group which is different from former study .In the last few years the huge economic and social changes exert great influence on the young people in the rural areas .

(3) The different type blood pressure crowds

Have the obvious different physique characteristics, namely in terms of the general physique situation , body ingredient, functional ability and quality, the hypertension crowd is much lower than the normal blood pressure people

Key word: physique monitor; hypertension; checking rate; distributed characteristic

我國 3-6 歲幼兒身體素質與身高發育相關性特徵的研究

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Our country 3-6 year old baby physical quality and the height growth relevant characteristic studies

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摘要

幼兒骨骼縱向發育（身高發育）的必須條件是適量的體育運動。各項身體素質的發展，必然與其身高發育存在著遵循人類遺傳學相關性和階段性規律特徵的自然增長規律與發育特徵。本文使用 2005 年山西省國民體質監測 11 個地市 3-6 歲男女幼兒 5571 人的體質測試數據，對 3-6 歲男女幼兒身高和 5 項身體素質的自然增長特徵和身高與 5 項身體素質的發育相關性特徵進行研究。研究結果表明：3-6 歲幼兒身高發育整體平穩。立定跳遠、10 米折返跑、雙腳連續跳、網球擲遠、走平衡木是 3-6 歲幼兒快速發展的自然增長敏感期，特徵為：立定跳遠與 10 米折返跑在 3-4 歲增長最快；網球擲遠與走平衡木在 4-5 歲增長最快。其特徵真實的反映出人類運動能力遺傳階段性和相關性規律；5 項身體素質與相應年齡段的幼兒身高發育存在著相關高度顯著（$P<0.01$）。研究結果提示：3-6 歲幼兒參加室內外體育運動、遊戲、活動的教學及安排，遵循研究結果，可以更好地促進幼兒身高與各項身體素質的自然增長及表達。

關鍵詞：幼兒；身體素質；身高；相關性

Abstract

Baby skeleton longitudinal growth (height growth) must the condition be the right amount sports. Each item of physical quality development, inevitably if the height growth exists follows the human genetics relevance and the gradual rule characteristic nature growth rule and the growth characteristic. This article uses in 2005 the Shanxi

Province national physique to monitor 11 places cities 3-6 year old men and women babies 5,571 person of physique test data, conducts the research to 3-6 year old male and female babies height and 5 item of physical qualities nature growth characteristic and the height with 5 item of physical qualities growth relevant characteristic. The findings indicated that, 3-6 year old baby height growth whole is steady. The standing broad jump, 10 meters turn back run, the double foot continuously jump, the tennis throw far, walk the balance beam are the nature which 3-6 year old baby fast develops grow the sensitive time, the characteristic are: The standing broad jump turns back with 10 meters runs is quickest in 3-4 year old of growth; The tennis throws far with walks the balance beam to be quickest in 4-5 year old of growth. Its characteristic real reflection humanity movement ability heredity gradualness and relevant rule; 5 item of physical qualities and the corresponding age section baby height growth has the obvious correlational dependence ($P<0.01$) .Findings prompt: 3-6 year old baby participates in inside and outside the room the sports, the game, the active teaching and the arrangement, follows the findings, may promote the baby height and each item of physical quality nature growth and the expression well.

Key word: Baby; Physical quality; Height; Relevance

中國優秀青年足球運動員在比賽中心率和重複衝刺能力的關係

Heart rate response and repeated sprint performance during Chinese elite youth soccer match

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Abstract

Heart rate (HR) response during a soccer match among elite youth players has been well documented in European countries (Capranica et al, 2001; Stroyer et al, 2004). However, there is no such information available in the literature with regard to the Chinese elite youth soccer players.

Furthermore, it has been reported that European top-class professional players perform less high-intensity running in the second half compare with the first half of a match. These players also have a marked decline in the amount of high-intensity exercise in the last 15min of the second half, indicating that they experience fatigue towards the end of the game (Mohr et al, 2003). Similar study has not been conducted on elite youth soccer players and therefore no information is available if such declination of high-intensity performance occurs in elite youth soccer players.

Therefore the primary purpose of this study is to investigate the HR response during match among Chinese elite youth soccer players. The secondary purpose is to examine if the high-intensity performance (i.e. sprint) is changed throughout the match among elite youth soccer players.

北京市2000年與2005年成年人身高、體重、BMI城鄉差異的研究

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Differences Exist between Country and City in samples of 2000 and 2005 about height, weight and BMI of adults in Beijng

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摘要

研究目的

北京市成年人群體質狀況2000年與2005年存在一定的差異，造成這種差異的原因是什麼？由於北京市國民體質監測所選取的樣本包含北京市18個區縣的三種不同人群，即農村、城市體力和城市非體力。只有在充分瞭解了這種差異出現在哪種人群中，才能夠更為深入的探索出現這種差異的原因。因而，本文立足于研究北京市成年人群身高、體重、BMI 三種常用的指標的城鄉差異，以期能夠為今後研究造成北京市城年人群體質差異原因奠定一定的理論基礎。

研究方法

選取2000年和2005年20～59歲年齡段成年人22332人為研究對象，用實驗測量法獲取身高、體重共2項身體形態指標。數據處理為常規統計方法——單因素方差分析（One-way ANOVA）。

結論

1 20～59歲成年人身高均值，2000年與20005年無論男女城鄉均存在差異，農村低於城市。

2 20～59歲成年人男性體重均值，2000年城鄉不存在差異，農村低於城市；2005年城鄉存在差異，農村低於城市。20～59歲成年人女性體重均值，2000年與20005年絕大多數年齡段城鄉存在差異，農村高於城市。

3 20～59歲成年人男性BMI均值，2000年部分年齡段城鄉存在差異，農村高於城市；2005年大部分年齡段城鄉存在差異，農村低於城市。 20～59歲成年人女性BMI均值，2000年與20005年絕大多數年齡段城鄉存在差異，農村高於城市。

4 20～59 歲成年人男性身高、體重、BMI 城鄉差異擴大；女性身高城鄉差異擴大，體重城鄉差異表現在年齡範圍擴大、最大差值缩小，BMI 城鄉差異表現在年齡範圍改變、最大差值增大。

關鍵詞：身高、體重、BMI、脂肪、生活方式、城鄉

Abstract

Purpose of study

There is a certain difference of the constitutional state of Beijing citizens in 2000 and 2005, then what is the cause of this difference? The test samples taken from 18 representitive districts and counties in Beijing by the Beijing National Monitoring Institute include 3 different groups of people, which are manual workers and nonmanual workers in urban Beijing and suburb Beijing . We cannot get the relative factors influencing the constitutions of Beijing citizens only after we pay enough attention to this issue. Thus, based on the studies of the differences of the staple index between countryside and the city , including height, weight and BMI of adults in Beijing.this essay is written in the purpose of offering a theoretical base for the future study of the cause to the constitutional differences between each adult group of Beijing citizens.

Methodology

Taking 22332 adults and senior people aged between 20 and 69 in the year 2000 and 2005 as study targets, I took records of 8 physical indexes from them by experimental measurement, including two indexes of height and weight, The data processing here used is conventional method of statistics and one-way ANOVA.

Conclusion:

1. Average height of adults and senior people aged between 20-59: differences exist either between males and females or between country and city in samples of 2000 and 2005. Heights are lower in counties than in city.
2. Average weight of male adults aged between 20-59: there isn't any difference between city and counties in samples of 2000; differences appear in samples of 2005: samples in counties are lower than in the city. Average weight of female adults aged between 20-69: difference exists both in 2000 and 2005 in most age

groups and between in counties and in city. Samples in counties are higher than in the city.

3. Average BMI figures of male adults aged between 20-59, difference exists in 2000 between counties and city, and in some age groups counties are lower than the city; Average BMI figures of of female adults aged between 20-59: difference exists between samples 2000 and 2005 in counties and the city. In most age groups the figure is higher in counties than in the city.

4. Average figures of height weight and BMI of male adults aged between 20-59: differences of heights of female citizens enlarges. The difference of weights of female citizens lies in the enlargement of age-bracket and the decreasement of the maximum difference value. Differences of BMI between the city and countryside lies in the change of age-bracket and enlargement of the maximum difference value.

Key words: height, weight, BMI, body fat, life style, city and countryside

廣州市居民體質特點與體育鍛煉情況關係的研究

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Relationship between Characteristics of Physical Fitness and Sports Exercise in Residents of Guangzhou

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摘要

本文以廣州市成年人（20～59 歲）為研究對象，分析了其體重指數、腰臀比的特點與體育鍛煉的關係。研究結果發現：廣州市居民的體重指數、腰臀比隨著年齡的增長而增長，並且男女之間的差異不斷的縮小；參加體育鍛煉與不參加體育鍛煉的 BMI、WHR 有顯著性的差異；長期參加一定負荷的體育鍛煉，對 BMI、WHR 的控制效果較明顯。

關鍵詞： 體質；體重指數；腰臀比；體育鍛煉

Abstract

Taking the adults in Guangzhou as research subject, this paper analyzes the relationship between sports exercise and the characteristics of BMI and WHR. The result shows that the BMI and WHR is increasing go with the age, the difference is reducing between the male and female. The BMI and WHR of residents who take exercise and don't take exercise have significant difference; controlling effects of BMI and WHR in those residents who take sports exercise for long time are apparent.

Key words: Physical Fitness; BMI; WHR; Sports Exercise

瑜伽對40-49歲女性體質影響的研究

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Research of Effect of Yoga on the Physical Fitness of 40-49 Years Old Woman

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摘要

目的：觀察瑜伽對 40-49 歲女性身體形態、體成分、心血管系統功能及各項與運動有關的素質指標的影響。方法：於 2005 年 4 月 15 日選擇瀋陽市大宇健身會館辦理年卡的 40-49 歲女性會員 40 人為研究對象。按訓練時間進行分組，新入會的會員 21 人，有半年以上瑜伽持續鍛煉經歷的會員 19 人，在同一條件下對新老會員進行測量研究。瑜伽練習內容包括呼吸調理、體位與呼吸相結合的體位法練習、瑜伽休息放鬆三部分。實驗週期內認真記錄受試者每週的練習的頻率，做好受試者自我主觀體力感覺評價。並對不同練習者跟蹤測試心率，確定練習者的訓練負荷。對所選對象進行訓練前後的身體成分和身體機能，身體形態等項指標的測試，嚴格控制測試的時間、條件，整理測試結果。結果：40-49 歲瑜練習伽半年以上會員組的體重、腰圍、呼吸差、每分鐘最大吸氧量、內臟脂肪量、內臟脂肪面積、去脂肪體重、臺階指數、安靜時血壓，[(58.94±6.23)kg、(77.02±6.92) cm、(5.08±2.19)cm、(34.88±1.55) ml/kg.min、(1.90±0.62) kg、(58.66±20.88) cm、(41.56±3.08) kg、(87.72±13.28)、(102.74±12.40) kpa、(73.26±9.92) kpa] 均顯著高於新會員組[(64.04±7.22) kg、(81.47±6.93) cm、(3.03±0.87) cm、(31.73±5.39) ml/kg.min、(2.24±0.71) kg、(66.16±22.7) cm、(44.28±3.84) kg、(73.60±26.57)、(119.19±15.47) kpa、(83.71±11.92) kpa]差異有顯著意義。**結論**：瑜伽以其獨特的鍛煉方式能夠科學有效的改善該年齡階段女性的身體狀況，經常參加瑜伽練習對該年齡階段女性的體質有積極的影響。

Abstract

Purpose: Inquiry into the yoga to female body in 40-49 years old shape, composition, strenuous efforts tube system function and each items and the influence of the character of relevant sport index sign.Method:A total of 40 women in 40-49 years old was mentioned from DaNing Yoga Club who have been the one-year card memember on the 15 April 2005 in ShenYang.Press training time to proceed to divide 19 people of a member for, new- become member 21 people, having half a year abovely yoga keeping experiencing, under same term proceed the diagraph to the new old member.The yoga practice contents includes the breath adjusts the reason, a for and breath combining together a method practice,yoga break relaxs three part. Experimenting the earnest record inside the period suffers the practice that try the frequency of every week, work well to suffer to try subjective physical strength in ego felling evaluation. And to different practice follow to test the heart rate, certain practice of training burthen.To a body for choosing object proceeding training in front and back composition with body function, the test of body appearance etc. an index sign, strict control time, term of the test sorting test result.Results:Above member of half a year in practice yoga of 40-49 years old set of the weight, waistline, breast girth, every minute biggest breathe the oxygen measures, internal organs the fat measures, internal organs fat area, goes to the fat the weight, step the index number, peaceful hour the blood pressure, the [(58.94 ±6.23) kg,(77.02±6.92) cm,(5.08±2.19) cm,(34.88±1.55)ml/kg.min,(1.90±0.62) kg,(58.66±20.88)cm,(41.56±3.08)kg,(87.72±13.28),(102.74±12.40)kpa,(73.26± 9.92)kpa] all show the higher than new member sets[(64.04±7.22) kg,(81.47±6.93) cm,(3.03±0.87)cm,(31.73±5.39)ml/ kg.min,(2.24±0.71)kg,(66.16±22.7)cm,(44.28 ±3.84) kg,(73.60±26.57),(119.19±15.47)kpa,(83.71±11.92)kpa]the difference shows the meaning.**Conclusion:**Yoga with its special method of exercising can science and effectively of female body in the age's stage in improvement condition, usually practice yoga to the fitness in the age's stage contain positive influence.

廣西20～39歲不同職業的成年人體育鍛煉意識和行為的比較研究

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Guangxi different professional sports consciousness and behavior of the adults aged between 20 ~ 39 Comparative Study

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摘要

研究目的：

通過對廣西 20～39 歲的不同職業人群進行體育鍛煉的意識和行為的調查，更好的瞭解不同職業人群體育鍛煉意識和行為的差異，找出規律，提出相應的對策和處方，為提高廣西人民的體質提供理論依據。

研究方法：

本次調查嚴格按《中國成年人體質監測工作手冊》所規定的方案進行。調查時間為 2005 年 5 月 10 日至 9 月 30 日。本研究主要對問卷中 20～39 歲不同職業人群的體育鍛煉意識和行為方面進行分析，主要包括參加體育鍛煉的目的、障礙和閒暇時間的利用情況，每週鍛煉的時間、次數，鍛煉的項目等，回收問卷後錄入數據經過 SPSS11.5 統計軟體進行統計。

研究結果：

1、大部分職業人群均把減輕壓力、調節情緒作為體育鍛煉的最大目的，其次是防病治病和提高運動能力。農、林、牧、漁、水利業生產人員參加體育鍛煉意識最低。在所有職業中超過 60%的人認為工作和家務太忙是參加鍛煉的主要障礙，農、林、牧、漁、水利業生產人員對體育鍛煉最沒興趣（21.9%），其次是商業服務人員（19.2%），只有 8.4%的國家機關、黨群組織、企業、事業單位負責人和 9.8%的專業技術人員對體育鍛煉沒有興趣，
32.2%的國家機關、黨群組織、企業、事業單位負責人、27.1%專業技術人員和 27.2%的辦事人員認為缺乏場地設施是他們參加體育鍛煉的障礙因素，經濟條件不是主要障礙。

2、在閒暇時間進行體育鍛煉的人群以單位負責人和辦事人員以及生產、運輸設備操作人員及有關人員的比例較高，為 58.7%、55.1%和 44.8%，專業技術人員和商業、服務人員比較低，只有 25.8%和 26.1%，最低是農、林、牧、漁、水利業生產人員（17.9%）。

每週鍛煉的次數以1～2次居多，每次鍛煉的時間60分鐘以下，堅持鍛煉的時間以6個月以下和5年以上居多，鍛煉5年以上比例最多的是國家機關、黨群組織、企業、事業單位負責人（25.2%）和專業技術人員（20.3%），最少的是農、林、牧、漁、水利業生產人員（5.7%）和商業、服務人員（6.9%），鍛煉項目以球類、步行、跑步居多，武術和健身氣功最低。

研究結論：

1、不同的職業體育鍛煉意識的差別較大。文化層次較高的單位負責人、技術人員等參與鍛煉的意識較強，對場地設施的要求也會提高，要加大場館的建設投入，滿足不同層次的需求。農、林、牧、漁、水利業生產人員的體育鍛煉意識最差，要加強農村體育鍛煉的宣傳。

2、體育鍛煉的行為在各職業間有所差別。我們還是要加強宣傳力度，針對不同職業的特點和需求，讓群眾掌握科學的鍛煉方法，形成終身鍛煉的習慣，加大體育社會指導員的培訓，使廣大的人民群眾體育鍛煉的項目更加豐富多彩。

關鍵詞：職業　體育鍛煉　意識　行為

Abstract

Objective: Guangxi different occupational groups of 20 ~ 39 years old, the sense of physical exercise and behavior survey better understanding of the different occupational groups and the awareness of differences in physical training, to identify policies accordingly prescription to provide a theoretical basis for improving the physical condition of the people of Guangxi.

Subject and Methods: The survey in strict accordance with the "Chinese adults Fitness Handbook," the program .The research work in 2005 from May 10 to September 30. The study includes the purposes and Obstacles of participating in physical exercise 、the use of leisure time 、Exercise time 、 exercise frequency and sports etc. The data were verified with SPSS11.5 for Windows.

Results: （1）Most of the largest adults doing exercises was to reduce the pressure regulating emotion. Second is the ability to prevent and cure diseases and improve movement . Agriculture, forestry, animal husbandry and fishery production staff awareness training minimum. More than 60% of all employment in that busy work and home is a major obstacle to participate in physical exercise. Agriculture, forestry, animal husbandry and fishery production staff is not interested in most of the physical training (21.9%). followed by business services (19.2%), the highest interest of the state organs, the relations between the organizations, businesses, institutions

responsible person (8.4%), and professional and technical personnel (9.8%). 32.2% of the state organs, the relations between the organizations, enterprises and institutions responsible person, 27.1% and 27.2% of the professional and technical staff that is hampered by a lack of facilities to participate in the body education training . Economic conditions is not a major obstacle . (2) In leisure time physical exercise leaders and staff to the crowd, as well as production, transport equipment and the personnel to operate a higher proportion of 58.7%,55.1% and 44.8%. Business and professional and technical personnel, the service staff is relatively low, only 25.8% and 26.1%, the lowest of agriculture, forestry, animal husbandry and fishery production (17.9%). 1-2 times per week the number to most of the training time of 60 minutes each. Exercise time to adhere to the following six months and five years of the majority, Physical Exercise for more than five years is the largest proportion of state organs, the relations between the organizations, businesses, institutions responsible person (25.2%), and professional and technical personnel (20.3%), at least in the agricultural, forestry, animal husbandry, fishery production (5.7%) and business services (6.9%). Sports to ball games, walking, jogging mostly, martial arts and fitness Qigong minimum.

Conclusion: (1) The sports consciousness of different occupations adults are very different. Responsible for the higher level of culture, a strong sense of the technical staff involved in training, infrastructure requirements will increase, We should increase input in the construction of venues to meet the needs of different levels. Agriculture, forestry, animal husbandry and fishery production in the worst sense of physical exercise, physical exercise to strengthen publicity. (2) Physical exercise somewhat different adult occupational differences . We still need to step up publicity efforts aimed at a wide variety of characteristics and needs, so the grasp of the scientific exercise, lifelong exercise habits. We should increase social sports instructor training and physical training of the broad masses of people more colorful.

Keywords: Professional: Physical Exercise: consciousness :training

上海幼兒的出生與餵養狀況調查研究

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The survey of newborn status and feeding of young children in Shanghai

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摘要

目的：系統瞭解掌握上海城郊區幼兒營養與健康體質狀況、變化趨勢，為制訂相關的公共健康政策和發展規劃提供可靠的信息和依據；以幫助提高上海市幼兒的體質及健康水平。

方法：採用多年齡段整群隨機抽樣方法，調查問題源于 2005 年國民體質監測中的問卷調查部分。

結果：上海市幼兒的出生體重和身長平均分別為 3365g 和 50.2cm，性別差異顯著(P<0.01)，低出生體重兒和巨大兒出生比例以及早產率分別為 1.9%、6.0%及 10.4%；本次調查的幼兒其 4 個月內採用基本純母乳餵養的占 55.8%，郊區顯著高於城區(P<0.001)。

結論：上海幼兒的生長發育及健康狀況良好，有較好的新生兒保健水平，但新生兒出生後餵養方式仍存在較多的不合理問題，母乳餵養率有降低的趨勢，與需要實現的目標有進一步擴大的差距。

關鍵詞：幼兒；餵養方式；健康狀況；體質監測

Abstract

Objective: The purpose of this study was to evaluate the nutrition and health status of young children in Shanghai, and to report the trends of their growth and development, so as to help improving their health status.

Method: The method of cluster sampling was adopted. The data were obtained from questionnaire of National Physical Fitness Survey in 2005.

Result: The average weight and length of new-born infants reached 3365g and

50.2cm respectively. The percentage of Low birth weight, huge infant and premature were 1.9%、6.0% and 10.4% respectively. The rate of almost exclusive breast-feeding within 4 months was 55.8%.

Conclusion: The status of growth and health of young children in Shanghai was good. It indicated that health care of new-born infants, but the rate of breast-feeding reduced gradually. It should make an effort to improve the probability of almost exclusive breast-feeding in Shanghai.

Key words: young children; feeding pattern; health status; physical fitness survey

大學生體質未達標群體體質與健康現狀及其對策研究

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Research on Countermeasures of the Current Situation of Physical Fitness and Healthy Behavior of College Students who have not reached the Physical Fitness Standard

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摘要

大學生體質未達標群體作為各高校實施《學生體質健康標準》以來，易被忽視而又呈現人數逐年增多、健康狀況低差等特點的一個特殊群體。體質現狀、運動習慣和生活方式是反映未達標群體健康狀況的重要指標。因此，本研究選取北京師範大學 120 名體質健康測試未達標群體為研究對象，應用人體測試法和社會學健康問卷，對 120 名未達標群體體質與健康現狀進行實測和分析，旨在為即將開展的全國億萬學生陽光體育運動（以下簡稱"陽光體育"）提供參考。結果表明：□體質特徵表現為未達標群體的呼吸機能和快速收縮力量較差，男生的肥胖檢出率較高、女生的柔韌性僅達全國平均水平一半；□健康行為特徵為該群體學生自我健身計畫的科學性差，鍛煉時間不足，運動技能掌握單一，早餐進食不規律。對策：在提高未達標群體整體體質與健康水平的基礎上，著重培養其科學自我鍛煉能力。

關鍵詞：體質；未達標群體；體質現狀；健康行為

Abstract

College student body constitution has not reached the standard since the group is put into effect "Health Standards of Student' Constitution" as every colleges and universities, the number easy to be ignored and appear as well increases by year by year, one of low grade of situation characteristic is peculiar group. Constitution current situation, motion habit and life-style are important group situation index report not having reached the standard. Therefore, this research chooses the Beijing Normal University 120 constitution testing not having reached the standard for the group studying a marriage partner ,by the human body applying tests law and the healthy questionnaire of sociology , group constitution and healthy current situation carry out reality on 120 not to have reached the standard measuring sum analysis , aim at being soon open-minded the whole nation hundreds of millions students sunlight athletic sports provides a reference. The result shows: The constitution characteristic shows the pulmonary capacity and lower limbs springing ability range being a group not having reached the standard , adiposity of the boy student inspects up out rates comparatively highly , flexibility of the girl student reaches average national level halves only; the healthy behavioral characteristic is group are lake of scientificalness that oneself body-building plans, take time exercise a bit, being not worth moving a technical ability grasping, breakfast takes food no law. Countermeasure: Have not reached the standard emphasizing the approach fostering whose science ego to take exercise on group overall constitution and the general level of the health basis in rise.

Keywords: constitution; groups who have not reached constitution standard; the current situation of constitution; healthy behavior

2005 年廣西 3~6 歲幼兒身體形態現狀分析

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Analysis of body condition of 3~6-year-old children in Guangxi in the year of 2005

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摘　要

本研究採用文獻數據法、測量法和數理統計法，對 2005 年廣西 3~6 歲幼兒身體形態現狀進行研究。研究結果表明，2005 年廣西 3~6 歲幼兒身體形態的生長發育具有性別和城鄉差異。城鎮男幼兒的身高和胸圍發育的水平較同齡女幼兒好，鄉村男幼兒的人體充實度和密度大於鄉村女幼兒，女幼兒的皮下脂肪厚度大於男幼兒。城鎮幼兒的身體形態狀態好于鄉村幼兒。鄉村幼兒的骨骼發育和人體縱向高度、軀幹的生長較 2000 年廣西同齡同類幼兒好，但總體上低於 2000 年全國水平。城鎮幼兒骨骼發育和人體縱向高度、以及城鎮男幼兒軀幹的生長發育水平好於 2000 年全國水平。幼兒身體形態各指標中逐年增長速度最快的為體重，身高次之，坐高第三，胸圍增長的速度最慢。

關鍵詞：身高，體重，胸圍，坐高、皮褶

Abstract

We did research on body condition of 3~6-year-old children in Guangxi in 2005 by literature document, measurement and mathematical statics. Results show that there are gender and urban-rural differences in the growth and development of 3~6-year-old children in Guangxi in the year of 2005. Height and chest circumference of urban boys are better than that of girls in the same age. Body repletion and density of rural boys are higher than that of rural girls. Subcutaneous fat of girls are thicker than boys. Body condition of urban children is better than rural ones. Height, skeleton development and truncal growth of rural children are better than that of children in the same condition in 2000, but in general worse than nation level of 2000. Height and skeleton development of urban children and truncal growth of urban boys are better than nation level of 2000. Among the body index, weight increase fastest, height second and sitting heigh third. Chest circumference increases the lowest.

Keywords:Height：weight; chest circumference; sitting height; skin fold

成都市城鄉幼兒（3~6 歲）體質狀況分析比較

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Chengdu city and countryside baby (3~6 year old) physique condition analysis comparison

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摘 要

幼兒階段是身體發育的快速時期，體質的好壞直接影響成年後的體質狀況。通過對成都市城鄉幼兒（3~6 歲）形態、機能、素質抽樣測試結果進行分析比較，瞭解掌握其體質狀況及變化規律。針對目前少年兒童體質狀況的城鄉差異提出科學合理的建議和意見。

目的：通過抽樣測試，獲得了全市幼兒國民體質狀況的數據資料，為系統、全面研究成都市幼兒國民體質變化規律，瞭解掌握其體質狀況及變化規律。針對目前少年兒童體質狀況的城鄉差異提出科學合理的建議和意見。

方法：測試指標數據的比較採用國家體育總局公佈《2005 年國民體質監測公報》和四川省體育局公佈的《2005 年國民體質監測公報》進行分析比較。

結果：我市幼兒體質狀況好于全國水平。其中形態類中身高、坐高、體重、胸圍、皮褶厚度都低於全國平均水平；機能類安靜脈搏高於全國水平；素質類坐位體前屈、立定跳遠低於全國平均水平，10 米折返跑、網球擲遠、雙腳連續跳、走平衡木高於全國平均水平。

結論：我市幼兒體質綜合比較優於全國平均水平，但由於遺傳因素、自然環境、生活方式等方面的原因，形態上從小就比我國其他地區偏矮、偏瘦。

關鍵詞：幼兒； 體質； 差異 ； 比較

Abstract

The children stage is the bodily growth fast time, the physique quality direct influence grown-up after physique condition. Through to the Chengdu city and countryside

children (3~6 year old) the shape, the function, the quality sampling test result carries on the analysis comparison, understood grasps its physique condition and the change rule. Puts forward the science reasonable proposal and the opinion in view of at present youth physique condition city and countryside difference.

Goal: Through the sampling test, has obtained the whole city baby national physique condition data material, for systematic, comprehensively studies the Chengdu baby national physique change rule, understood grasps its physique condition and the change rule. Puts forward the science reasonable proposal and the opinion in view of at present youth physique condition city and countryside difference.

Method: The test target data comparison uses National Sports Bureau to announce "in 2005 National Physique Monitor Bulletin" "in 2005 National Physique Monitor Bulletin" to carry on the analysis comparison with the Sichuan sports bureau announcement.

Finally: My city baby physique condition good in national level. In shape class height, the seat high, the body weight, the chest measurement, skin pleat thickness all is lower than the national average level; The function class peaceful pulse is higher than the national level; The quality class seat body anteflexion, the standing broad jump is lower than the national average level, 10 meters turn back run, the tennis throw, the both feet far jump continuously, walk the balance beam to be higher than the national average level.

Conclusion: My city baby physique synthesis comparison surpasses the national average level, but because aspect and so on heredity factor, natural environment, life style reasons, in the shape on are since childhood shorter and thinly than our country other areas.

Keywords: Children; Physique; Difference Comparison

2005 年孝感市國民體質監測結果研究

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湖北省孝感市文化體育局

Research on monitoring result of body constitution of Xiaogan citizen in 2005

摘要

1、研究目的

孝感市第二次國民體質監測研究結果旨在對我市居民健康狀況進行綜合評估，建立和完善國民體質數據，為今後針對性地開展全民健身工作提供科學依據，為構建和諧孝感服務。

2、研究方法

(1)體質監測方法與問卷調查填寫遵循《2005 年國民體質監測工作手冊》要求進行。以國家體育總局出版的《國民體質測定標準手冊》為體質評定標準。

(2)監測器材使用國家體育總局指定的器材，並於測試前進行校正。

(3)測試經培訓合格持證上崗。

(4)所有監測資料當天進行嚴格審核，對可疑資料予以剔除。

(5)數據處理採用國民體質監測專用數據庫軟件和評分統計軟件進行。

(6)分析方法採用數理統計、歸納、類比等研究方法進行。

3、研究結果

本次監測對象為隨機抽樣，符合統計學、概率論的要求，具有廣泛的代表性，檢測數據和問卷調查所反映的國民體質及生活特徵具有真實性、可靠性、客觀性。其研究結果對孝感市國民體質的綜合評估，具有科學的依據。

依據國家體育總局頒發的《國民體質測定標準手冊》評定標準，孝感市國民體質監測評定，合格率人數占測試總人數的 90% ，其中優秀率為 13.4%，良好率為 28.3%，合格率為 48.3%，尚有 10%的不合格率。

4.結論

（1）本次國民體質監測對孝感市7個縣、市、區及市直相關單位2794人進行體質測試，抽樣具有代表性，數據可靠，統計計算的各項指標可作為孝感市今後開展國民體質監測和研究的依據。

（2）本次國民體質監測結果與上次國民體質監測結果相比，總體合格率提高了7.7%。

（3）城市幼兒優秀率達7.8%。農村幼兒組優秀率僅達0.6% ，之間的差異較大，應引起有關部門的高度重視，加大對農村幼兒的各方面的投入，引導農村幼兒經常性開展，有利兒童身體發育、成長的科學健身方法。

(4)從本次監測中反映出，我市成年人綜合指標相對穩定，不合格率為5.5%；老年人合格率平均高於成年人，從問卷調查不參加鍛煉人數占調查人數的45.3%，兩項指標足以證明，全民健身活動中兩頭熱中間冷的現象十分突出。今後孝感市開展全民健身工作的主要重點對象仍然是職工體育。

中文關鍵詞：國民體質、監測結果、達成率、體育鍛煉

湖南省邵陽市成年、老年人體育鍛煉現狀調查

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The Current Survey of Physical Training among the Adults and the Elderly in Shaoyang City of Hunan

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1·2·3·The whole people builds body guiding centre in Shaoyang City of Hunan Province，422000

摘要

通過問卷調查，對邵陽市成年、老年人群參加體育鍛煉目的、內容、興趣、時間、次數、場地等有了初步的瞭解，為實施全民健身計畫和政府決策提供科學依據。

關鍵詞：體育鍛煉；現狀；調查

Abstract

This article has a preliminary knowledge of the contents，interest，time，frequency，places，etc. that the adults and the elderly in Shaoyang city participate in physical training by a questioning investigation, which provides scientific basis for carrying out the plan of the whole people taking exercise and the government making policy.

Key words：Physical training，current situation，survey

2005年青島市國民體質現狀分析

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The abstract of the analytic report forCivil constitution's status quo of Qingdao, 2005

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摘 要

研究目的：

國民體質是社會生產力的組成因素，是國家綜合國力的具體體現，也是社會文明和進步的重要標誌。為了更好地瞭解青島市國民體質狀況，本研究利用2005年青島市國民體質監測所獲得的基本數據，進行分析國民體質狀況變化的特點、規律、趨勢及影響國民體質的相關因素，為青島市國民體質的改善和健康水平的提高提供參考依據，為政府和主管部門決策提供科學的理論依據。

研究方法：

本研究採用文獻數據法、問卷調查法、體質測試法和數理統計法對青島市國民體質狀況進行分析研究。

研究結果：

1、幼兒體質現狀：幼兒的身體形態隨年齡的增長而增長，城鎮幼兒各項指標的均值大於鄉村幼兒。幼兒心率隨年齡增長而緩慢降低，但下降幅度較大。幼兒上下肢和腰腹肌力量均隨年齡增長而增長。幼兒速度和靈敏素質均隨年齡的增長而同步提高，各年齡組男幼兒均優於女幼兒，城鎮幼兒好于鄉村幼兒。男幼兒的柔韌性隨年齡的增長而逐漸下降，女幼兒的柔韌性比較穩定，女幼兒在各年齡組均優於男幼兒。平衡能力表現為隨年齡的增長完成時間逐漸縮短，並且城鎮幼

兒優於鄉村幼兒。

2、成年人和老年人體質現狀：身體形態指標中，男女除身高隨年齡的增長而降低外，其他指標均隨年齡的增長而增大。各項機能指標隨年齡增長都有明顯改變，除臺階試驗指數外，各年齡段機能指標均為男性高於女性。在身體素質方面，成年甲組的握力，男女均隨年齡的增長而增長。同年齡段的男性好於女性。成年人和老年人速度和靈敏素質的特點是隨年齡的增長呈下降趨勢。柔韌性素質隨年齡增長而下降，女性好於男性。

研究結論：

1、青島市幼兒體質特點：幼兒的身體形態隨年齡的增長而增長，心率隨年齡增長而緩慢降低；上、下肢和腰腹肌力量均隨年齡增長而持續增長，男幼兒的柔韌性隨年齡的增長而逐漸下降，女幼兒的柔韌性比較穩定，平衡能力表現為隨年齡的增長完成時間逐漸縮短。

2、青島市成年人和老年人體質特點：身體形態指標中，男女除身高隨年齡的增長而降低外，其他指標均隨年齡的增長而增大。各項機能指標隨年齡增長都有明顯改變，成年甲組的握力，男女均隨年齡的增長而增長。同年齡段的男性好於女性。成年人和老年人速度和靈敏素質的特點是隨年齡的增長呈下降趨勢。柔韌性素質隨年齡增長而下降，女性好於男性。

關鍵詞：青島市，體質，幼兒，成年人，老年人

Abstract

The aim of the research：

The civil constitution is the component factor of social productivity, which embodies the country's aggregate national strength and symbolled the social civilization and progress. In order to inquire into the situation of Qingdao's civil constitution, we have analyzed the characteristic, regular, tendency of civil constitution's changing situation and the relevant factor influenced the civil constitution, with the basic data from civil constitution's inspection and measurement in Qingdao, 2005. The research offers the referenced bases to improve Qingdao's civil constitution and keep citizen's healthy, but also support the government bodies to make policies.

The method of the research:

The research adopts the approach of literature and data, questionnaire, constitution's measurement, symbolic statistic to analyze the status quo of Qingdao's civil constitution.

The outcome of the research:

1. The actuality of infants' constitution: The infant's body physique changes with the rise of the age. The average numerical value of the infants' every target in cities and towns is higher than those in countryside. During the period of infant's growing up, the frequency of heart's beat decreases with a big margin; the strength of arms, legs, waist and abdomen's muscle enhances; the quality of speed and agility increases step by step, which of boys is better than girls', and of the infants of the cities and towns is better than countryside's in every age group. The boy's flexibility comes down while the girl's is stable, which of boys is worse than girls' in every age group. Cultivating the balance ability spends less time when the time of life increases. The balance ability of cities and towns' infants is better than countryside's.

2. The actuality of adult and senior citizens' constitution: Almost every target of both male and female's body configuration goes up along with the increase of the age except the stature which comes down. Each index of organic function alters obviously year after year, which of male is better than female's in every age group, gotten rid of the step testing index. In the aspect of physical quality, the gripping power of 20--39 years' adult enhances with the rise of age, which of male is better than female's in the same age group. The adult and senior citizens' quality of speed and agility declines while the time of life increases, the same as the flexibility which of male is worse than female's.

The conclusion of the research:

1. The characteristic of infants' constitution of Qingdao: During the period of infants' growing up, their figures and physiques take changes; the frequency of heart's beat decreases with a big margin; the strength of arms, legs, waist and abdomen's muscle enhances; the boy's flexibility comes down while the girl's is stable; cultivating the balance ability spends less time when the time of life increases.

2. The characteristic of adult and senior citizens' constitution of Qingdao: Almost every target of both male and female's body configuration goes up along with the increase of the age except the stature which comes down. Each index of organic function alters obviously. The gripping power of the first age group's adult (both male and female) enhances with the rise of age, which of male is better than female's in the same age group. The adult and senior citizens' quality of speed and agility declines while the time of life increases, the same as the flexibility which of male is worse than female's.

Key words: Qingdao, constitution, infant, adult, senior citizen

肥胖程度對幼兒身體素質影響的研究

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Investigation and Analysis the Influence of Obesity on Physical Stamina Level of Children

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摘要

目的 研究肥胖程度對幼兒身體素質的影響，為預防幼兒肥胖和提高幼兒身體素質提供依據。**方法** 2005 年測量山東省 17 地市 3~6 歲男女幼兒 10897 名幼兒的身體素質，分析體重與立定跳遠、網球擲遠、坐位體前屈、10 米折返跑、走平衡木和雙腳連續跳指標測試成績的關係。**結果** 除網球擲遠男、女幼兒成績沒有表現為隨肥胖程度的增加而降低外，其他 5 個項目的男、女均表現出隨著體重等級的升高而成績逐漸下降的特點。 **結論** 肥胖幼兒身體素質較差，應通過加強鍛煉、合理飲食、糾正不良生活方式等改進身體素質。

關鍵詞： 肥胖；幼兒；身體素質

Abstract

Objective To investigate the influence of obesity on physical stamina among children, and to provide evidence for preventing obesity so as to improve their physical constitution. **Methods** In 2005 the physical stamina of 10897 children aged 3~6 in 17 cities of Shandong province were measured. The relationship between body weight and the standing long jump, tennis throwing, body bending front when sitting, the sense of balance and two foot jumping continuously were analyzed. **Results** Except the tennis throwing, others 5 indexes showed the trend that the children's physical stamina decreased with their ages increasing. **Conclusion** Obese students have worse physical stamina, which should be improved by taking balance diet, correcting the unhealthy life style, and taking part in the physical activity.

Key words: Obesity; Physical stamina; Sport; Students

21世紀初期我國城市社區體育重點發展環節之研究

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Research 21st century initial period our country city community sports prioritize link

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摘要

1 研究目的

城市社區體育是體育健身的一種形式，其產生和發展與社區發展緊密聯繫。在2008年奧運會日益臨近的今天，如何發展社區體育，是應當思考的、有著現實意義的問題。在此大背景之下，本文通過對我國城市社區體育發展過程當中幾個重點環節進行探討，提出一些看法和觀點，旨在為有關決策提供相應的參考。

2 研究方法

2.1 文獻數據法：根據本課題的需要查閱相關的文獻，借鑒和吸收這些成果的精華，以求為本研究提供可靠參考。

2.2 訪談法：走訪相關專家與行業人士，力求瞭解目前城市社區體育的現狀，並探討其欠完滿之處。為本課題的研究拓展了思路。

2.3 邏輯分析法：在研究中對收集到的數據進行分析比較，進行分析研究，並提出合理化建議。

3 研究結果

本文主要從城市社區體育人力資源、城市社區體育文化氛圍、城市社區體育參與人口結構以及城市社區體育硬體設施等四個方面來探討目前我國城市社區體育幾個重點發展環節。認為對社區體育相關專業的認識不足、社區資金短缺和社區居民維權意識不高是限制我國城市社區體育人力資源發展的難題之一；城市社區體育文化氛圍營造不利和現代人緊張的工作節奏是造成社區內鍛煉人口結構不合理的主要原因；另外，城市社區體育健身器材和場地數量不足、以及健身器材的安全性等問題也是我國城市社區體育發展的阻力因素。

4 結論與建議

結論認為：1、城市社區體育人力資源不足，很大程度是因為人們對社會體育等相關專業認識不足，致使專業人才沒有"學以致用"；2、城市社區體育文化

氛圍營造不足，參加運動健身的人口結構較為單一，影響了社區體育發展；3、城市社區體育健身器材數量不足、針對性單一和安全性不高等問題，也在一定程度上也影響了城市社區體育的發展。

建議認為：1、應當加大對社會體育專業的宣傳，增強民眾對該專業的認識；2、有關部門應當督促社區管理部門重視對體育活動的開展，並相應配備社區體育指導與維護人員；3、結合與城市社區體育相關的環節，可以全面、立體、多角度發展城市社區體育事業；4、社區應當按器材的適用人群進行分類，並派專人進行相關指導，在居民實現自己健身目的的同時也保證了他們的人身安全；5、社區可以考慮借助高校的運動器材、場地發展社區體育，另外營造"立體式"健身環境，也是改善社區體育的一個有益思路。

關鍵詞：城市；社區；體育

Abstract

1 research goal

The city community sports are the sports fitness one form, it produces with the development and the community develops the close relation. Today the Olympic Games approach day by day which in 2008, how develops the community sports, is must ponder, have the practical significance question. Under this big background, this article through several key links carries on the discussion to our country city community sports developing process in the middle of, proposed some views and the viewpoint, are for the purpose of for the related decision-making providing the corresponding reference.

2 research techniques

2.1 Literature material law: Needs to consult the related literature according to this topic, profits from and absorbs these achievements the essence, in order to provides the reliable reference for this research.

2.2 Interview law: Visits the correlation expert and the profession public figure, makes every effort to understand the present city community sports the present situation, and discusses it to owe the perfect place. Has developed the mentality for this topic research.

2.3 Logical analytic method: To the material which collects carries on the analysis comparison in the research, conducts the analysis research, and proposes the rationalization proposal.

3 findings

This article mainly from the city community sports human resources, the city community sports culture atmosphere, the city community sports participation population structure as well as the city community sports hardware facility and so on four aspects discusses the present our country city community sports several prioritize links. Thought to the community sports correlation specialized understanding insufficiency, the community fund short and community inhabitant Uygur power consciousness not high limits one of our country city community sports human resources development difficult problems; City community sports culture atmosphere building disadvantageous and modern people's intense work rhythm is creates in the community to exercise the population structure unreasonable reason; Moreover, the city community sports fitness equipment and the location quantity insufficiency, as well as fitness equipment questions and so on security also are our country city community sports development resistance factors.

4 conclusions and suggestion

This article conclusion thought that,1st, the city community sports human resources are insufficient, the very great degree is because the people to correlation specialized understanding insufficiencies and so on social sports, the cause professional do not have "to study for the purpose of application"; 2nd, the city community sports culture atmosphere building insufficiency, the participation movement fitness population structure was unitary, has affected the community sports development; 3rd, city community sports fitness equipment quantity insufficiency, pointed sole and secure not higher question, also has to a certain extent affected the city community sports development.

This article suggestion thought that,1st, must enlarge to the social sports specialized propaganda, strengthens the populace to this specialized understanding; 2nd, the department concerned must supervise the community control section to take the sports development, and corresponding equipment community sports instruction and attendant; 3rd, the union and the city community sports correlation link, may comprehensive, three-dimensional, the multiple perspectives develop the city community sports enterprise; 4th, the community must carry on the classification according to the equipment adaptation crowd, and sends the specialist to carry on the correlation instruction, realized while the inhabitant oneself fitness goal also to guarantee their personal safety; 5th, the community may consider with the aid of university's movement equipment, the location development community sports, moreover construction "stereo metric formula" fitness environment, also is improves the community sports a beneficial mentality.

Key word: City; Community; Sports

國民體質監測中健康促進優先干預項目研究

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Research on Developing Priority and Program Options of Health Promotion in the National Constitution Test

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摘要

目的 篩選出不同目標人群體質健康教育和健康促進優先干預項目，降低和控制影響國民體質健康的危險因素，構建國民體質研究與健康促進相結合的工作平臺，促進全民健身計畫與健康促進計畫的有機結合，提高國民體質健康水平，為政府的健康促進干預決策提供可靠的理論依據。**方法** 採用 Logistic Regression 分析法，對影響不同人群體質健康水平的主要行為因素進行分析，篩選出不同目標人群健康促進優先干預項目。**結果** 不同人群體質健康水平的影響因素差別很大，農民、城鎮體力勞動者、城鎮非體力勞動者的最重要的影響因素分別為體育鍛煉、工作時間、工作時間和坐位活動；吸煙人群、鍛煉人群的影響因素差別也較大。**結論** 針對這三種人群優先干預的項目分別為加強體育鍛煉、控制工作時間、調整工作時間和減少坐位活動，有針對性的提高目標人群的體質健康水平。

關鍵詞：體質監測　健康促進　Logistic 回歸　優先干預項目

Abstract

Objective Screen the priority and program options of health education and health promotion in different objective populations, play down the hazard factors, establish the platform of the combination of national constitution research and health promotion, and so on. Advance the level of national health, and provide reliable theory basis of health promotion intervention decision-making for government. **Methods** With the method of Logistic regression, find out the main factors of different populations, and develop priority and program options. **Results** Different population factors are very different. The influence factors of farmer in the country,

physical force workers and non-physical force worker in the towns, are such as physical training, working time, working time and keeping sitting activities, respectively. Smoking and physical training populations also exists great difference in the hazard factors. **Conclusion** Aiming at the three populations, we should take some measures, such as strengthening physical training, adjusting working time, reducing the sitting activities, and so on. At last, achieve the level of national constitution health.

Key words: constitution test, health promotion, Logistic regression, priority and program options

長沙市高校高級知識份子健康狀況的研究

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The Research of the senior Intellectuals' Health Satuation for Colleges and Universisties of Changsha City

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摘要

通過對長沙市高校高級知識份子進行健康檢查和問卷調查研究分析，調查結果不容樂觀，長沙市高校高級知識份子有不同程度的症狀或病變。主要體現在：多數高級知識份子具有多種職業病；超重情況比較嚴重；各系統無患病情況的只有 12.1%。在患疾病種類上，以呼吸、心血管、消化和運動系統為主；影響長沙市高校高級知識份子健康的因素主要是生活方式（飲食無規律；睡眠時間不足；缺乏科學地進行體育鍛煉；男知識份子不良習慣；）、工作環境、工作壓力、人際關係等，因此，建議有關單位和部門積極關注知識份子的身心健康.關注他們的工作和生活，把提高知識份子的健康水平納入工作日程，高校體育俱樂部要全面指定出符合其需要的、適合其特點的、行之有效的服務體系。

關鍵詞：長沙市；高校高級知識份子；健康狀況

Abstract

Analysis , result do not allow an optimism , the Chang Sha City colleges and universities senior intellectual has the symptom or lesion to varying degrees by the fact that the senior intellectual carries out the check-up and questionnaire investigation and study on Chang Sha City colleges and universities. Embody in mainly: Major senior intellectuals have the various occupational disease; Superheavy condition is comparatively grave; Every system has no diseasedness condition only having 12.1%. On trouble disease kind, give first place to the system breathing , cardiovascular , digesting and moving; Affecting the healthy factor of Chang Sha City

colleges and universities senior intellectual is that life-style (food and drink has no law mainly; The length of one's sleep is insufficient; Be short of the science field carrying out physical training; Bad male intellectual habit); Work environment , actuating pressure , human relations etc, The body and mind therefore, suggesting institution concerned and the branch to show solicitude for an intellectual actively is healthy. Show solicitude for their job and grow words, general level of the health brings to improving an intellectual's into programme of work , the colleges and universities athletic club needs to be appointed as out all round according with whose need , be suitable to whose characteristic's , effective service system.

Key words: Changsha city; senior intellectual in colleges and Universisties; health statuation

天津市成年人體質達標狀況的動態分析

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Dynamic analysis the situation of adult reaching the physique standard in Tianjin municipality

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摘要

1 前言

本研究依據《國民體質測定標準》，對天津市第二次國民體質監測獲得的成年人的基本數據進行評定，並通過與全國平均水平、與2000年天津市成年人監測數據評定結果的橫向對比和動態觀察，進一步揭示天津市成年人2000—2005年以來體質狀況的變化規律。

2 研究對象和方法

研究對象為2005年天津市國民體質監測中20—59歲成年人，每5歲一個年齡段，共分成8個年齡段，按性別、工作種類（農民、城市體力勞動者、城市非體力勞動者）分成6類樣本，總計48組。

對2000年和2005年兩次監測結果綜合評定後進行對比分析；對2005年天津市綜合評定結果與全國體質狀況進行對比分析。

測試的結果採用國家體育總局指定的"國民體質測定標準電腦應用系統"綜合評定，

3 結果與分析

3.1 天津市成年人體質達標總體狀況

2005年天津市成年人體質總體達成率為87.7%，高於全國平均水平0.9個百分點。成年男子體質達成率為90.4%，高於成年女子體質達成率5.3個百分點。

與2000年相比，達成率增加了17.7個百分點， 2005年天津市成年人體質

達成率較2000年有顯著提高。

3.2 天津市成年人體質達標年齡特徵

2005年天津市20～59歲成年人各年齡段體質達成率隨年齡的增加呈上升趨勢，其中55～59歲最高，為92.7%，25～29歲最低，為78.5%。

3.3 天津市成年人體質達標工作種類特徵

天津市城市非體力勞動者體質達成率最高91.5%，分別高於城市體力勞動者和農民2.2個百分點和9.0個百分點。

天津市2005年不同工作種類成年人相比2000年體質達成率均有明顯提高，其中城市非體力勞動者提高幅度最大。

4 結論

4.1 2005年天津市第二次國民體質監測成年人總體達成率為87.7%，高於全國平均水平，

4.2 與2000年相比，2005年天津市成年人體質總體達成率提高了17.7個百分點。

4.3 2005年天津市成年男子體質達成率高於女子，差異顯著，且體質達成率隨年齡增長呈現同步增長趨勢。

4.4 天津市成年人體質達成率表現出顯著的城鄉差異，鄉村人群的體質達成率低於城鎮人群。不同工作種類體質達成率比較，城市非體力勞動者>城市體力勞動者>農民。

關鍵詞：天津市 體質監測 成年人 達成率

Abstract

1 Foreword

According to the standard of national physical fitness testing , this research evaluate the data from the second national physical fitness surveillance in Tianjin , meanwhile dynamic observe and horizon compare it to the average level and the monitoring data of the adult in Tianjin 2000 , which finally reveals the changing rule of adults in Tianjin from 2000 to 2005 .

2. The research objection and measure

The object of the research is the adult aging from 20 to 59 in the national physique monitor in Tianjin. They are divided into 48 groups, which are 8 age segments in every-5- year and 6 sample groups in terms of sex distinction and vacation (farmer,

urban manual worker, and urban mental labor)

Compare these findings of national physique monitor in 2000 and 2005;The findings are comprehensively evaluated by computer application system of the National Physical Fitness Surveillance which is appointed by the National Sports Bureau

3 Finding and the analysis

3.1 The general situation of reaching physique standard in adult Tianjin people

In 2005 the general reaching physique standard rate of the adult is 87.7%, higher than the national average rate by 0.9%. The rate of female adult is 90.4%, higher than that of the female by 5.3%

3.2 The age feature of the adult who reach the physique standard

In 2005, among the adult people aging from the 20 to 59,the rate of reaching standard increases with the age ,while the most obvious in the group of 55-59, 92.7%,and the most unobvious is the age group of 25-29,78.5%

3.3 The vacation feature of adult people reaching the physique standard in Tianjin

In Tanjin, The rate of reaching physique standard is the highest, 91.5% among the urban non-manual labor, 2.2% higher than urban manual labor and 9.0%highter than that of the farmer

4. Conclusion

4.1 According to the data from the second National Physical Fitness Surveillance in Tianjin in2005, the general rate of the adult reaching the physique standard is 87.7%, higher than the national lever.

4.2 Comaring with the data in 2000, the general rate of the adult reaching the physique standard has increased 17.7%.

4.3 From the data in 2005, the rate of the male reaching the physique standard is higher than that of female .And sex distinction is so obvious, although both groups share the same tendency that the rate is increasing with the age.

4.4 In the terms of reaching physique standard rate ,distinction is much obvious between the urban and the rural group and the rate of rural group is lower than the urban group .In the terms of vacation ,the rate is urban mental labor > urban manual labor > farmer.

Key words: Tianjin ;the National Physical Fitness Surveillance; the rate of reaching the standard

河源市不同鍛煉水平人群的體質現狀及其相關研究

邱　遠

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Research on correlation between physical fitness and level of sports exercise of adult of Heyuan area

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摘要

基於對國民群體的體質狀況與體育鍛煉行為之間的關係的研究目前的報導尚不多見的事實。為了進一步瞭解河源市國民參加體育鍛煉的基本情況和體質之間的關係，本文利用 2005 年河源市國民體質監測的詢問調查數據以及現場體質測試數據，就河源市不鍛煉、偶爾鍛煉和經常鍛煉三組人群的體質狀況與體育鍛煉行為之間的關係進行較為深入的探討，得出了相關的結論。

(1) 三組不同鍛煉水平對體質指標的影響是顯著的：經常鍛煉組人群肺功能和心血管系統功能明顯好於不鍛煉組，其肺活量、肺活量/體重指數明顯高於不鍛煉組，偶爾鍛煉組肺活量也顯著高於不鍛煉組，臺階實驗參數在各年齡段三組臺階指數的變化不規律，偶爾鍛煉組和經常鍛煉組與不鍛煉組的組間的臺階指數均存在顯著性差異，經常鍛煉組與偶爾鍛煉組的組間差異不顯著，這一點還需作進一步的探討。

(2) 體育鍛煉對於增加身體肌肉含量、改善體脂分佈以及預防心血管系統疾病具有十分重要的作用。科學的體育鍛煉可以維持和改善身體中各種組織的比例，從而延緩機體內各種組織、器官功能下降的速度，達到增強體質的目的。經常鍛煉組和偶爾鍛煉組人群身體充實程度要好於不鍛煉組人群，其在克托萊指數和 BMI 明顯高於不鍛煉組。腰臀比在三個鍛煉組中的變化沒有明顯的規律性，但是，經常鍛煉組肥胖人數比例和患病危險性都明顯低於不鍛煉組。經常鍛煉組和偶爾鍛煉組瘦體重明顯高於不鍛煉組，同理，體脂百分率和體脂量卻顯著低於不鍛煉組，瘦體重的變化沒有顯示出明顯的規律。

(3) 經常參加體育鍛煉對於保持或延緩身體柔韌素質和平衡能力有積極的作用，還能效地改善或延緩身體素質下降的趨勢。經常參加體育鍛煉能有效地提高人體肌肉力量、爆發力和肌肉耐力，改善身體柔韌素質和增強機體的平衡能力，同樣，由於肌肉力量的增強，也使神經系統和運動系統之間的協調能力得到明顯的提高。

(4) 從研究結果看，河源市成年人參加體育鍛煉的意識還需要進一步加強和提高。開闊因地制宜的健身路徑，特別是在城鎮有針對性地規劃和建設一定素量的登山健身路徑，以滿足成年人的鍛煉需要，是我市政府部門和體育部門工作的新的生長點。此外，科學地進行體育鍛煉以及採用有效的手段來增強國民體質和防病治病，從而提高國民健康水平是未來一個時期推行全民健身運動的重要工作。

Abstract

Based on the infrequent fact in connection between the action of sports exercise and physical fitness. In order to understand connection between basal things of sports exercise and physical fitness with Heyuan country, this paper deeply study their connection among the team of no sports exercise, unmeant's and frequently's by using the data of 2005 National monitor of Heyuan area, then, gains some conclusions.

2005 年甘肅省 3-6 歲幼兒體質狀況研究報告摘要

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Study on the constitution status of three to six years old infants in Gansu province in 2005

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摘要

研究目的"中國學生體質調查：胖而無力 危及國家競爭力""青少年生活習慣堪憂 運動時間普遍減少""營養好了，身體素質差了" 這是中國學生，特別是城市學生面臨的重要難題。學生體質存在的問題看似影響的是個體，實則關係到一個國家、一個民族的整體素質。兒童青少年的基礎是幼兒時期，生長發育是一個連續的過程，形成不同的快慢階段，各個階段又是相互影響、環環緊扣的，任何一個階段的發育受到障礙，都會對後一階段產生不良的影響，因此對於幼兒階段的體質狀況的研究顯得尤為緊迫。為瞭解甘肅省 3－6 歲幼兒體質現狀，探討其發展和變化的規律，為相關政府決策部門提供依據。根據《中華人民共和國體育法》、《全民健身計畫綱要》和《國民體質監測工作規定》，國家決定於 2005 年開展第二次國民體質監測工作，對甘肅省 3-6 歲幼兒體質進行了監測，並對所獲數據進行了分析。

研究方法問卷調查、數據處理和查閱數據的方法。

研究結果甘肅省 3-6 歲幼兒身體形態各項指標均隨年齡的增長而遞增，說明我省幼兒的生長發育符合兒童少年的生長發育基本規律。在 4-5 歲間發育最快，表明在此年齡段幼兒發育是一個高峰。較 5 年前相比，身高、體重因生活水平的不斷提高而增加。但機能指標有所下降。素質指標：除柔軟性女好於男以外，其他各項指標均為男好於女；鄉村幼兒上肢力量、平衡能力和男童柔韌性好於城市，女童柔韌性城市好於鄉村。在下肢力量、平衡能力和動作協調性方面男女幼兒比年前有明顯提高，但在上肢力量和柔韌性方面有所下降。

問卷調查：甘肅省 3-6 歲幼兒出生時身長、體重較 2000 年有所增長，城市女童高於鄉村。

我省 3-6 歲幼兒自出生以後的餵養方式和生活習慣符合科學餵養基本原則。業餘活動所選項目健康、合理。

達成率：較 2000 年達到優秀、良好的人數大幅提高，未合格人數下降。

主要結論形態指標：身高、體重、胸圍指標男童大於女童，城市女童高於鄉村，4-5 歲段增長幅度最大，較 5 年前相比身高、體重有所增長。
機能指標：心臟功能有減弱的趨勢。
素質指標：鄉村優於城市，有關下肢力量方面的各個指標較 5 年前有提高。
科學健康的生活方式應從幼兒時期培養、形成，家長是孩子的第一個老師，運動、營養、生活方式具體到睡眠、膳食結構、活動量、日照時間及各種維生素的補充都關係到幼兒的身心健康，如何合理有效的安排孩子的日常生活，需要每位元家長高度關注，更需要幼兒教師的認真、敬業精神，

關鍵詞： 幼兒 體質 監測 問卷

Abstract

According to 《Law of the Peoples Republic of China on Physical Culture and Sports》,《Outline of the nationwide body-building plan》and《Country constitution inspection work regulation》, Our country decided to develop country constitution inspection for second time. This paper inspected the constitution of three to six years old infants in Gansu Province using measures of questionnaire investigation, data processing and consulting information and these data were analyzed sufficiently, We hope that this research can offer theory base for relative government decision-making. The research results indicated that the body configuration indexes increased by degrees along with the increase of age for infants of three to six years old in Gansu province; the growth of infants was most rapid during four to five years old; comparing to five years ago, stature and avoirdupois had increased following the improvement of standard of living, but the enginery indexes had declined. For the diathesis indexes, boys were all better than girls except plasticity; the upper limbs strength, balance capability and flexility of boys in country were better than in city, the flexility of girls was better in city; the lower limbs strength, balance capability and action harmony of infants had improved evidently comparing to five years ago, but upper limbs strength and flexility had declined. The natal height and weight of three to six years old infants had increased comparing to 2000 year and they were higher for girls in city than in country; the feed fashion and living habit acted in accord with the basic principle of science feed; the activities in spare time were healthy and rational; the number of people who obtained excellence and nice had increased largely comparing to 2000 year, the unqualified people had declined.

Keywords: infant; constitution; inspection; questionnaire

對北京市體育局系統職工（20~59 歲）體質狀況的初步探討

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An Initial Study on the Physical Constitution of Staff Members in Beijing Municipal Bureau of Sports (20 to 59 years old)

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摘要

1 研究目的

北京市體育局系統是北京體育事業的策劃者、管理者和實施者，這一特殊人群的體質狀況值得我們關注。本研究的目的在於，通過體質測定和相關問卷調查，瞭解市體育局系統職工的體質狀況並做出客觀評價，針對其體質狀況的成因進行分析和探討，以期為改善市體育局系統職工的體質狀況提供現實依據，並為今後北京全面開展分行業體質測試提供經驗和方法參考。

2 研究對象與方法

2.1 研究對象：以市體育局系統 20~59 歲年齡段的在職職工為研究對象，有效數據 673 人，其中男 398 人、女 275 人。

2.2 研究方法：文獻數據法、問卷調查法、數理統計分析

3 結果

體質測定總評為"優秀"的占職工總人數的 41.9%；"良好"的占職工總人數的 26.2%；"合格"占職工總人數的 23.9%；"不合格"占職工總人數的 8.0%。

男性體質總評優良率為 61.0%，不合格率為 11.1%；女性優良率為 78.1%；不合格率僅為 3.6%。

體育人中，總評為優良的占體育人總數的 83.6%，不合格的僅占 0.8%；普通人中，體質測定的優良率為 59.3%，而不合格率占普通人總數的 12.1%。不論是體育人還是普通人，體質總評的優秀率均大於北京市整體水平（$p<0.01$）。體育人總評的不合格率小於北京市整體水平（$p<0.01$）。

市體育局系統職工的各單項指標中，選擇反應時的優良率最高（78.6%），其次是肺活量（75.4%）；不合格率最高為坐位體前屈（11.2%），其次是握力（5.4%）。

通過 BMI 評價，市體育局系統職工的超重和肥胖率也較高，特別是男性。

市體育局系統職工中體育人口僅占總人數的 38.6%。無論是體育人還是普通人，體育人口總評的優秀率均高於非體育人口，而不合格率則比非體育人口低。

"工作忙，缺少時間"和"惰性"處在體育人和普通人體育鍛煉影響因素的前兩位，而"缺乏場地設施"也在兩個人群的選擇中佔據很高的位次，不同的是，影響體育人參加鍛煉的另一個主要因素是"缺乏組織"，而普通人選擇了"缺乏指導"。

4 結論

4.1 市體育局系統職工的體質優於北京市整體水平，女性優於男性，體育人優於普通人。

4.2 超重和肥胖問題在市體育局系統職工中同樣存在，特別是男性。

4.3 無論是體育人還是普通人，規律的體育鍛煉對其體質的改善與提高均有促進作用。

4.4 阻礙市體育局系統職工參加體育鍛煉的內因是"健身理念"，外因是"組織工作問題"。

關鍵詞：體育局　體質　體育人口　BMI

Abstract

1. Purpose of the Study

Beijing Municipal Bureau of Sport and its set-up are the sponsor, organizer and executor of the sport undertaking in Beijing. As a special group, the physical qualification of its staff member is worth to be concerned. The purpose of this study is to have a better understanding of the physical constitution of staff member in this bureau and make an objective evaluation through physical test and relevant survey, and to have an analysis and exploration on the cause of formation of their constitution, hopefully being able to provide an actual basis for the improvement of their health situation as well as an experience and method reference for the future constitution test in different professions in Beijing.

2. Targets and Method of the Study

2.1Target：Take those staff member between the ages from 20 to 59 years old in Beijing Municipal Bureau of Sport as the target of this study. Data of 673 persons are effective, among which there are 398 male and 275 female.

2.2Method：Document and Material reference; Investigation through survey; Statistical Analysis of the data

3. Result

41.9% of the total staff members are evaluated as excellent in the constitution test; 26.2% of them are good, 23.9% just pass, and 8.0% failed.

Among male 61.0% are excellent and good with 11.1% fail; while among female 78.1% are excellent and good, with only 3.6% failed.

Within those who have been trained professionally, 83.6% people are excellent and good, with only 0.8% people fail; while within ordinary people, the percentage are 59.3% and 12.1% respectively. No matter among ordinary people or those who have been trained professionally , the percentage of being excellent & good are higher and that of those who failed is lower than the average rate in Beijing ($p<0.01$) .

Among all individual index, Selection Reaction Time gets the highest rate in being excellent and good (78.6%), and Vital Capacity gets the second highest rate; the highest rate in those who fail is sitting up (11.2%) , and the second highest rate is Gripping Strength(5.4%).

Through BMI evaluation, the rate of overweight and obesity among staff members of the Bureau is comparatively high, especially for male.

Sports population account for only 38.6% of the total member in the Municipal Bureau of Sport. No matter for those who have been trained professionally or those ordinary people, the overall rate of being excellent and good of sports population is higher than that of non-sports population, and the rate of being failed is lower.

"Busy working, lack of time" and "Being lazy" are the top two factors influencing physical exercises of both ordinary people and those who have had professional trainings, and "Lack of venue and equipment" also ranks very high in reasons chosen by both groups. What's different is that, another main factor for people who have had professional trainings is "Lack of organizing", however, ordinary people choose "Lack of guidance" as the other reason.

4. Conclusion

4.1 Physical Constitution of staff member in the Municipal Bureau of Sport is better than the overall level in Beijing, among which that of female is better than that of male, and that of those who have had professional trainings is better than that of ordinary people.

4.2 The problem of overweight and obesity also exist among staff member in the Bureau of Sport, especially males.

4.3 Regular physical exercise help to improve and enhance physical constitution of people, no matter those who have had professional trainings or those who have not.

4.4 The internal reason which prevent staff member of the Bureau of Sport from taking part in exercise is the "Theory of exercise", while the external reason is the "Organization of exercise".

Key words: Bureau of Sports ; Physical Constitution ; Sports Population ; BMI

2005 年雲南省 6 個少數民族兒童青少年（6—18 歲）營養狀況監測結果分析

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Adolescent (6-18 years old) nutrition conditions monitor result Analysis of Yunnan Province 6 national minorities in 2005

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摘要

雲南省是一個多民族聚居的邊疆省，全省 4000 萬人口聚居的少數民族 25 種，少數民族人口占全省總人口的 32%。2005 年雲南省開展了第二次國民體質監測及學生體質健康調研，並對 6 個少數民族學生進行專項調研，共計測試調研學生達 16567 人。監測內容系由全國統一規定的監測指標和調查問卷兩部分組成。監測指標包括身體形態、生理機能和身體素質三大類。

本論文重點對 2005 年雲南省 6 個少數民族兒童青少年（6—18 歲）營養狀況監測結果進行分析，以期對進一步瞭解雲南省少數民族兒童青少年營養狀況的規律、進一步改善和提高少數民族兒童青少年的體質狀況提供了可靠依據。

2005 年雲南省 6 個少數民族兒童青少年（6—18 歲）營養狀況分佈總體情況為：6 個民族的"較低體重"的檢出率均很高；納西族的肥胖率明顯高於其他民族；傣族男女生、白族男女生、納西族男生"營養不良率"明顯高於佤族、傈僳族、哈尼族。

2005 年雲南省 6 個少數民族兒童青少年（6—18 歲）貧血檢出率狀況總體為：貧血檢出率均高於漢族，其中由高到低的順序為：佤族、傈僳族、傣族、白族、哈尼族、納西族。其中，佤族男生貧血檢出率分別為 18.76%，為最高；傈僳族男生次之，貧血檢出率分別為 18.28%；傈僳族女生貧血檢出率分別為 13.21%，為最高；佤族女生為次之，貧血檢出率分別為 11.82%。

關鍵詞：雲南省，少數民族，青少年，營養狀況，貧血

Abstract

This paper uses the data which the Yunnan Province 6 national minorities Adolescent Physical monitor process obtains in 2005, our logarithm makes the contrast and the analysis according to the center 6 national minorities' adolescent nutrition condition. Our goal is provides the scientific basis to adolescent physical health standard enhancement of the Yunnan Province 6 national minorities. The result indicated that：The nutrition condition distribution main characteristic is: 6 national minorities adolescent "lower weight" picking out rate is very high; Naxi nationality adolescent 's obese ratio is obviously higher than other nationalities; The Dai and Pai national minorities male students and the female student, the Naxi nationality male student "the malnutrition rate" is obviously higher than the Wa ,Lisu and Hani national minorities. These 6 national minorities anemia rate is higher than the Han Nationality. From big to the small order is: Wa national minority, Lisu nationality, Dai national minority, Pai nationality, Hani national minority, Naxi nationality.

Key Words: Yunnan Province; National minority; Young people; Nutrition condition, Anemia

廣西成年人不同體重水平人群身體機能比較及其相關性研究

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Contrastive analysis of physical function and correlation of Guangxi adult with different body weight level

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摘要

研究目的：根據中國肥胖問題工作組推薦的中國人超重和肥胖的界限值，比較廣西不同體重水平人群的身體機能和不同BMI值與身體機能各指標間的相關性，以探討不同體重水平對廣西成年人身體機能的影響。

研究方法：隨機抽取2005年廣西國民體質監測20-59歲成年人7424人，其中男3669人，女3755人。監測的細節和和指標根據《2005年國民體質監測工作手冊》進行。根據中國肥胖問題工作組推薦的中國人超重和肥胖的BMI值，把體重劃分為體重過輕、正常、超重和肥胖四個等級。本課題研究指標有BMI、肺活量、血壓、安靜脈搏和臺階試驗指數。

研究結果：體重過輕者的肺活量較低，超重和肥胖者肺活量最高，但肥胖女子肺活量低於正常者。體重過輕和過重者的心血管機能都差于正常者，表現為安靜脈搏過快，臺階試驗指數低；體重過輕組血壓過低，低血壓人數的比例高；過重組的血壓過高，高血壓人數的比例高。

結論：體重水平不同的成年人其呼吸機能和心血管機能不同，體重正常者的呼吸機能和心血管機能最好，體重過重或過輕都對身體機能有不良影響。建議成年人注意合理膳食、積極體育鍛煉，維持體重在正常水平。

關鍵詞 體重；身體機能； 成年人；廣西

Abstract

According to the limitation of overweight and obesity for Chinese suggested by Chinese Obesity Task Force, the different of physical function and the correlation between BMI and the index of physical function were analyzed among the Guangxi adult of different body weight, as so to study the influence of body weight to physical

function of Guangxi adults.

Method: the adult aged 20 to 59 years under Guangxi national physical quality monitoring in 2005 were selected by random. There were 7424 peoples. The number of male is 3669 cases, and the female is 3755 cases. The detail and index is according to the workbook of 2005 year national physical quality monitoring. According to the limitation of overweight and obesity for Chinese suggested by Chinese Obesity Task Force, the body weight was divided into four level, it is underweight, common, overweight and obesity. The index such as BMI, vital capacity, blood pressure, resting pulse and the trial step index was taken to observation.

Result: The vital capacity is lower to the underweight people than others. The vital capacity to the overweight and the obesity are the highest in the all people. The obesity female' vital capacity is lower than the common people. The cardiovascular function to the overweight and the obesity are different from the common people. For example: the calm pulse is faster and the trail step index is lower than that of the common people. Beside that, the blood pressure of the underweight people is lower and the ratio of hypotension is higher than that of the common people. The number people and the radio of the high blood pressure are higher than that.

Conclusion: the respiration function and the cardiovascular function are different to the different body weight adult. The respiration function and the cardiovascular function to the common weight are the best in all people. There are harmful effects to the physical function if the body weight of adult is overweight or underweight. To keep the body weight in the common level, the adult should have reasonable food and positive physical training.

Keyword: body weight: physical function: adult: Guangxi

上海市民日常生活感覺和鍛煉年限關係的調查研究

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Research on the Relationship between Shanghai Citizen's Feel in Their Daily Living with Number of Exercise Year

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摘要

研究目的：本文旨在通過對市民日常生活感覺和體育鍛煉年限的調查與分析，瞭解市民日常生活感覺現狀，探討市民日常生活感覺和體育鍛煉年限之間的關係，為激勵市民參加體育健身提供參考。**研究方法**：對上海市 7 個區 1402 名 20~79 歲自願參加體質監測者作了問卷調查。該問卷設計以"東亞地區五城市體育比較研究"問卷為依據，最終形成的問卷中有關"日常生活感覺"共計 10 個問題，每題兩個選項（是/否）。該問卷中有關鍛煉年限的調查採取 5 個選項的形式，由被調查者根據實際情況予以選擇一項：□半年以下；□半年~1 年以下；□1 年~3 年以下；□3 年~5 年以下；□5 年及以上。回收的有效問卷共計 1401 份，本文主要對"日常生活感覺"和"鍛煉年限"的資料進行了整理以及描述性統計與分析。**研究結論**：（1）在 20~79 歲人群的各年齡段中，鍛煉年限長者較鍛煉年限短者更加感到"精力充沛、充滿活力"，鍛煉年限短者較鍛煉年限長者更願意"放棄活動、呆在家裏"。（2）在 40-79 歲人群的各年齡段中，鍛煉年限長者較鍛煉年限短者更加"感到快樂、滿意生活"，鍛煉年限短者較鍛煉年限長者更易"不充實、感到厭煩、感到無助"。

【關鍵詞】日常生活感覺；鍛煉年限

Abstract

Purpose: The main purpose of this paper is to provide reference for promoting citizen taking part in fitness exercises, though investigating and analyzing two factors which are citizen's feeling of daily live and years of physical exercise, discussing the relationship between the two factors.

Methods: Total 1402, age range from 20~79 year old participants from 7 districts of

Shanghai were involved in questionnaire survey. The questionnaire was designed based on the questionnaire "Comparing Study Physical Exercise among Five East Asia Cities". The final edition of "Feeling of Daily Live Survey" (FDLS) included 10 items and choosing yes/no as an answer for each item. The states of physical exercise of participants were investigated. The participants made a choice from five scales: (1) less than half year, (2) between half and 1 year, (3) between 1 and 3 years, (4) between 3 and 5 years and (5) more than 5 years. 1401 effective questionnaires were retracted. In this paper, data about "feeling of daily live" and "years of physical exercise" were calculated and analyzed.

Conclusions: (1) Among 20~79 year old citizens, the longer physical exercise years were, the more energetic and lifeful feeling were. The shorter physical exercise years were, the easier giving up exercise and staying home were. (2) Among 40~79 year old, the participants who had longer physical exercise years felt more happiness and satisfaction than those shorter physical exercise years'. The shorter physical exercise years participants tended to feel void, boredom and helplessness than those of longer physical exercise years'.

Key words：Feel in one's daily living; Number of exercise year

2005 年海南省老年人體質監測狀況及相關因素分析

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Survey on Senior citizen's Habitus in Hainan Province in 2005 and Analysis on the Correlation factors

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摘 要

為瞭解海南省老年人的體質特徵及規律，為海南省政府制定、實施關愛老年人健康的相關政策,保持和提高老年人的體質健康水平,防治老年性疾病等提供科學依據。2005 年海南省國民體質監測中心對海口市、瓊海市、儋州市、樂東縣等四市（縣）中 60~69 歲 840 名老年人實施第二次國民體質監測工作，對海南省城鄉老年人身體形態、機能、素質和國民體質老年人調查問卷等指標進行相關統計學分析、研究。

調查發現：身體形態方面，海南省老年人絕大部分為正常偏瘦體形；與 2000 年老年人身體形態指標進行比較分析，男女體重略有提高；男女腰圍明顯增長，隨著年齡的增大體重略有減輕；老年人的體重與身高的關係更加合理。身體機能方面，男女肺活量變化不大；農村老年女性機能狀況衰退快低於城市老年女性；身體機能在各個年齡組中都達到 3 分和 2 分,屬於合格狀況。身體素質方面，兩次監測老年人身體素質變化不大。

體育鍛煉目的上首選"防病治病"， 鍛煉項目選擇上城市有豐富多彩、多樣化的特點， "步行"、"跑步"為我省男女性老年人體育鍛煉項目的首選。海南老人的生活方式日常舉止則屬別具一格的 "宜勞宜靜"保健法。閒暇之餘主要以圍繞家庭和滿足視聽娛樂等場所為主休閒的生活方式，男性鍛煉人群比例高於 2000 年，女性鍛煉熱情高於男性，但強度和時間明顯不足。"家務忙、缺少時間"、"沒興趣"、"體力工作多，不必參加"、"缺乏場地設施"是影響老年人參加體育鍛煉的重要因素。2005 年與 2000 年比較，我省老年人體質優秀率增加 0.5 個百分點，良好率減少 1.5 個百分點，合格率減少 0.2 個百分點，不合格率增加 1.2 個百分點。

海南省城市老年人的形態、機能、體能指標多數都高於鄉村老年人,且均具有顯著性或非常顯著性差異。這一結果與海南省城市與鄉村之間在生存環境、經

濟狀況、生活水平以及健康意識等方面的差別有重要關係。海南省政府需大力宣傳推廣全民健身活動，加快體育
設施建設，面向普通民眾，降低消費標準，使已有體育設施的使用功能得到充分利用。

關鍵詞：海南省；老年人；體質監測；分析

Abstract

For the sake of the characteristics of Hainan senior citizen's habitus and providing reasonable basis for the governmental entities to constitute senior-citizen-health-relative policies, of keeping and improving their health level and prevention and cure of aged illnesses, in 2005 Hainan province Center for National Physical Fitness Surveillalice carried out the second-time survey on citizen's physical fitness among 840 people, between 60 and 69 years old, inhabitation in Haikou, Qionghai, Danzou, Ledong, and then finished the statistic analysis and investigation on the indexes such as senior citizen's body figure, function and diathesis in the citizen's physical fitness questionnaire.

This research discovered that, as to body figure, the most aged in Hainan are standard, even a bit thin; comparing the same index with 2000 survey we find people's weight increase a bit but waistline obviously; the aged's proportion between weight and height is more proper. As to body's function, people's vital capability changes unobviosly; body function of aged women in country declines fast than in city; but this index in all age group wins 3 to 2 points and belongs to eligibility. As to the index of body diathesis these two surveys show few change.

The first aim of physical training is to "preventing and curing illnesses", choices of training way changes greatly among city inhabitants, but "walking" and "running" are the first choices. Hainan aged people's life style shows a kind of special hygiene----proper labour and proper rest. They enjoy their leisure mainly at home or in some public entertainment places. Among the men doing physical training male's proportion is higher than 2000, but female's more zealous, though their intension and time are obviously insufficient. "Busying in house-hold", "without interest", "unnecessary for being physical worker", "insufficient of establishment" are the main reasons why the aged does not take part in physical training. Compared with 2000 in Hainan province the fine proportion of senior citizen's Habitus increases 5%, good proportion decreases 0.2%, disqualification proportion increases 1.2%.

The indexes of body figure, function, physical ability of aged townsman is obviously higher than countryman and with notable or very notable difference, which comes from the fact that great differences, which include existing circumstance, finance condition, living level and health idea, etc, exist between city and country. This survey provides us the information that what is the difference between Hainan and the whole country, and gives some constructive advice or plan, for example, the government ought to propagandize and popularize all-people-physical-fitness-action, invest more

for new establishment, improve existing establishment, decrease fee for more people to take part in.

Keywords: Hainan Province; Senior citizen; Survey on Habitus; Analysis

對高校大學生體質健康狀況的調查與分析

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Investigation and Analysis on University Students' Physique Condition

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摘 要

通過對我院 2001—2005 年度二年級本科學生 5 年來體質健康檢測數據的調查統計，分析並評價大學生體質健康狀況及發展趨勢，以期為加快高校體育教學改革，提高體育教學品質，提供科學的參考依據。

關鍵詞：體育；健康；身體素質；體育教學

Abstract

Through the survey of university students' physical health of Putian University, the article has analyzed and appraised university students' physique health status and development trend in order to offer the scientific reference basis for university sports educational reform.

Key words: sports; health; physical quality; sports teaching

瑜伽課程對高校女生情緒狀況的影響

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The influence of Yoga Curriculum on the Mood of female Students in University

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摘要

目的：探討一學期瑜伽課程對高校女生情緒狀況的影響。

方法：比較 111 名普通高校女生一學期瑜伽課程前後狀態-特質焦慮量表分值的變化。

結果：一學期瑜伽課程結束後，全體女生狀態、特質焦慮量表分值均下降，差異有統計學顯著性（P＜0.05），其中本科女生焦慮量表分值顯著下降，差異有統計學顯著性（P＜0.05），女研究生焦慮量表分值未見顯著改變（P＞0.05）。

結論：瑜伽課程可顯著改善高校女生，尤其是本科女生的焦慮情緒水平。

關鍵詞：瑜伽 情緒 大學生

Abstract

Objective：To evaluate the impact of Yoga curriculum on the mood of female Students in University.

Methods: One hundred and eleven healthy female students in University participated in Yoga curriculum lasting 16 weeks. The State-Trait Anxiety Inventory was adopted to evaluate the subjects' mood before and after the Yoga curriculum.

Results: The value of the STAI-Form of all the subjects droped significantly after the 16 weeks of Yoga curriculum（P＜0.05）. The same trend was also found on the group of the female undergraduates（P＜0.05）, not on the group of the female graduates（P＞0.05）.

Conclusion：One semester Yoga curriculum can improve the mood of female Students in University, especially helpful for the female undergraduates.

Key Words: Yoga Mood Undergraduate

定量數據的統計分析

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Quantitative variables statistical analysis

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摘要

在國民體質監測工作中有大量的定量資料數據需要處理，根據不同的研究目的應該選擇不同處理手段和統計分析方法，在實際應用中存在一些統計方法誤用現象，導致錯誤的研究結論。為提高體質監測數據處理的科學性，本文以國民體質監測研究論文中常見的3種實驗設計為例，分析了其中的一些統計方法誤用，並提出適當的統計分析方法以供參考。

關鍵詞：體質、統計、*t* 檢驗、方差分析

Abstract

A great number of quantitative variables need to be analyzed in physical fitness evaluation. Different statistical analysis method should be selected based on different study purpose. There are some misapply in statistical analysis which result to incorrect research conclusion. The paper makes three usual kind of experiment design as example. Introduce some misapply， and point out correct method of statistical analysis in them.

Key word: physical fitness; statistics; *t* test; variance analysis

我市 60～69 歲老年人體質狀況的分析

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An Analysis of the 60~69 Years' Physique in Our City

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摘要

研究目的：隨著老年人口的不斷增多，研究老年人的體質狀況，掌握老年人群體質變化規律。**方法**：通過 2005 年國民體質監測的有關數據，分析我市 60～69 歲老年人的形態、機能和素質等指標抽樣測試結果進行分析。**結果**：我市老年人群身高、體重等形態各年齡組與全國平均水平基本持平，但脂肪分佈集中在腹部，特別是老年女性；安靜心率、血壓等機能與全國平均水平基本持平，肺活量指標明顯高於全國平均水平。反映力量素質的握力指標略高於全國平均水平。**結論**：我市老年人群形態、機能、素質指標部分與全國平均水平基本持平，肺活量指標明顯高於全國平均水平；身體脂肪分佈狀況特別是老年女性呈"向心性肥胖"，其患病的危險性大。反映老年人群機能的指標只測得安靜心率和血壓，而反映人體心肺功能變化的臺階試驗不適合老年人群測試，應引入簡便易行又適合老年人群測試的反映心肺機能變化的有效指標。素質指標如力量（握力、縱跳、俯臥撐、仰臥起坐），柔韌素質（坐位體前屈），平衡能力（閉眼單腳站），靈敏、反應能力（10 米×4 往返跑、反應時）中適合老年人群測試的指標不多，老年人群素質指標的測試有待修訂。

關鍵詞：老年人；體質；測試結果；分析

Key Words：Old Human；Physique；Test Results；Analysis

不同年齡段男性醫務人員身體成分分析

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The analysis of body components of male medical personnel with different ages

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摘要

目的：瞭解不同年齡段男性醫務人員身體形態及身體成分組成。**方法**：以瀋陽市某市級醫院男性醫務人員（136 人）為研究對象，用生物體電阻抗法，對全院健康男性醫務人員進行身體成分測量分析。**結果**：不同年齡段男性醫務人員的身高隨年齡的增長雖然有下降趨勢，但差別不具有顯著性（F 檢驗，P>0.05）；30-39 歲年齡組的平均體重顯著高於 20-29 歲年齡組（P<0.05），而 50-59 歲年齡組的平均體重顯著低於 30-39 歲年齡組（P<0.05），其他各年齡組體重均值未見明顯差異（P>0.05）；各年齡組身體品質指數（BMI）均處於超重範圍；20-29 歲年齡組偏瘦的比例（25.9%）明顯高於正常體重的比例(14.8%)，20-29 歲、30-39 歲、40-49 歲以及 50 歲以上年齡組，體重超重的比例分別為 59.3% 、88.1%、86.3%、87.0%，其中，肥胖率分別為 18.5%、47.6%、43.2%、52.2%，嚴重肥胖率分別為 7.4%、19.0%、11.4%、4.3%。身體成分結果顯示，30-39 歲年齡組的體重、脂肪量、礦物質量和細胞外水分等指標顯著高於 20-29 歲年齡組（P<0.01，P<0.05），而肌肉量、蛋白質量、細胞總量和細胞內水未見明顯改變，提示該年齡組體重的增加主要以脂肪量的增加為主；50-59 歲年齡組的體重、肌肉量、礦物質量、細胞總量、蛋白質量及細胞內水分等指標明顯低於 30-39 歲年齡組（P<0.05），而脂肪量未見明顯變化，提示該年齡組體重降低的原因很可能是與肌肉萎縮或肌體蛋白質的流失有關。結論：不同年齡段男性醫務人員的平均體重都超過正常體重範圍，尤其是在 30 歲以後，體重超重比例顯著增加；不同年齡段該群體人員的身體成分也不盡相同，30-39 歲年齡段身體脂肪量顯著增加，50-59 年齡段身體蛋白質流失明顯增加。建議該群體人員平時要注意合理飲食、加強身體鍛煉，尤其在 30-49 歲年齡階段要注意控制身體脂肪量的增加；在 50-59 歲年齡段，要注意防止肌肉萎縮或蛋白質的流失。

關鍵詞：醫務人員，身體成分，生物電阻抗，肥胖

Abstract

The objective of this research is to investigate body morphology and body components of male medical personnel with different ages. Methods: The parameters of the body were measured by composition with bioelectrical impedance measurement in 136 normal volunteers.136 male medical personnel were divided into four groups, aged 20-29(n=27), 30-39(n=42), 40-49(n=44), 50-59(n=17) and above 50(n=6).Results: statistical results revealed that the body height of male medical personnel with different ages is decreasing with ages, but there was no significant difference among different groups（F test，P>0.05）.The average weight of age group(30-39) was significantly higher than that of age group(20-29) （P<0.05）. The average weight of age group(50-59) was significantly lower than that of age group(30-39) （P<0.05）; there was no significant difference among other groups （P>0.05）. The body mass index of all age groups exceeded the normal range; The 25.9% percent of age groups(20-29) is thin-oriented, it is much more than that of its normal weight percent (14.8%).The percentage of the body weight exceeding standard weight of groups 20-29,30-39,40-49 and above 50 are 59.3%, 88.1%, 86.3%,87.0% respectively; while the obesity percentage are 18.5%、47.6%、43.2%、52.2% respectively; and the severe obesity percentage are 7.4%、19.0%、11.4%、4.3% respectively. The results of body components showed that body weight, fat content , mineral mass and extra cellular content of age group(30-39) were significantly higher than those of age group(20-29) （P<0.01，P<0.05）,while contents of muscle , cell total amount , protein mass and internal cellular water were no changed. This results indicate that the increase of the body weight is mainly because of the increase of the body fat. The body weight and the contents of muscle , mineral mass, cell total amount, protein mass and internal cellular water of age group(50-59) are significantly lower than those of age group(30-39) （P<0.05）, while the fat content was no changed. Those results are possible have a large relationship with muscular atrophy or protein loss. The main conclusions are: The average weight of all age groups are above the normal range and the overweight percentages of the groups over 30 years old are higher significantly. The body components vary in according to different groups. Body fat increase significantly in group 30-39, while the protein loss obviously in group 50-59. We suggested that this population plan out rational diet and strengthen physical exercise to control body fat increase especially between 30 and 39 years old and to prevent muscular atrophy or protein loss especially in ages between 50 and 59 years old.

Keywords: medical personnel; body components; bioelectrical impedance measurement ;obesity

普通高校開展長跑運動的實驗研究

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Research on Development Long-distance Exercise in Common College

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摘要

中國教育部關於 2005 年全國學生體質與健康調研結果指出：學生肺活量水平繼續呈下降趨勢，其中速度和力量素質連續 10 年下降，而耐力素質則連續 20 年下降。大學生身體素質，特別是耐力素質持續下降問題，再次引起全社會的廣泛關注。本文根據本校自 1994 年以來在全校大學生中推行長跑運動（12min 跑測驗和 3000 米（男）/2400 米（女）跑或走）所進行的跟踪實驗研究，探索在普通高校大學生中廣泛開展長跑運動的必要性、科學性和可行性。

研究方法：

本文採用文獻數據法、實驗研究法、調查訪談法和邏輯分析法等研究方法。

研究結果：

1、當前大學生身體素質持續下降，特別是耐力素質出現連續 20 年下降的問題，與高校開展長跑運動有密切的關係。由於沒有硬性規定，許多高校怕學生在長跑中出事故，導致體育教學中不敢安排長跑等劇烈運動，這是耐力素質持續下降的主要原因之一。

2、我校開展了 13 年的長跑運動，有 10 多萬大學生參加了幾十萬次的長跑測試。實踐證明，只要思想重視，注意安全，堅持鍛煉，長跑運動（主要是指 12min 跑測驗和 3000M/2400M 跑）不僅可以在普通高校中廣泛開展，而且也是提高大學生耐力素質的有效手段。

3、開展長跑運動貴在堅持。通過我校長期的教學實踐證明，每學期最好都安排長跑測試，以便促進大學生經常參加長跑運動。評分標準不必太高，特別是及格線，以保證絕大多數學生通過自身努力都能合格，關鍵是要形成人人都參與長跑運動的鍛煉氛圍。

4、在推行長跑運動時，最好採用"跑或走"的形式（即在測試過程中，可採用跑或走交替進行的形式）。這樣既可減輕大學生的心理負擔，又能達到健身的目的，還可以把可能出現的傷害事故降到最低限度。

結論：

長跑運動是增加耐力素質的有效手段。長期教學實踐證明，在普通高校中開展長跑運動不但是必要的，而且是可行的。建議把 12min 跑測驗和 3000M（男）/2400M（女）跑或走測試列入到《學生體質健康標準》中，作為必測項目。

關鍵詞：普通高校、大學生、長跑運動、實驗研究

Abstract

The result that student vital capacity keep on Declining trend, speed and strength qualities is declining continuously ten years, endurance quality last out declining twenty years. undergraduate physical fitness, specialties is provoke whole social attention of students physique and health research paper of China ministry of education in 2005, The paper follow up the scent research that our collate long-distance exercise(12 Min Running and 3000m/2400m running or walk) is putted in practice in whole undergraduate from 1994,to provide necessity、science and feasibility reference what common college undergraduate develop long-distance exercise.

Study methods

The paper is researched with literature and data method、experimentation method、investigation method、logic analytical method etc.

Result and analyze

1. Undergraduate physical fitness is declining continuously ten years, specialties endurance quality last out declining twenty years problem that relate to college develop long-distance exercise consanguineous. because of don't forcibly regulate, many college is afraid of accident in long-distance exercise, bring on physical education don't arrange long-distance exercise etc intense exercise, what caused mostly endurance quality last out declining.

2. Long-distance exercise develop in ours university thirteen years, more a hundred thousands students take part in test. practice prove that long-distance exercise(12 Min Running and 3000m/2400m running or walk) is developed abroad and enhance undergraduate endurance quality availability means, if only thought regard, pay attention to safety, persist in exercise.

3. Develop long-distance exercise need to persist. Our university teaching proved the best arrange long-distance exercise, promote undergraduate join this exercise. Grade standard need not too high, specially pass line, to assure most students pass test through themselves struggle, it key to come into joining long-distance exercise.

4. Push long-distance exercise is most adopt running or walking form(adopt running or walking by turns in test),so it can alleviate undergraduate's mentality burden and avail physical health, accident can decline danger coefficient the lowest horizon.

Conclusion:

Long-distance exercise is availability means to advance endurance quality. long teaching practice proved that develop long-distance exercise is necessary and feasible. it suggest that 12 Min Running and 3000m/2400m running or walk is arranged in 《student physical health standard》

Keywords: common college undergraduate long-distance exercise experiment and research

經濟欠發達地區體質監測現狀---05年黔北地區市民身體素質調研

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The Present Situation of Constitution Research in Under-developed Areas in Economy------Investigation into People's Health Quality in 2005 in Northern Cuizhou Province

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摘要

提高全民健康水平，抓好體質監測是先行军。邊遠貧困地開展此項工作有其局限性和特殊性，因地制宜，因陋就簡，挖掘民間文化傳承，進一步推進全民健身是今後群體工作的重點，為全面、科學、快速地推進該項工作的普及，本文對遵義地區不同年齡段的人群進行調查研究，總結歸納了部分代表性的實際情況，為下一步的全面啟動作好鋪墊。

關鍵詞:體質監測;身體素質;指標研究

Abstract

It is a prerequisite to make great efforts to physique monitor to people for improving the healthy standard of the whole people. But there are some restricted and special condition to develop this job in the isolated and poor districts. The key job of the mass sports in the future is to suit various local conditions and whatever facilities, to tap the cultural tradition the people, and to furtherly push on a nationwide body building. For pushing on the popularization of the job wholly, scientifically and quickly, the author of the paper summarizes and makes a induction of the partly representative conditions from the investigation of the different ages of the local people in Zun Yi, for the purpose of the next overall start over of the job.

Key Words: physique monitor; body quality; index research

我國 20~59 歲成年人體質研究進展

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The Evolvement of the Study on the Body Constitution of 20~69-year-old adult

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摘要

採用文獻數據法，從歷史概況、研究現狀、發展趨勢三個方面就我國成年人體質研究進行了論述，分析和論述了我國成年人體質研究工作的規律、特點及不足之處，並對其今後的發展趨勢進行了展望。

關鍵詞：成年人，體質

Abstract

In this paper , we use the method of literature study to analyze the research of the body constitution of 20~69-year-old adult from the history overview , the actuality of research and the development trend. We discussed the law, the characteristic and the shortage of the study of the body constitution of adult, and provided the expectation for the further investigation.

Key word: adult, body constitution, current situation, expectation

雲南省城鄉 60-69 歲老年人健康指數調查分析

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Health Exponent and Physical Status in 60-69 Aged Elderly Urban and Rural Inhabitants: A Pilot Study in Yunnan

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摘要

對雲南省城鄉參與 2005 年全國第二次國民體質監測的雲南省 10 個縣區 60-69 歲老年人共 2210 人的身體形態和機能指標進行分析。結果表明，雲南省男子 BMI(體重指數)平均值為 22.07，女子平均為 22.93；其中城鎮男、女 BMI 分別顯著高於鄉村同性別同年齡組男、女(P<0.01)；城鎮男、女的腰臀圍比顯著高於鄉村同性別同年齡組男、女(P<0.01)(60-64 歲組女性除外)；城鎮男、女的克托萊指數顯著高於鄉村同性別同年齡組男、女(P<0.01)。

關鍵詞：雲南；老年人；BMI；腰臀圍比；克托萊指數

Abstract

To explore the role of urban and rural people in Yunnan in 60-69 aged elder people participate in 2005 communique on the second national physical fitness surveillance , a study was carried out in a population-based sample (n=2210) of inhabitants, which covered 10 districts and outskirts in Yunnan . The investigation showed that the BMI is 22.07 for man and 22.93 for woman in Yunnan, while BMI of urban inhabitants were significantly higher than their rural counterparts, while WHR of urban inhabitants were significantly higher than their rural counterparts(except of 60-64 aged elder woman), while ketuolai exponent of urban inhabitants were significantly higher than their rural counterparts.

Key words: yunnan; elderly inhabitans; BMI; WHR; Ketuolai exponent

瀋陽市 2000 年與 2005 年成年人素質指標的對比分析

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Comparative Analysis of Index of Body Function About Adult between 2000 and 2005 in the City Of ShenYang

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摘要

通過對瀋陽市 2000 年及 2005 年的成年人體質監測數據中的素質指標的分析。採用數理統計法對肺活量、心功指數、握力、背肌力、體前屈、縱跳、反應時、閉目單足站立八個指標的對比分析，動態反應我市體質變化的趨勢。經研究發現，與 00 年相比：1 肺活量呈顯著下降趨勢；2 心功指數略呈上升均勢；3 反應力量的握力和背肌力有所提高；4 反應柔韌性的體前屈下降顯著；5 反應彈跳能力的縱跳顯著提高；6 體現反應速度的反應時時間有所延長；7 反應平衡的閉目單足站立顯著下降。

關鍵詞　瀋陽市　體質監測　素質指標　對比分析

Abstract:

Some index of body function between 2000 and 2005 in the city of shenyang is analyzed in this article. The index of VC ,cardiac index, grip strength, back muscle strength, the level of the sit pose of body bend, vertical jump , reaction time, Standing on one leg with the eyes closed is comparatively analyzed through applying the Mathematical statistics method . The result reflects the dynamic trend of adult physical constitution of shenyang city. Results are the followings: first, the vc show the tend of declining. Second, the cardiac index shows the tendency of increasing. Third, the grip strength and back muscle strength improve .fourth, the level of the sit pose of body bend decline. Fifth, the achievement of vertical jump increase. Sixth, the reaction time prolongs. Seventh, the time of standing on one leg with the eyes closed decrease.

Key words: Shengyang, the measurement of body function, index about physical constitution, comparatively analysis.

皖北高校不同體質學生生活方式的調查分析

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A Study into the Lifestyles of Colleges Students of Different Fitness in the North of Anhui

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摘要

現代文明在帶給人們充分物質享受的同時，也給人類的健康帶來了新的威脅，社會的快速發展、物質生活的極大豐富，改變了人們的工作方式和生活方式，使影響人類健康的因素發生了很大的變化，許多不良的生活方式也隨之而來。不良的生活方式也給學生的身心健康帶來負面影響。世界衛生組織指出個人健康長壽60%取決於自己，也說明了生活方式因素對人的壽命的重要性。作為學校教育者，必須深入研究這一新課題,認真學習保健醫學理論，教育學生積極預防，以消除不良的生活方式對學生健康的危害。良好健康的生活方式將決定人們的生命品質。因此，關注現代大學生的健康生活方式，會對未來科技工作者的壽命和生存品質產生極其重要的影響。本文採用問卷調查法，在整群隨機抽樣的基礎上，對皖北高校學生生活方式的狀況進行調查與分析，共發放問卷5360份，剔除無效問卷等，共回收有效問卷4553份，回收率為84.94%。以此瞭解大學生生活方式的特點，為教育行政部門制定大學生健康促進戰略提供科學依據，為學校體育的改革提供參考。

本文對皖北三所高校學生進行調查分析，根據《學生體質健康標準》測試成績，將學生分為不同體質等級，研究體質優生（《標準》測試達到優秀的學生）和體質差生（《標準》測試成績不及格的學生）生活方式狀況，結果表明：

1．皖北高校89.09%的學生都能達到《學生體質健康標準》的要求，但整體水平不高，絕大多數學生處於及格水平（占50.89%）。

2．在熬夜、吸煙、飲酒等生活習慣方面，不同體質學生間具有顯著性的差異。體質優生熬夜、吸煙、飲酒等生活習慣相對體質差生更趨於合理；電腦輻射

對身體健康有一定影響，長時間使用電腦也是導致學生體質健康下降不可忽視的因素之一。

3，體育優生和體質差生達不到"體育人口"標準的比例均較高，分別為50.12%、81.71%。不同體質學生在體育鍛煉方面具有顯著性的差異，體質優生鍛煉狀況好於體質差生。在學生不參加體育鍛煉的原因中，體質優生主要集中在無場地（占30.75%），體質差生主要在怕吃苦受累（占41.08%），體質差生吃苦受累的精神比體質優生差。

關鍵詞：皖北高校；大學生；體質；生活方式

Abstract

Modern civilization brings people a great deal of enjoyment, but in the meanwhile, it presents new threats to people's health. The rapid development of society and the large increase in material wealth have changed people's work and life. The factors that affect people's health have also been changed. A lot of unhealthy lifestyles arise. These lifestyles have negative influence on people's physical and mental health. The World Health Organization (WHO) points out that a person's health and lifespan depend more on the person himself. These individual factors take up 60% of all factors that affect a person's health and lifespan. It is a clear indication of the importance of lifestyles to people's lifespan. In order to teach the students how to take precaution against unhealthy lifestyle and avoid its harm, educators must study this new subject and learn the theories of health care medicine. Lifestyles will determine quality of life. Therefore, paying attention to lifestyles of college students is very important for people to work out a way to increase lifespan of people who will take a job associated with science and technology and improve their quality of life. This thesis mainly adopts the method of questionnaire and statistics random sampling to study and analyze lifestyles of college students in the north of Anhui Province. 5360 questionnaires had been handed out, and 4553 valid questionnaires were gathered. The rate of recovery is 84.94%. The purpose of this study is to know the characteristics of college students' lifestyles, to offer scientific basis for the educational administration to draw up a new strategy for college students to improve their health, and to offer useful information for the reform of physical education in colleges and universities.

Students surveyed are from three colleges in the north of Anhui Province. According to *Standards of Good Fitness for College Students*, the fitness of students surveyed is

clearly at different levels. In the study, lifestyles of students who have different fitness are surveyed, the results are the following:

1. 89.09% of the students could pass the test of fitness and meet the requirements of the standards, but most of them gain a low point and are at a low level (50.89%).
2. Students of different fitness differ greatly in the habits of staying up late, smoking and drinking. Students of good fitness spend less time in staying up late, smoking and drinking than students of bad fitness. Radiation of computers has negative effect on people' health, so it is also an important factor which causes students to have bad fitness.
3. 50.12% of students who have good fitness and 81.71% of students who have bad fitness take less exercise than what is required by our country for college students. Students of good fitness take more exercise than students of bad fitness. Among the students who have good fitness and take less exercise than what is required, 30.75% of them are believed to do so because there is lack of playground. Among the students who have bad fitness and take less exercise than what is required, 41.08% of them are believed to do so because they fear hardships. These students don't have the spirit of bearing hardships as students of good fitness do.

Key words: colleges and universities, college students, fitness, lifestyles.

山西省城市成年人人體適應能力綜合評價方法研究—《人體適應能力評價量表》的初步修訂

燕飛

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Study on Optimizing the Human Body Adaptation for Shanxi Adult in City—A Preliminary Revision Study on Evaluation Scale of Human Body Adaptation

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摘要

目的：現行國民體質監測系統是由身體形態發育水平、生理功能水平、身體素質和運動能力的發展水平，三類指標組成，以此對國民體質進行監測，從體質研究的內容來看，目前的指標體系尚需完善，本研究通過對《人體適應能力評價量表》的初步修訂，為完善和補充現行國民體質監測系統，做理論上的探索研究。**方法**：利用北京體育大學任弘博士編制的《人體適應能力評價量表》，對 1600 名城市居民進行測試，對該量表進行初步修訂及檢驗。**結果**：經過兩輪項目分析，篩選後的量表包含三個分量表：對自然環境的適應、對社會環境的適應和對疾病的抵抗能力，項目數分別為 9 個、15 個、16 個，共 40 個條目。三個分量表內部一致性係數達到 0.8674、0.8749、0.8169，重測信度達到 0.86、0.83、0.81，平均為 0.83。**結論**：該量表經實測檢驗具有較好信度和效度，基本符合測量學要求。該量表施測簡單、可操作性強、成本低，適合於大規模群體測量。

關鍵詞：體質，適應能力，信度，效度，評價量表

Abstract

Objective: The overall status of physique of a person can only be precisely reflected through comprehensive evaluation. But unfortunately, the current system of physique measurement consists of the first three indices because so far we have not a practical method of measurement of the last two factors .This paper is a theoretical and

empirical study focused on the Human body Adaptation. **Methods:** A pilot study was conducted from a sample of 1600 the Shanxi Province city people using Evaluation Scale of Human body Adaptation (ESHA) developed by Renhong. Reliability and validity was assessed in a comprehensive way. **Results:** The design of evaluations scale includes to the natural environment adaptation, to the social environment adaptation and to own physiological change adaptation and to the disease resistance three scales, altogether 40 clauses. Most sub-scales in ESHA had Cronbach's coefficient alpha ranging 0.85 and test-retest reliability ranging 0.83. **Conclusion:** ESHA has the good reliability and validity after the actual examination, conforms to the surveying requirement basically. This scale executes measured simple, the feasibility strong, the cost is low, suits surveys in the large-scale community.

Key word: physique: capability to adapt: reliability: validity: evaluation scale

海南省國民體質監測的調查與比較研究

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Comparing Research on Questionnaire Investigation Data of National Constitution Monitoring of Hainan Provinces

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摘要

1、研究目的

國民體質直接關係到國家的前途和命運，用科學指標監測、研究、評價國民體質，長期動態觀察國民體質狀況和變化趨勢，可為政府保護、指導和發展人力資源提供依據。繼2000年我省第一次開展國民體質監測之後，再次進行了2005年國民體質監測。

2、研究對象和方法

調查對象為海南省4個市縣20-39歲成人甲組2520人，向每位參測人員發放有20項內容問卷調查表，涉及參測人員的認識水平、受教育程度、職業分佈、每天工作、睡眠、活動時間、吸煙狀況、體育鍛煉的次數、時間、目的、項目、感覺和障礙等方面。與2000年問卷調查內容相比有8項相同、12項不同，全部數據錄入電腦統計。

3、結果與結論

3.1 我國開展國民體質監測已有9年時間，但是宣傳力度不足，我省仍有60%的人從未聽說過此項工作。開展國民體質監測是對我國國民體質進行動態的、長期的、縱向研究的一大舉措，建議我國設立"國民體質監測日"制度。

3.2 我省成年人參加體育鍛煉的意識與文化素質密切相關，腦力勞動者更重視參加體育鍛煉。成年人每週參加體育鍛煉的人數有61.7%，比2000年上升了3個百分點。但是，成年人參加體育鍛煉的品質不高，每週有意識鍛煉3次以上的"體育人口"比例僅有23.7%，比2000年下降了5個百分點，每次鍛煉的時間也大幅度減少。另外，有51.4%的人堅持參加體育鍛煉的時間還不足一年，說明有一半的成年人體育健身意識才剛剛形成。

3.3 經過5年社會經濟發展，我省成年人參加體育鍛煉的目的不再局限于"增強體質"上，而向"防病治病"、"減壓調節"、"減肥健美"和"社交"等多樣性變化。球

類、步行和跑步是成年人選擇的主要體育項目，它充分體現了我省歷史淵源和地方特色。

3.4 影響我省成年人參加體育鍛煉的障礙主要有職業、性別和年齡之區分：

按職業區分：城市人口因"工作忙"、"缺乏場地設施"，農民因"家務忙"、"無興趣"。

按性別區分：男性因"工作忙"、"缺乏場地設施"、女性因"工作忙"、"家務忙"、"無興趣"。

按年齡區分：因"工作忙"而影響參加體育鍛煉隨年齡增長而下降，因"家務忙"隨年齡增長而上升，因"缺乏場地設施"隨年齡增長而下降，年青人對場地的要求和對體育的興趣表現的熱情更高。

關鍵詞：國民體質；體質監測； 問卷調查；比較研究

Abstract

The Paper research about the 20 piece of content of national constitution monitoring questionnaire investigation of Hainan province. And compare with the national constitution monitoring data of 2000.

Key words: national constitution; questionnaire investigation; comparing research

體質測評與亞健康狀態的研究及其干預

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The Measurement & Assessment of Physique and the Research & Prevention of Subhealthy State

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摘要

目的：通過體質檢測瞭解國民的體質狀況，並進行評估，以區分健康與亞健康人群，為國內的體質研究和國民經濟發展及相關部門決策提供可靠的依據。進而有針對性的提出干預措施，提高國民體質水平。

方法：將體質檢測結果作為健康狀態的工作基礎，結合國內外各種亞健康的評價方法，其中包括健康評估法、症狀標準評價法、問卷評定量表檢測法等，建立相應指標的評價體系。

結果與分析：體質是人的生命活動和勞動能力的物質基礎，是在遺傳和獲得性基礎上表現出來的人體形態結構、身體功能、身體素質和適應能力綜合的不斷發展的相對穩定的特徵。體質與亞健康有著密切的關係。亞健康是介於健康和疾病之間的一種生理功能低下的狀態，根據世界衛生組織（WHO）確定的新的健康標準，醫學專家對人類健康進行調查分析後發現，人體除了健康和疾病狀態以外，還存在一種即非疾病也非健康，又可雙向轉化的中間狀態，即亞健康狀態。WHO的一項全球性調查表明，真正健康的人口僅占5%，患有疾病的人占20%，而75%的人處於亞健康狀態。上海中醫藥大學一項近萬人的調查證實，被調查人數中只有10%～20%的人處於心身完全健康狀態，50%～70%的人處於亞健康狀態。由此可見，亞健康狀態對人類健康的威脅越來越大，因此受到了國內外的廣泛重視。1)、亞健康的成因主要有社會心理因素；環境因素；飲食因素；生活方式。2）亞健康狀態的干預措施包括運動處方；營養調控；中醫養生等。

結論：1)、體質與亞健康有著密切的聯繫，體質差的人大多處於心理或軀體的亞健康狀態。2)、亞健康狀態沒有明顯的臨床症狀，是健康向疾病發展的過渡階段，達到一定程度後發生質變。3)、運動健身是促進人體機能全面發展的最佳手段。特別是那些不拘形式、不重輸贏，只追求在運動中獲得快樂的有氧運動和輕體育。4)、亞健康狀態的研究，可根據體質測評為工作基礎，結合醫學、心理學、中醫學、免疫學等多學科發揮優勢，制定一套完善的預防措施。

關鍵詞：體質測評；亞健康狀態；運動健身

Abstract

Purpose: Through the measurement of physique, we can know the physique state of people, and carry on the assessment in order to distinguish the healthy and subhealthy crowd, and then offer the reliable basis for the domestic physique research, national economic development & relevant departments' decisions. To improve people's physique level, we further point out the methods to prevent the subhealthy state.

Method: The result of physique measurement is regarded as the working foundation of the health state, and combined the domestic and international appraisal methods of subhealth, including the health assessment method, the symptom standard assessment method and the measurement method of the questionnaire evaluation scales to establish the appraisal system of the corresponding index.

Result and analysis: Physique is people's life activity and material base of labor capacity, the human shape structure shown on the basis of heredity and acquired character, comprehensive developing and relatively stable characteristic of body function, body constitution and adaptive capacity. There are close relations between physique and subhealth. Subhealth is a kind of state with low physiological function between health and disease. According to the definite new health standard of World Health Organization (WHO) and the medical experts' investigation & analysis on human health, the human body's another state besides health and disease state is neither disease nor healthy. The middle state that can be transformed bidirection is subhealthy state. A global investigation of WHO indicates really healthy population account for 5%, the persons suffering from disease account for 20%, and the 75% persons is in subhealthy state. Shanghai Traditional Chinese Medicine University's investigation of nearly ten thousand people verifies the investigated people have only 10%-20% people in complete health state, the 50%-70% persons is in subhealthy state. Obviously, the subhealthy state's threat to human health is greater and greater, so it has got the extensive attention both at home and abroad. 1). The factors of causing subhealthy mainly have society, psychology, environment, diet & life style. 2).The prevention methods of the subhealthy state include the movement prescription, nutrition's adjustment and controlling, and Chinese medicine to keep in good health etc.

Conclusions: 1). The physique has close relation with subhealth, the most people with bad physique are subhealthy state in psychology or body. 2). The subhealthy state does not have obvious clinical symptom, it is the transition stage from health to disease, and the qualitative change takes place after getting to certain degree. 3).Sports fitness is the best way to promote body function' all-round development, especially informal aerobic and light sports that only pursue to obtain happiness. 4). The research of subhealthy state can be taken as working foundation according to the physique, be combined with medical science, psychology, traditional Chinese medicine, and immunology's advantages to make a set of complete precautionary measures.

Key Words: the Measurement & Assessment of Physique, Subhealthy State, Sports Fitness

新疆維、哈、蒙、柯、錫、塔、回七民族3~6歲幼兒體質研究

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The Research on Physical Fitness of 3-6 years old Uygur, Kazak, Mongolian, Kiregiz, Xibe, Tajik, Hui Nationality Children in Xinjiang

Zang Liuhong

摘要

通過抽樣調查對新疆4900名新疆維、哈、蒙、柯、錫、塔、回七民族（簡稱新疆七民族）3~6歲幼兒男女身體形態、機能、素質共14項指標的測試，進行研究分析，揭示新疆七民族幼兒生長發育的變化規律、發展趨勢和性別間所存在的差異及原因等，為研究新疆七民族幼兒體質變化的規律和制訂各項體質評定標準提供科學依據。

關鍵詞：體質　測試指標　研究分析　3~6歲幼兒　新疆少數民族

Abstract:

According to the sample investigation on 14 indexes such as the body shape, function and quality of 1400 3-6 years old male and female Uygur, Kazak, Mongolian, Kinesis, Xebec, Tajik, Hui nationality children, this paper analyses and reveals the changing regularities, the developing trend and the differences between urban and rural areas and its reasons about the seven nationalities' children's growth in Xingjiang. It gives scientific basis for research on changing regularities of seven nationalities' children's physical fitness and formulating the criteria of different physiques.

Key Words: Physical fitness; Testing indexes; Research and analysis; 3-6 years old children; Minority nationalities in Xinjiang.

廣州市成年人體質特點與體育鍛煉情況關係的研究

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Relationship between Characteristics of Physical Fitness and Sports Exercise in Adults of Guangzhou

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摘要

以廣州市成年人（20～59 歲）為研究對象，分析了其體重指數、腰臀比的特點與體育鍛煉的關係。研究結果發現：廣州市成年人的體重指數、腰臀比隨著年齡的增長而增長，並且男女之間的差異不斷的縮小；參加體育鍛煉與不參加體育鍛煉的 BMI、WHR 有顯著性的差異；長期參加一定負荷的體育鍛煉，對 BMI、WHR 的控制效果較明顯。

關鍵詞：體質；體重指數；腰臀比； 體育鍛煉

Abstract

Taking the adults in Guangzhou as research subject, this paper analyzes the relationship between sports exercise and the characteristics of BMI and WHR. The result shows that the BMI and WHR is increasing go with the age ,the difference is reducing between the Male and Female; The BMI and WHR of residents who take exercise and don't take exercise have significant difference; controlling effects of BMI and WHR in those residents who take sports exercise for long time are apparent.

Key words: Physical Fitness ; BMI; WHR; Sports Exercise

使用膳食營養調整和個體針對性運動方案對青少年肥胖干預實例結果的分析

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The usage meals nutrition is adjusted and particular pertinences motion scheme interferes with example result analysis to teen-agers adiposity

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摘要

通過對干預對象平均一天生活中的學習、運動、休息時間相對準確的調查，計算出干預對象一天生活能量的消耗量。通過對干預對象一天膳食攝取品種、數量的調查，計算出干預對象一天攝取食物的總能量及各種營養素的達成率。使用多頻（5HZ、50HZ、250HZ、500HZ）八觸點電阻抗人體成分分析儀對干預對象的生理指標進行量化評定。測定干預對象的肺活量、臺階指數評定其心肺功能。

根據個體測試結果制定膳食方案和運動方案，安排針對性運動熱量消耗將控制在每天 400—600 千卡，消耗身體多餘熱量 250—400 千卡。制定低能量、低脂肪、優良蛋白膳食方案。考慮到個體在吸收方面的適應能力需要一個緩慢的調整過程，因此進行多餐食物補充方案。

運動減脂對象的營養膳食方案制定應該針對單一個體，保證能量攝取與個體日常生活消耗能量基本平衡或略高；結合運動減脂消耗熱量情況，強調優質蛋白質攝取及足夠的膳食纖維、微量元素、維生素補充。監控個體變化情況隨時進行營養膳食和運動強度的調整。

關鍵詞：肥胖；干預；營養；能量；蛋白質；攝取；消耗；運動

Abstract

By relative to studying, motion, off-hours in interfering with average day of marriage partner life accurate investigation, and calculate out the wastages interfering with the marriage partner day life energy. Inquire into, calculate out up to the standard rate interfering with a marriage partner absorbing food general energy and various nutrients one day by the fact that meals absorbs the breed, quantity to interfering with marriage partner day. Use the multifrequency (5 HZ, 50 HZ, 250 HZ, and 500 HZ) eight contact electrical impedance human body to become the analytical instrument carrying out quantization on the physiology index interfering with a marriage partner appraising. The ad measurement interferes with vital capacity of the marriage partner, the flight of steps exponent appraises whose heart-lung function.

Work out the meals scheme and sport scheme according to individual testing result, 400 600,000 cards arrangement pertinence motion quantity of heat is consumed will be in every day under the control of, consume unnecessary 250 400,000 calories of body quantity of heat. Work out the low energy, low fat, good proteide meals scheme. Think that need one to adjust process slowly to the individual acclimatization in the field of sorption; the food carrying out many meals therefore supplements a scheme.

The scheme works out the nutrition meals moving the subtraction grease marriage partner ought to specifically for unitary individual, ensure that the energy absorbs and the individual daily life consumes fundamental balance of energy or summary height; Consuming quantity of heat condition combining with moving the subtraction grease , absorb and be enough to emphasize high grade proteide

Keywords: fat; interfere with; nutrition; energy; proteide; absorb; consumption; sport

體育鍛煉對廣州市成年人體質狀況的影響

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Effects of physical exercise on physical fitness of adult in Guangzhou

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摘要

目的 瞭解體育鍛煉人群的體質狀況及體育鍛煉的效果。**方法** 對研究對象按體育鍛煉情況進行分類，分析比較不同鍛煉情況下的體質狀況差異。**結果** 廣州市成年人參加體育鍛煉的人口比率為達到 60.4%，明顯高於不鍛煉人群的39.6%；參加體育鍛煉人群的身體機能、素質水平高於不參加鍛煉人群的水平，經常參加體育鍛煉者這種作用效果更明顯。男女經常鍛煉者的 BMI 總體水平高於偶爾鍛煉者和不鍛煉者；女性經常鍛煉的"腰臀比"水平低於偶爾鍛煉和不鍛煉。**結論** 體育鍛煉有益於身體機能和身體素質的提高，對身體形態的改善不明顯並與相關研究存在差異，有待進一步研究。

關鍵詞　體育鍛煉　體質　成年人　關係

Abstract

Objective To realize adult fitness of physical exercise and physical function. **Methods** According physical exercise to classify research object and compare the different of physical fitness at different exercise level. **Results** The rate of adult physical exercise in Guangzhou is 60.4% and no exercise is 39.6%. The body enginery and diathesis of exercises is high of no exercises and this effect is better in often exercises. The general BMI level of often exercise in male and female is high of no often exercise and no exercise, and the rate of waist girth to stern girth of often exercise in female is low of no often exercise and no exercise. **Conclusions** physical exercise is beneficial to the advance of body enginery and diathesis, but this is no effect to body shape and so we should research in the future.

Key words: **physical exercise** **fitness** **adult** **relation**

青海省各民族體質狀況的分析研究

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The research of people physical fitness of each nation living in Qinghai Province

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摘要

為了掌握和探討生活在青藏高原的不同民族的體質狀況，本文在 2005 年全省範圍內開展的第二次國民體質監測工作的基礎上，首次對青海省成年人中不同民族人群的體質情況進行調查統計和分析研究，為促進全省體質水平的改善提供科學依據。按照《2005 年國民體質監測工作手冊》和《青海省 2005 年國民體質監測方案》的要求，採取隨機抽樣的原則，對生活在青海省的漢族、藏族、回族、蒙古族、撒拉族和土族等民族的成年人群（20~59 歲）男女性 11859 人，進行了包括身體形態、機能和素質的體質指標的監測和體質達標情況的評定，所測數據進行嚴格的檢查驗收，並且應用國民體質監測和體育統計軟體（王路德研究員）進行核對總和計算。研究結果表明，青海省各民族的總體體質達標情況從好到差依次為：蒙古族、漢族、撒拉族、土族、藏族和回族，其中成年男性以藏族、女性以回族體質達成率最低；青海省各民族成年人群中，蒙古族男女性比較明顯的表現出體格健碩、體內脂肪堆積的身體形態特徵和擁有較高心肺功能和血壓、身體機能狀況較好的機能特點，而回族男女性則表現為身材瘦小、體內脂肪含量較低的身體形態特點和具有較低心肺功能和血壓的機能特色，其他民族的身體形態和機能水平則介於蒙古族和回族之間；青海省各民族的身體素質各有特色，綜合來看，成年男性中撒拉族身體素質較好，而蒙古族和藏族成年男性總體的身體素質卻較差，成年女性以回族和撒拉族整體的身體素質水平較低。

關鍵詞：民族 體質 達成率

Abstract

After totally 11859 adult living in Qinghai province of age 20~59，the author discussed the different nation (the Han nationality、the Tibetan nationality、the Mongolian nationality、the Hui nationality、the Tu nationality、the Sala nationality) in physical configuration, function , capacity and qualification ratio ,to giving a useful reference for people on physical fitness and health improvement. The result show that the physical qualification ratio of each nation form best to worst one by one is the Mongolian nationality、the Han nationality、the Sala nationality、the Tu nationality、the Tibetan nationality、the Hui nationality. The people of the Mongolian nationality are best and the people of the Hui nationality are worst in physical configuration and function .In capacity, the male of the Sala nationality is best 、the male of the Mongolian nationality and the Tibetan nationality are worst and the female of the Hui nationality and the Sala nationality are worst .

Keyword : nation; physical fitness; qualification ratio

大型體育運動會優秀禮儀引導志願者身體形態和素質特徵研究

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Research on Physical Structure and physical accomplishment Characteristics of Excellent Volunteers for Ceremonial Guides of Big-Scale Comprehensive Games

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摘要

體育賽事禮儀引導志願者是直接參與賽事禮儀活動、表現禮儀規範、展示民族精神風貌的一個特殊志願者群體，而身體形態和身體素質是反應禮儀引導志願者的健康狀況、儀錶儀態等特徵的重要指標。第 21 屆北京世界大學生運動會是迄今為止我國舉辦過的最大規模的一次綜合性運動會，因此，研究選取該屆運動會的 169 名優秀禮儀引導志願者為研究對象，應用人體測試法和希思—卡特體型測評方法，對 169 名優秀禮儀引導志願者的身體形態和素質特徵進行實測和分析，結果表明：(1)禮儀引導志願者體型屬內—外—中胚型，呈現出體型較勻稱、皮下脂肪含量相對偏高、較缺乏肌肉健美的體型特點以及體輕和胸廓發育程度稍低等形態特徵 ；(2)最優秀禮儀引導志願者體型三因數的分值(4.76-1.80-4.92)具有量化參考價值；(3)該群體學生表現出反應靈敏、柔韌、彈跳素質較好，而軀幹和上肢力量相對較弱的身體素質特徵。 建議：大型運動會禮儀引導志願者的選拔，在校大學生是理想之群體， 其培訓應在禮儀規範和引導技能訓練的基礎上，加強軀幹與上肢力量素質的訓練。研究旨在為即將啟動的 2008 北京奧運動會禮儀引導志願者的選拔和培訓提供參考。

關鍵詞：運動會；禮儀引導志願者；身體形態；身體素質；選拔和培訓

Abstract

Sports match thing etiquette guides a volunteer to be the norm exercising , showing etiquette , a peculiar volunteer group showing national spirit scene participate in match thing etiquette directly, but the body form and physical constitution are that reaction etiquette guides important characteristic indices such as volunteer's situation , appearance carriage. 21st Beijing Universiade is a comprehensiveness of maximal scale Games that our country had held so far. By physical measurement method, Heath Carter method and somatotype index comparison method, a study on the somatotype and physical structure characteristics of 169 excellent ceremonial guides of the 21st Universiade was done. Conclusion: (1) the somatotype of excellent ceremonial guides of the 21st Universiade belongs to endodermic-ectodermic-mesodermic type. It could be characterized as well-shaped, relatively high subcutaneous fat content and lack of muscular fitness; The somatotype characteristics of the ceremonial guides are light in weight and long legs, slightly low level of chest development; (2) The average scores of three factors of The most excellent ceremonial guides are 4.76-1.80-4.92, which have a quantitative reference value; (3)Be the group student's turn to show reaction keen , pliable and tough , spring quality is fairly good, but trunk and upper limb relatively weaker physical constitution of strength characteristic. Suggestions: with respect to the selection of voluntary ceremonial guides for large sport events, college students are the ideal source. The training for them shall be based on amenities standard and guiding skills training and shall enhance somatotype training and trainings on strength and duration qualities. We try to build up a physical structure evaluation index system and a quantified physical structure evaluation standard on undergraduate to provide reference to the selection and training of ceremonial guides for big-scale comprehensive games in China and 2008 Beijing Olympic Games.

Key words: sports games; volunteers for ceremonial guides; somatotype; physical accomplishment; selection and training

冬泳運動對中年女性骨骼品質的影響

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Effects of winter swimming on the bone metabolism of middle-aged women

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摘要

目的：觀察冬泳運動對中年女性骨密度、骨礦含量和血清性激素水平的影響，以及與骨代謝相關血生化指標的變化。

方法：實驗於 2004-05 年度在瀋陽體育學院進行。由瀋陽市冬泳協會組織冬泳愛好者和非冬泳實驗對象各 36 人，年齡在 50-55 歲之間。冬泳組經 3 周適應性運動後，每週在 2~10^{0}C 水溫中游泳 3 次，5~10min/次，每次游泳前後分別進行 5~10min 的熱身和調整運動。運動週期結束採用 BH6005 型單光子骨密度儀測試實驗對象骨寬、骨礦物質、骨密度；放射免疫法和生化法分析睾酮、雌二醇、骨鈣素、鈣、磷、皮質醇等指標。

結果：實驗結果顯示，□ 冬泳前冬泳組與非冬泳組比較，骨密度值和血激素指標無統計學意義。□ 冬泳後冬泳組橈骨遠端的骨密度(BMD)、骨礦物質(BMC)均高於對照組（$p<0.05$），而骨寬(BW)無顯著變化。□ 冬泳後冬泳組血清中骨鈣素（BGP）、睾酮（T）、雌二醇（E_2）值均較對照組顯著增高（$p<0.05$），而血清鈣(Ca)、磷(P)、皮質醇(Co)兩組無顯著差異（$p>0.05$）。□ 冬泳後相關分析顯示冬泳運動改善血清 T、E_2和 BGP 的濃度，與 BMD 呈正相關(r—0.323, 0.321, 0.407, P—0.05, 0.05, 0.01)。

結論：冬泳運動影響中年女性的骨代謝，增加 BMD 和 BMC 的含量，提高 BGP、T、E_2的血液濃度，對於預防骨質疏鬆的發生有其重要意義。

主題詞：冬泳運動；骨代謝；中年婦女

Abstract

AIM: To observe the effect of winter swimming on bone density; bone mineral content; serum hormone and the change of serum biochemistry with the correlation of bone metabolism.

METHODS: The experiment was performed at the Shenyang Institute of Physical Education between 2004 and 2005.Thirty six winter swimming people and thirty six non winter swimming people aged of 50-55 years were selected by Shenyang winter association and then exercised 3 times per week (in the water of 2-10^{0}C) for 5-10 minutes after they adapted 3 weeks. Winter swimming people performed the movement of hot body and adjustment for 5-10 minutes before and after the exercise. Bone density was detected with BH 6005 single-energy X-ray absorptiometry scanner. testosterone, estradiol ,steocalcin were analyzed with radio immunoassay and biochemistry method.

RESULTS: Experimental results display, ㈠ Compared with non winter swimming group, bone density and serum hormone content of winter swimming group were not changed before exercise. ㈡ Bone density(BMD) of far-end radius and bone mineral content(BMC) of winter swimming group was markedly higher than non winter swimming group($P<0.05$), but bone width(BW) was not changed. ㈢ Winter swimming exercise increased serum steocalcin(BGP), testosterone(T), estradiol(E_2) content($P<0.05$), while serum calcium(Ca), phosphate(P) and cortisol(Co) had no significant change($p>0.05$). ㈣ There were obviously positive relationship between T, E2, BGP and BMD (r 0.323, 0.321, 0.407, $P=0.05$, 0.05, 0.01).

CONCLUSION: Winter swimming exercise affect bone metabolism in the middle-aged women, increase BMD and BMC content and elevate the concentration of BGP, T, E_2. There is an extremely significance to a prevention of osteoporosis.

Key word: middle-aged women :bone metabolism :winter swimming

建立上海市成年男性體脂率預測公式的研究

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Research on development and validation of Shanghai adult men's Body Fat Percent prediction equation

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摘要

目的：以上海市 2005 年國民體質監測數據為基礎，建立上海市成年男性體脂率預測公式。**方法**：抽取來自上海市 19 個區（縣）的 21—59 歲上海男性市民，共 441 人。隨機將總受試者的 80%（n=353）分為建立組，通過多元線性回歸分析建立回歸方程；剩餘 20%（n=88）受試者作為驗證組對所得到的預測方程進行回代驗證。同時，將新建立的預測方程預測值，與上海市 2005 年國民體質監測中所用的皮褶厚度法體脂率預測方程（下稱舊預測方程）預測值，以 BODPOD 方法測試值為標準進行比較。**結果**：新建立的預測方程為%BF=〔0.072+0.005＊腹部皮褶厚度＋0.005＊肩胛下皮褶厚度｜0.003＊上臂部皮褶厚度 0.0000189*(腹部皮褶厚度+肩胛下皮褶厚度+上臂部皮褶厚度)^2〕＊100%，通過回代驗證表明，新預測方程較舊預測方程更能準確的反應測試值。結論：在條件有限和基層進行簡易的上海市成年男性體脂率預測時，推薦使用該預測公式。

關鍵詞：上海市；成年男性；體脂率；預測方程

Abstract

Objective Based on the dates of 2005 Shanghai national fitness testing, developing and validating of Shanghai adult men's Body Fat Percent prediction equation. ***Methods*** The subjects at the age between 21 and 59, a total of 441 adult men come from Shanghai's 19 distract (county). Subjects were randomly divided into a validation sample (n=353) to develop the new %BF prediction equation and a cross-validation sample (n=88) used to validate the new prediction equation and compare the old prediction equations using BODPOD model as a reference. ***Results*** The new %BF prediction equation is: %BF=[0.072+0.005 * abdomen skinfolds+ 0.005 * subscapular skinfolds + 0.003 * triceps skinfolds − 0.0000189 * (abdomen+subscapular+triceps)^2] * 100%. Compared the old prediction equation, the new prediction equation is more accurate. ***Conclusions*** When research condition limit and simply predict Shanghai adult men's Body Fat Percent, recommending using this new prediction equation.

Key words：Shanghai；adult men；Body Fat Percent；Prediction equation

生活環境對廣西3~6歲幼兒體質影響的研究

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Surroundings factor is for the analysis that the GuangXi year-old child physique of 3~6 affects

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摘　要

本研究採用文獻數據法、測量法、問卷調查法和數理統計法，根據廣西2005年國民體質監測數據，對影響廣西 3~6 歲幼兒體質的生活環境因素進行研究。研究結果表明，幼兒所在地（城鎮或鄉村）、幼兒在家的看護人和母親每週平均參加體育鍛煉的次數是生活環境因素中影響廣西 3~6 歲幼兒體質的主效應，父母應是幼兒在家看護人的第一人選。母親參加體育鍛煉有利於增強幼兒體質，但鍛煉的次數要適宜。

關鍵詞：體質，主效應，方差分析，看護人，體育鍛煉

Abstract

This research adopts document information law, measure law, questionnaire investigation law and mathematical statistical law , is studied according to the GuangXi national physique inspection data of 2005 years, for affecting the surroundings factor of the GuangXi year-old child physique of 36. Research result shows , child site (town or village) , the nurse of child at home popular support mother the frequency of attending physical training every week in average is the main effect that affects the GuangXi child physique of 36 of year-old in surroundings factor, parents should be the first candidate of child in domestic nurse person. It will be suited that mother attends physical training to be helpful for the frequency that strengthens child physique and but exercises.

Keyword: Physique; main effect; variance analysis; looks after person; physical training

國民體質測定的社會效益與經濟效益及平臺模式探析

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Analysis the Social efficiency，Economic efficiency and Platform Pattern of National Physical Fitness Measurement

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摘要

從公共服務的產品劃分來講，體質測定服務是一種准公共服務產品，既要堅持公益性原則，又可以有經營性質，還具有部分的排他性和一定的市場競爭性。

國民體質監測的社會效益體現在對本地區國民體質的狀況和變化規律進行客觀的描述，為政府職能部門的相關工作和決策提供依據，推動全民健身活動的開展，促進國家經濟建設和社會發展。國民體質測定的社會效益表現在宣傳體育工作、宣傳國民體質監測，為個人和單位提供體質狀況描述和諮詢，促進全民健身活動的開展。獲取最大的社會效益是國民體質監測和國民體質測定的生存之本。各級國民體質監測中心必須以獲取社會效益為己任。

國民體質測定作為衡量一個人體質健康水平，進而提供運動健身指導的服務，完全可以作為一種成熟的消費推向市場，並獲得足夠的經濟效益。各地國民體質監測中心在人員、設備和場地上，具備了使國民體質測定工作面向社會，為社會提供專業性營利服務的條件。面向社會的營利服務是盤活國民體質監測中心的有效途徑，既能充分發揮現有儀器設備的作用，又可調動工作人員的積極性，對於國民體質監測和和國民體質測定工作長期持久地良性開展具有現實意義。

根據筆者的測算，一個省級國民體質監測中心，每年營利性測定量最低應在5千人左右，測定和延伸服務收入可達到50萬元以上。

國民體質監測是由國家無償投入，並隨著國民經濟的發展，逐漸增加投入的比重。這充分顯示了人民政府把體育的社會效益放在首位，全心全意為人民服務的宗旨。但這與搞經營開發，把經濟效益放在重要位置並不衝突。應該鼓勵微觀搞活，追求經濟效益、賺取更多的利潤。微觀搞活，盤活了國有資產，既可以減輕國家的財政負擔，又可以使國民體質測定走上良性迴圈的發展道路。

平臺模式就是將國民體質監測中心，包括人力、物力及相關資源，作為一個平臺向社會推出，任何有需要的個人、群體、單位、公司等等都可以使用和利用。國民體質監測中心本身可以通過這個平臺獲得社會效益和經濟效益，社會各界也可以利用這個平臺獲取各自的社會效益和經濟利益。平臺的特點是構架完善，政策支持，有相對固定的人員、場地和高科技設備，有良好的管理運作的方式、方法和手段。平臺模式能促進省市級國民體質測定工作在社會效益和經濟效益的雙豐收。

關鍵詞：國民體質測定　國民體質監測　社會效益　經濟效益　准公共產品　平臺模式

Abstract

Says from the public service product division, the physical fitness measurement service is one kind of parapublic product, both must persist the public welfare principle, and may have the management nature, but also has the part exclusiveness and certain market competitiveness.

The social efficiency of national physical fitness surveillance manifests in carries on the objective description to this local national physique condition and the change rule, provides the basis for the government functional department's correlation work and the decision-making, impels all the people fitness the active development, the promotion national economic construction and the social development.

The social efficiency of public welfare national physical fitness measurement displays in the propaganda sports work, propagandizes the national physical fitness surveillance, and the unit provides the physique condition description and the consultation for individual, promotes all the people fitness the active development.

Gains the biggest social efficiency is the national physical fitness surveillance and the national physical fitness measurement foundation of survival. All levels of national physical fitness surveillance center must take gain the social efficiency as an own duty.

The national physical fitness measurement achievement weighs a person physique health standard, then provides the movement fitness instruction the service, definitely may take one kind of mature expense pushes to the market, and obtains the enough economic efficiency.

Each place national physical fitness surveillance center in the personnel, the

equipment and the location, had has caused the national physical fitness measurement work to face the society, provided the specialization for the society to seek to make a profit the service condition. Seeks to make a profit the service face the society is stimulates the physical fitness surveillance center the effective way, both can display the existing instrumentation equipment fully the function, and may arouse staff's enthusiasm, has the practical significance lastingly regarding the national physique monitor and with the national physical fitness measurement work long-term benignity development.

According to author's reckoning, a provincial level national physical fitness surveillance center, the beneficial determination quantity is every year lowest should about 5000 people, determines and extends the service income to be possible to amount to above 500,000 Yuan.

The national physical fitness surveillance is by the national free investment, and along with the national economy development, increases the investment gradually the proportion. This had demonstrated fully the people's government places the sports social efficiency the first place, wholeheartedly goal of serving the people. But this with does the management development, places the economic efficiency the important position not to conflict. Should encourage to enliven, the pursue economic efficiency, earns more profits. Enlivened, has stimulated the state asset, both might reduce national the financial burden, and might cause the national physical fitness measurement to step onto the positive cycle the development path.

The platform pattern is the national physical fitness surveillance center, including the manpower, the physical resource and the correlation resources, took a platform promotes to the society, any has need individual, the community, the unit, the company and so on all may use and use. National physical fitness surveillance center itself may obtain the social efficiency and the economic efficiency through this platform, the society from all walks of life also may use this platform to gain respective social efficiency and the economic interest. The platform characteristic is the skeleton consummation, the policy support, has the relatively fixed personnel, the location and the high tech equipment, has the good management operation way, the method and the method. The platform pattern can promote the provincial and municipality level national physical fitness measurement work in the social efficiency and the economic efficiency double abundant harvest.

Keywords: national physical fitness measurement, national physical fitness surveillance, social efficiency, economic efficiency, parapublic product, platform pattern

如何提高澳門居民的體質水平

何興中

澳門聖公會蔡高中學

How to improve the physical fitness of Macao residents

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摘要

1.澳門居民體質現狀

一個地區的居民體質，與當地的體育運動水平有莫大的關係，澳門地區的體育運動水平與鄰近地及國內、世界的差距很大，處於滯後狀態，故體質水平也是比較落後的。

但澳門特別行政區對體育運動的投入從人均指數比鄰近地區都高，有人說澳門的運動員是幸運兒，因為他們經常有機會參加世界上各種競技比賽，甚至可以與世界頂尖級的運動員同場競技，在其他地區是不可思議的。

也有人譴稱澳門的運動員是最大的"魚腩部隊"之一，因為他們在以往的國際比賽中，多次以懸殊的比分敗在對方手下，甚至"創造"出另類的"世界紀錄"，一場足球賽事中，以極大的比數負於對手。然而，屢敗屢戰是現今澳門體育界的社會現狀。

回歸之後，澳門以更積極的姿勢投入到世界大家庭中的體育活動之林，2005年首次主辦大型國際體育盛會--東亞運動會，贏得了國際聲譽，並取得了良好的社會效應，2006 年主辦了第一屆葡語系國運動會，獲得了參與國的好評，產生了深刻的國際影響。今年初又派出了龐大的體育代表團參加了多哈亞運會，參加了二十多項競技比賽，雖然獲得獎牌數目不多，但充份體現了特區政府對體育運動的大力扶持，下半年更準備籌辦國際室內田徑運動會。作為主管機構的體育發展局，對開展群眾性的體育運動也不遺餘力，澳門居民參與體育活動的機會和能力處於較高水平，在世界運動日的大眾體育活動中就多次戰勝對手國家的城市。

2. 學界體育在澳門體育的地位

澳門的競技體育有一個特點，就是基本上以學生特別是在校的大中小學生為主力，因為暫時還未有組成職業運動員組成的專業運動隊，參加各比賽的隊伍都帶有臨時組合性質，對各中學的運動員依賴性很強。

作為專責中小學體育活動的教育局青年廳，每年都組織一系列的學界比賽，參賽學校逐年增多，使新人得到不斷的發掘和鍛煉，對各校的體育運動是一個極大的推動力，並且給予青年人充分的表現空間，對推動群眾性的體育活動的開展

以及本地競技體育水平的提高，都有深遠的意義，毫無疑問，也將促進澳門市民體質水平的提高。

3. 提高體質水平關鍵在於提高運動水平

體質是人生命活動的物質基礎，它以力量、速度、耐力、反應性、靈敏度等各種形式表現在日常生活和體育運動中，經常性的參與和加強身體鍛鍊，是提高體質水平的最重要途徑。

由澳門體育發展局主導統籌、國家體育總局協助，本澳教育局、衛生局等跨部門組織了各年齡組的樣本進行了體質測試，撰寫了 2005 年澳門特別行政區體質監測報告。

該次監測結果顯示，澳門中學生與北京、上海和廣州同齡的中學生相比，身高較矮，心肺功能較差，體現出脈搏較高、肺活量較少、質素(力量、速度與耐力)指標明顯偏低。特別是女同學在青春期後，隨著年齡增大，體型的變化等致體育活動時間有減少的趨勢。

在筆者的工作實踐中，也發現有這一趨勢，高中的女同學從高一至高三，在參與運動的積極性方面，越往高年級越差，自然體育成績也呈下降趨勢，究其原因，一個是生理上的因素，一個是體質下降等致。

因此，提高市民體質水平最有效手段是提高運動水平，一方面，加大群眾性體育運動的力度，另一方面通過體育教學提高在學中學生的體質水平，筆者在體育教學過程中，對照京、滬、穗等地區的中學生評分標準，發現同齡澳門學生的可量化成績在很多項目中都處於合格水平之下，教師在進行體育成績評核時，為遷就這程現狀，降低評核分數，這樣又進一步拉低了學生的體質水平，必須採取有效措施加以改變。

Abstract

A local inhabitant physique, has the greatest relations with the local sports level, the macau area sports level and the neighbor and the home, the world disparity is very big, is at the lag condition, therefore the physique level also is quite backward. But Macao special administrative region is close to the area to the sports investment from the average per person index to be all higher than, some people said macau the athlete is a lucky fellow, because they frequently have the opportunity to participate in the world each kind of athletics competition, even may and the world apex level athlete with the field athletics, in other areas be inconceivable.

Also some people called macau the athlete is biggest "the fish intestinal fat army" one, because they in the former international competition, defeat many times by the disparate score in opposite party under, even "the creation" the kind "the world

record", in a soccer sports event, loses in addition by the enormous score to the match. However, the defeat ,war is the nowadays macau sports society present situation. After return, macau invests by a more positive posture into the world big family's in forest of sports, in 2005 sponsored the large-scale international sports grand meeting -- east asian games for the first time, the Ying international prestige, and has obtained the good social effect, in 2006 has sponsored the first session of Portuguese language family country games, has obtained the participational country high praise, has had the profound international influence. Beginning of this year sent out the huge sports to represent attended the doha Asian Games, attended more than 20 athletics competitions, although obtained the medal number not to be many but the sufficient share to manifest the special zone government to the sports vigorously support, second half year prepared to prepare in Office of Foreign Relations the track and field games. As the cognizant agency sports development bureau, to launches the mass sports to be also spare no effort, the macau inhabitant participates in the sports the opportunity and the ability is in compares the high level, on defeats the match country many times in the Olympics date populace sports the city.

Macau's athletics sports has a characteristic, is basically take the student especially maybe in the school major and medium elementary student as the main force, because temporarily has not had the specialized movement team which the composition free agent composes, attends each competition the troop all to have the temporary combinatorial property, is very strong to various middle schools' athlete dependence. As the sole responsibility elementary and middle schools sports Bureau of Education youth , organizes a series of educational worlds competition, the participative school to increase year by year every year, enable the new person to obtain unceasing excavating with the exercise, to various schools sports is an enormous propelling force, and gives the young people the full performance space, to impels the mass sports the development as well as the local athletics sports level enhancement, all has the profound significance, without a doubt, also will promote the macau resident physique level enhancement.

The physique is the person vital activity material base, it by the strength, the speed, the endurance, the reactivity, the sensitivity and so on each kind of form displays in the daily life and the sports, the regular participation and strengthens the body to hammer, is raises the physique level the most important way. By the macau sports development bureau leadership overall plan, the national sports bureau assistance, this Australian Bureau of Education, the sanitation bureau and so on the cross department organized various age groups' sample to carry on the physique test, has composed in

2005 the Macao special administrative region physique monitor report. This monitor result showed that, the macau middle-school student and Beijing, Shanghai and the Guangzhou same age middle-school student compares, height shorter, cardiopulmonary function worse, manifests the pulse higher, the vital capacity less, the innate nature (strength, speed and endurance) the target obvious is somewhat low. Specially the female schoolmate after the puberty, increases along with the age, the build change causes the sports time to have reduced the tendency. In author's working practice, also discovered has this tendency, high school's female schoolmate from high one to high three, in the participation movement enthusiastic aspect, is worse toward the higher grades, the natural sports result also assumes the drop tendency, investigates its reason, is in the physiological factor, is the physique drops causes. Therefore, enhances the residential physique level most effective method raises the movement level, on the one hand, enlarges the mass sports dynamics, on the other hand enhances through the sports teaching in study middle-school student's physique level, the author in the sports teaching process, compares Beijing, , the ear and so on the local middle-school student grades the standard, discovered the same age Macau student may the quantification result all be in under the qualified level in very many projects, the teacher when carries on the sports result comments the nucleus, gives in to this regulation present situation, reduces comments the nuclear score, like this further pulled has lowered student's physique level, had to take the effective action to perform to change.