

Analysis on the Social Factors of Adolescents' Physical Deterioration in China

Liu Dongxiao, Jin Yuqiang

*College of Physical Education of Hunan Normal University
School of Physical Education , South China University of Technology
Corresponding Author: Liu Dongxiao*

ABSTRACT : *The social factors that cause the physical deterioration of Chinese adolescents are multifaceted and complicated. In order to find effective ways to solve it, all the social factors that lead to the decline of Chinese adolescent's physical fitness in accordance with the idea of "exhaustion principle" in engineering design theory should be summarized and classified and then analyzed. Based on the literature review and expert consultation, judgments from scholars of different disciplines on the reasons for the decline of Chinese adolescent's physical fitness have been collected and analyzed. It is believed that the insufficient energy consumption of the body, imbalanced input energy supply to the body and intervention damages are the three major social factors that lead to the decline of Chinese adolescent's physical constitution.*

Keywords : *Adolescent; physical fitness; physical fitness decline; social factors; body;*

Date of Submission:05-09-2019

Date of acceptance: 23-09-2019

I. THE PROPOSAL OF THE QUESTION

China has carried out seven times of physical health monitoring among students since late 1970s. A large number of test data obtained show that some health and sports quality indicators of adolescents in China have been declining continuously. Pedagogical observation also verifies the correctness of these data from another perspective. Most of the front-line physical education teachers have the overall negative evaluation on their teaching object's physical health and sports ability. According to them , the students' sports performance in physical education class is not as good as before, and the records of some school sports meeting are hard to break for many years. What's more, the standards of physical examination qualifications which have been implemented for many years in the annual conscription work have to be adjusted twice in a row due to the decline of the overall level of the physical fitness of the candidates , so as to solve the current situation of insufficient military resources caused by lower rate of physical examination qualifications.

After the physical deterioration among adolescents was reported, the Party Central Committee and the State Council attached great importance to the situation and special documents were issued. On December 20th, 2006, the Ministry of Education, the General Administration of Sport of China and the Communist Youth League Central Committee jointly issued the Notice on Developing Sunshine Sports for Billions of Students in China. On May 7th, 2007, the Central Committee of the Communist Party of China and the State Council issued the "Opinions on Strengthening Youth Sports and Enhancing Youth's Physical Health" and again it pointed out: "Recent physical health monitoring shows that physical fitness indicators such as endurance, strength and speed of adolescents continue to decline, the rate of poor eyesight remains high, while the proportion of overweight and obese adolescents in cities is increasing obviously in a high speed. In some rural areas, the nutrition of adolescents needs to be improved urgently. If these problems are not effectively solved, the healthy growth of adolescents will be highly affected, even the future of China and the Chinese people."

"Rome is not built in a day". The physical deterioration among adolescents as a whole is not only a long accumulation process, but also the result of a complex gradual change process. To decode the problem of adolescents' physical deterioration in our country, one must first find out what factors are involved in the gradual process leading to the decline of adolescents' physical fitness in China. Only by finding out these factors and then combing them in detail and summing them up can one accurately figure out the best way to solve the problem of adolescents' physical deterioration. The purpose of this paper is to list all the social factors that may lead to adolescents' physical deterioration according to the exhaustion principle, and lay a foundation for further research.

"Exhaustion principle" is a basic principle in design engineering. Basically, it means that before the design scheme is formed, all the inevitable and probable factors that may lead to the failure of the project are

classified and arranged separately, so that these factors can be avoided and overcome one by one in the process of the design scheme formation to ensure the success of the project. In design engineering, the "exhaustion" principle of must be followed, whether in the forward process which is to ensure the success of the project or in the reverse process which is to find the cause of failures. The idea of the exhaustion principle is also applicable in many fields.

For example, at the closing ceremony of the 2008 Pingchang Winter Olympic Games, as the host of the 2022 Beijing Winter Olympic Games, Beijing was given minutes to show the charm of Beijing Winter Olympic Games to the world, which is also known as "Beijing's Eight minutes". Director-in-chief Zhang Yimou broke through the previous tactics of "sea of people" in the design and made full use of high-tech energy while only 24 actors participated in the whole performance. In order to ensure absolute success, the team of "Beijing's Eight Minutes" had refined and listed all the reasons which may lead to failures and had taken measures to deal with them one by one. For example, wind tunnel testing was used to simulate different wind speeds to test the anti-wind ability of high-tech equipment; artificial freezing technology was used to check the ultimate limit of thousands of parts' cold resistance ability; vibration and noise were used to test the stability of transportation and remote restructuring, etc. Although launching rockets and satellites is a feat of human exploration of space, not every launch has been successful. As the saying goes "No cross, no crown", it is those failed launches that increase the odds of success for the final successful launches. The examination of the reasons of launch failures also guarantee that the next launch which would be carried out on the premise that all failure reasons are exhausted and overcome.

One of the important functions of society is to cultivate and educate the next generation of adolescents. In this sense, the growth process of adolescents can be also regarded as a grand project of the cultivation of people by society. Then, the physical deterioration of adolescents could also be deemed as a failure of the education project. In order to reverse this situation and find a solution to the problem, all the factors that may lead to the decline of adolescents' physical health should be found out according to the "exhaustion principle", which must be an indispensable step to put forward an optimal scheme to solve the problem of adolescents' physical deterioration in China. There are not only natural factors but also social factors that lead to adolescents' physical deterioration in China. This paper will mainly discuss the social factors which lead to the adolescents' physical deterioration in China.

II. RESEARCH METHODS AND PROCESSES

2.1 Literature Research Method

In March 2016, by using key words of "adolescents' physical deterioration", "causes" and "factors", 62 relevant papers, including 2 doctoral dissertations and 7 master's dissertations were retrieved from China's CNKI.net. The factors lead to the decline of adolescents' physical health in China are extracted, summarized in the following table (Table 1).

Table 1. The Social Factors Causing the Decline of Adolescents' Physical Fitness in 62 Papers

Serial No.	Social Factors	Frequency
1	Schools do not attach importance to physical education. The status of physical education is low, the time for physical activities is not guaranteed, and the status of P.E teachers is low.	31
2	Excessive pursuit of enrollment quotas caused by Chinese examination-oriented system.	31
3	Family factors. Parents' spoiling under the one-child policy, parents' emphasize more on intelligence rather than body.	25
4	Economic and technological development, change of lifestyles, development of online games make people change from dynamic to static life.	25
5	Students' consciousness in exercise is weak, they are afraid of hardship and have not formed a good habit of physical exercise.	20
6	Poor living habits; sleep deficiency; Dietary habits; Nutrition imbalance.	17
7	Inadequate funding for site equipment due to poverty.	15
8	Traditional social and cultural consciousness; lack of sports culture; lack of sports culture in schools	13
9	The quality of teachers is not high and the number of teachers is not enough.	12
10	Government and school policy implementation are not well carried out; inadequate supervision of government departments.	10
11	Potential dangers of unsound legal system in physical education	7

2.2 Expert Consultation

From July to August 2016, 18 experts were interviewed and consulted on the causes of adolescents' physical deterioration in China. These experts are professors, researchers and chief physicians in the fields of biology, medicine, nutrition, environmental science and education. Their opinions are summarized in Table 2.

Table 2. Social Factors Leading to Adolescents' physical Deterioration in China According to Relevant Experts

Serial No.	Social Factors	Frequency
1	Overnutrition and obesity lead to physical decline	16
2	Too little physical activity leads to a decline in physical fitness and endurance	16
3	Violation of eye hygiene leads to poor eyesight	11
4	Physical deterioration due to air, water pollution and electromagnetic radiation	13
5	Abuse of fake and inferior food and supplies leads to premature puberty	13
6	Anemia due to inadequate nutrition intake	9
7	Overuse of antibiotics leads to poor immunity	2

III. DISCUSSION

The authors of the 62 academic papers are all from physical education institutions, engaged in physical education teaching and scientific research. They can be regarded as experts in the field of sports to study the physical deterioration of young people in China. Coming from different academic fields, the 16 experts all put forward their own opinions on the causes of adolescents' physical deterioration from the perspective of their disciplines. This is more conducive to the "exhaustion principle" in the search for factors leading to the decline in the physical health of our young people.

The stage of adolescence should be the period for physical ascension of life. According to the current understanding of human science, the reasons for the decline of the overall physical fitness of adolescents can only be based on the following four situations: 1) insufficient energy consumption stimulation to the body; 2) unbalanced energy supply for the growth of the body (insufficient or excessive); 3) intrusive damage to the body. 4) Gradual degradation of species. The gradual degeneration of species is a common phenomenon in nature, but it takes a long time to appear, which is obviously inconsistent with the reality of the physical deterioration among young people in China. Moreover, the phenomenon of gradual degeneration of species focuses on natural factors, so this paper will omit it and only discusses the first three reasons.

3.1 Insufficient energy consumption stimulation for adolescents

Following the biological law of stimulation-adaptation-development, the physical health of human body is related to external stimulation. The relationship is much more closer during the growth and development of children. There are many forms of energy-consuming stimuli (such as coping with changes in the body in cold and hot environments, fever, etc.). However, physical activities (physical labor, walking and sports) are the stimulus which have the greatest impact on physical fitness under normal conditions. Once they are inadequate, they will become a negative factor in the physical improvement of adolescents. According to people's current understanding, lack of physical activity can lead to physical weakness, especially when long-term physical activity is insufficient, physical weakness is more obvious. This is the general law of "advancing with usage, retreating in waste" in the biological world. In the daily life of adolescents, physical activities can be divided into three categories: physical labor, sports and moving.

3.1.1 Lack of physical Labor

In the past, teenager students would take part in some physical labor because of family needs, such as housework and specific productive labor. The daily housework in family life in the past, such as carrying water, chopping wood, cleaning, washing clothes, cooking and washing dishes, are almost entirely replaced by modern facilities and household appliances such as tap water, gas, washing machines, dishwashers, intelligent sweepers. The intensity and frequency of housework are greatly reduced. Since the implementation of family planning policy in the late 1970s, more and more families of three have emerged. The total amount of housework in these families is naturally much lesser than the dominant main families and united families in the past. Therefore, the daily housework that families need adolescents to participate in nowadays is very few. In addition to the daily housework, some families also have some specific productive labor that requires the participation of underaged children, especially those living in rural areas. After China's reform and opening up was implemented, the amount of labor required for farmland management has been reduced by more than half compared with traditional farming methods with the emergence of the household responsibility contract system in rural areas and the widespread use of various types of modern agricultural machinery and pesticides. These changes have made the working pressure of the parents who are working as farmers very small, so there are few opportunities for their children and adolescents in the family to participate in the specific productive labor.

In addition to the reduction of physical labor at home, it is the same situation in schools. Most of the indoor and outdoor cleaning work in urban schools is contracted to professional cleaning companies. For social welfare labor like afforestation, schools rarely take the initiative to organize students to participate in the work to avoid the risk of accidents.

3.1.2 Insufficient Sports Activities

Sports activity is a kind of physical activity with strong initiative and enthusiasm. Human experience and many research results have proved that sports can obviously stimulate the energy consumption of human body, so it has a very obvious effect on the improvement of physical fitness. In this study, almost 100% of the research literature point out that the primary reason for the adolescents' physical deterioration in China is due to the lack of sports activity. As the trajectory of adolescents' daily life is simple and clear, and the space-time structure of their lives is also very clear, it is very easy to figure out the reasons for their insufficient sports activities: the inadequate implementation of sports activities in school or the insufficient self-exercise of students, or both. The weak implementation of school physical education mainly focuses on the influence of the outside world on the students. Lack of self-exercise focuses on the subjective action of the students. The level of the students' subjective initiative is also related to the educational effect. Therefore, the inadequate implementation of school physical education and the insufficient self-exercise of students are the two aspects of a problem. Their relationship is often the cause-and-effect, closely linked and inseparable.

The inadequate implementation of school physical education seems to be a common phenomenon in primary and secondary schools. An examination-oriented education of "thousands of horses crossing a single wooden bridge" and the recessive strength of the evaluation lever of "evaluating heroes by the enrollment rate force schools to let one of "three-education" function, namely the physical education to give way to the intellectual education. Secondly, school physical education has to accommodate and "please" parents and students under the one child policy background to minimize the teaching content which students are not interested and tired and energy-consuming. The risky content would be deleted and replaced with relatively safer teaching contents that students like. As a result, rhythmic gymnastics and badminton are more taught while gymnastics such as horizontal and parallel bars, vaulting horse, cushion sports and middle and long distance running are compressed, and even completely withdrawn from school physical education classes.

To rely only on the energy consumption in the twice-a-week physical education classes to enhance students' physical fitness is unrealistic. Students should do more self-exercise after class. Nowadays, the self-exercise among students after class is at a lower level. One of the important reasons is that students are afraid of hardship and tiredness and lack of interest. The lack of interest of students in physical exercise is not only a factor of inadequate implementation of school physical education, but also a consequence of inadequate implementation of school physical education.

In addition, students' lack of interest in physical exercise is also due to poor physical fitness. For example, some students are overweight (obese) or weak, they do not perform well in strength, endurance and coordination quality, which will result in their lack of self-confidence in sports, so their interest in sports gradually disappears. It would become a vicious circle as their poor sports ability will lead to lack of confidence in sports and then their interest in sports would be declining, and because of lack of interest, they would seldom take the initiative to take part in physical exercise. After the network infiltrate into people's life in an all-round way, a new generation of homebody lifestyle has been born. When this lifestyle becomes a fashion among adolescents, they are even less able to have passion and interest in physical exercise.

Apart from the reasons of interest, the biggest obstacle for adolescents' inadequate self-exercise is that they have too little leisure time. A large number of homework and various kinds of cramming classes occupy almost all the leisure time that should belong to children. Even if they are interested in sports activities, they will sigh at the lack of time to do what they are interested in.

3.1.3 Less Moving

Moving is a special form of physical activity between physical labor and sports. For adolescents, moving refers mainly to activities to overcome the distance between their place of residence and other places, such as going to school and returning home after school. The distance, state and mode of movement determine the magnitude of physical activity. Nowadays, the time and distance that primary and secondary school students need to walk in their daily life are decreasing. Vast majority of students will use all kinds of transportation to go and leave school. This situation is not limited to cities, but also in some rural schools. School buses have become a non-luxury configuration. In addition, some family houses in the city are equipped with elevators, so students do not need to climb stairs to enter or leave their homes. This series of changes has, of course, reduced the chances of adolescents' daily physical activity.

3.2 Imbalance of Energy Supply for Body Growth

The unbalanced supply of input energy for human body can lead to two situations: one is deficiency of nutrition, the other is excess of nutrition. Lack of input can lead to malnutrition, and excessive input can lead to overweight. Nutrition deficiency and overnutrition are relative concepts. The boundaries between nutritional deficiency and excess are not fixed for different individuals in different periods of time. But without exception, both lack of nutrition and excess will directly affect the physical development of adolescents, that is to say, they will hinder the physical development.

3.2.1 Nutritional Deficiency

At present, the symptoms of the impact of nutritional deficiency on the physical fitness of adolescents in China are mainly reflected in the two indicators: body mass index and anemia, because nutritional deficiency will make these two indicators appear lower than the normal value. According to the "Standard Body Mass Index of Chinese Students' from 7 to 22 Years Old" issued by the Ministry of Health in 1995, body weight below 90% of the standard weight was malnutrition, which was divided into mild malnutrition (< 90%), moderate malnutrition (< 80%) and severe malnutrition (< 70%). According to survey, the detection rate of malnutrition among Chinese Han Nationality students aged 7-18 in 2014 was 10.0% [2].

At present, China is still in the primary stage of socialism. Due to the unbalanced development of regional economy and other reasons, there are still some areas where people's living standards are below the poverty line. Many children in poor families often eat salted vegetable and for them a can of salted vegetable can be eaten for a week. Other children can only eat two meals a day, which is hard to meet the nutritional needs of physical development. This phenomenon is not uncommon in some old revolutionary base areas, ethnic minority autonomous areas, land border areas and underdeveloped areas and some left-behind families. In addition, family and individual eating habits can also lead to malnutrition. Family eating habits are closed related to the local customs. As the saying goes, "people live in south love sweet foods; people in the north like salty foods; people in the east like spicy foods while people in the west like sour foods ". These regional characteristics of eating habits sometimes will also become a negative factor in the physical growth of adolescents.

3.2.2 Nutrition Excess

What attracts more attention than nutritional deficiency is nutrition excess characterized by obesity. In 2014, it was reported that 23% of boys under 20 years old were overweight or obese, and 14% of girls were overweight or obese. So, who is behind nutrition excess? Firstly, after the reform and opening up, with the improvement of social and economic level, people's dietary structure has changed as food ingredients rich in fat and protein such as chicken, duck, fish etc. increased rapidly. Many families have completed the table revolution from hungry to full, and then from full to well-fed revolution. In addition, some families think that chicken, duck and fish are both delicious and nutritious and good for children's health due to lack of nutrition and health knowledge. This dietary structure will certainly lead to nutrition excess among children and adolescents [4].

In addition, with China's opening to the outside world, fast foods from western countries such as KFC, McDonald's and other high-sugar carbonated drinks such as Coca-Cola and Sprite quickly entered China's catering market. It is also one of the important reasons for the increase of obese children in cities [5]. Because many children in the city like these foreign fast foods, parents often meet their children's requirements without principle and these children become frequent customers there. The increasing consumption ability promoted by increasing income, lack of nutrition knowledge, and the relatively spoiled parenting have become the pushing hands of some adolescents' nutrition excess.

3.3 Intrusive Damage to Human Body

Intrusive damage of organism directly threatens human health. It is the obvious factor of weakening physical deterioration. At present, the intrusive damages faced by adolescents in China mainly come from three aspects: fake, shoddy and unsafe food, polluted air, water and photoelectric radiation environment, and insufficient sleep.

3.3.1 Fake, Shoddy and Unsafe foods

The negative effects of fake, shoddy and unsafe food on people's health are dominant [6,7]. Foods and beverages made from various chemical pigments, illegal or excessive additives, plasticizers and inferior food materials are tempting with bright colour and attractive aroma. Younger students lack the ability to distinguish and resist the temptation of these foods. Medical experts believe that non-specific hypertension, hyperlipidemia, obesity and canceration, which should not have occurred in adolescence and childhood, are all related to the damage of fake and unsafe food. Behind the fake and unsafe food is the commercial interests. The interest chain

revealed by the "Melamine and tainted milk powder" incident a few years ago is a typical example. In addition, some experts believe that the abuse of antibiotics will also lead to immunity decline, resulting in physical deterioration of adolescents [8].

3.3.2 Environment Pollution

The air and water environmental pollution problems in our lives threaten the health of all people. For the growing adolescents, the damage will be deeper [9]. Air and water pollution are a social problem facing the whole world, especially in developing countries. The causes of air and water environmental pollution are very complex, such as the increasingly serious haze in Henan, Hebei, Tianjin and Beijing in recent years. So far, the real causes have not been clarified, but it can be concluded that air and water environmental pollution is mainly caused by the imbalance between population and social development and environment.

Photoelectric radiation is another factor that has a negative impact on adolescents' physique. The screen of mobile phone and computer is a kind of photoelectric environment faced by adolescents and students. Because of the high popularity of these electronic products, their harm to human health has exceeded that of stroboscopic light sources such as fluorescent lamps. They not only damage the eyesight, but also indirectly affect the health of the whole body because people use mobile phones and computers for a long time. [10]

3.3.3 Insufficient Sleep

Sleep is the natural way for human body to recover from physical fatigue. Long-term insufficient sleep is an intrusive damage to the body [11]. Under the pressure of exam-oriented education, students are under more pressure and homework, so that they have to sacrifice part of their sleep time to complete all the learning tasks. At the same time, there is another situation, because the time spent on network terminals such as smartphones or computers is too long, which aggravates the lack of sleep time.

IV. CONCLUSION AND SUGGESTIONS

1) Currently, all the social factors leading to adolescents' physical deterioration in China come from three aspects: insufficient energy consumption stimulation to the body, unbalanced energy supply for the growth of the body and intrusive damage to the body. Among them, the lack of energy consumption stimulation to the body is more prominent, which is also the breakthrough point to solve the problem of physical deterioration of adolescents in China.

2) Lack of energy consumption stimulation of the body is mainly manifested in three aspects: insufficient physical exercise, insufficient physical labor and reduced walking volume among adolescents. At present, the lack of energy consumption stimulus is comprehensive. The changes of family structure, the popularization of household appliances, advanced production methods and production technology have drawn a background for the reduction of physical activity of adolescents. Moreover, the heavy learning task under exam-oriented education has further promoted the reduction of their physical activity. The best way to improve the energy consumption among adolescents is to strengthen sports activities.

3) The imbalance of energy supply for body growth is mainly manifested by malnutrition and nutrition excess. Poverty is the main cause of the former, while the latter is based on the improvement of people's economic living standards, the lack of nutritional knowledge and the spoiling parents brought about by the only child policy. With the publication of Opinions on Implementing the Nutrition Improvement Plan for Rural Students under Compulsory Education by the General Office of the State Council in 2011, the problem of unbalanced body energy supply caused by lack of nutrition has been preliminarily solved. People's lack of nutritional knowledge and doting caused by one-child policy still need to be vigorously publicized by the government, the media and all sectors of society.

4) Intrusive damage to the body directly threatens the health of the human body and is an obvious factor to weaken the physical fitness. At present, the intrusive damages faced by adolescents in China mainly come from three aspects: insufficient sleep, environmental pollution and fake and inferior food. Reducing the homework pressure and taking environmental pollution and punishment of fake and inferior food as the important goals of the whole society will be the best choice to alleviate the intrusive damage of adolescents.

5) The inadequate implementation of school physical education is one of the social factors leading to the adolescents' physical deterioration in China. To curb the decline of adolescents' physique fitness in our country, we need to start with school physical education, otherwise we will lose the entry path and key to solve the problem.

REFERENCES

- [1]. Comments on Strengthening Youth Sports and Strengthening Adolescents' Physical Fitness Issued by of CPC Central Committee [N]. People's Daily, 2007-05-07(1).
- [2]. Dong Yanhui, Wang Zhenghe and Yang Zhaogeng, etc. Epidemic Status and Secular Trends of Malnutrition among Children and Adolescents aged 7-18 years from 2005 to2014 in China[J] Journal of Peking University (Health Sciences) 2017 49(3):432.
- [3]. Media of the United States: China Become the Second "Obesity Country" The Obesity Rate of Children Become Serious [N].Cankaoxiaoxi, 2014-06-01 (4) .
- [4]. Zhao Shaoli, Zhao Hongming. Study on Intervention of Adolescent Physical Health [M]. Shenyang: Northeastern University Press, 2012:71-75.
- [5]. Liu Depei. Sports Sociology[M]. Beijing: People's Sports Publishing House of China, 1990:76.
- [6]. He Beiyi. On Social Analysis of Physical Deterioration of Urban Pupils. [D]. Beijing: Beijing Sport University, 2013:61-62.
- [7]. Ma Siyuan. A Study of Physical Deterioration of Primary and Secondary School Students in China and Its Social Causes. [D].Beijing: Beijing Sport University, 2013:61-62.
- [8]. Zhou Liangyun, Xu Liang. Interpretation and Reflection on "Trend Change" of Students' Physical Fitness and Health in China [J]. Journal of Guangzhou Sport University, 2013, 33 (1) :26-27.
- [9]. Yang Guiren. The Decline of Students'sports Quality Should not be Neglected [N]. People's Daily, 2004-02-05 (2) .
- [10]. Zhou Wanpeg, Wang Wufei. Students's Physical Fitness Decline Physical Education Teachers Suffer in Silence [N].www.Xinhuanet.com, 2013-06-03 (3) .
- [11]. Ma Bangjie. Examination-oriented Education is the Disaster for Adolescents' Weak Physical Fitness. [N].www.Xinhuanet.com, 2007-08-14 (3) .
- [12]. Peng Chunzheng. Study on the Concept and Method of Adolescent Physical Health Education [M]. Beijing: China Book Press, 2015.

Liu Dongxiao" Analysis on the Social Factors of Adolescents' Physical Deterioration in China"
International Journal of Humanities and Social Science Invention(IJHSSI), vol. 08, no. 9, 2019,
pp. 46-52