

Research on Physical Health Status and Exercise Intervention of Primary and Middle School Students in the Background of Core Literacy

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ABSTRACT.*From the perspective of core literacy in the subject of sports and health, through the literature data method, self-made questionnaire survey method, experimental comparison method, mathematical statistics and other research methods, investigate and analyze the physical and mental health status of primary and middle school students in Xiamen City, and explore the factors that affect the physical health of primary and middle school students and formulate exercise prescriptions to intervene in the physical and mental health of primary and middle school students. The results of the study indicate that the overall physical and mental health of primary and middle school students is currently at the upper middle level. Factors such as different genders, grades, body types, academic achievements, family background, economic income, boarding patterns and school types affect the physical and mental health of primary and middle school students. Formulating appropriate exercise prescriptions can promote the healthy development of their physical and mental health.*

KEYWORDS:*Core literacy, exercise intervention, good health*

1. Introduction

Core literacy is a topic that is generally valued in the world today. Its full implementation will directly affect students' ability and value in the future international society, and its importance is obvious. In recent years, various education departments in China have re-examined and planned future development strategies based on the core literacy theories and requirements, and school sports have also responded positively. With the successive introduction of relevant national policies, the clarion call for the change of school physical education from quality education to core quality education has sounded. With the deepening of China's education reform, changes in the times and talent training methods, the cultivation of students' core literacy has gradually become a consensus. Core literacy is the

essential characteristic and key ability of students, and plays an important role in the students' lifelong development and social progress. Since the 1980s, countries around the world have been building, updating, and perfecting students' core literacy concepts. The United States, Singapore and Japan have successively studied the definition, framework and value of core literacy.

Core literacy is an important guarantee for students to develop physical activities and good health. With the further deepening of the curriculum reform, the physical and mental health of primary and middle school students has received more and more attention from society, schools and parents. "Interpretation of Compulsory Education Sports and Health Curriculum Standards (2011 Edition)" from the perspective of the curriculum, the relationship between sports and health is understood as: "The relationship between sports and health is understood as 'sports for health', which means that sports should be for students now. And future physical and mental health services. Physical education and health teaching are only means and carriers, the purpose is to improve the physical and mental health of students. The improvement of physical and mental health referred to here is achieved by physical activity of sports, but physical activity is not activities for activities. It should be closely linked with the promotion of student health, that is, to promote students to actively participate in physical education. Carry out physical education and physical exercise, so that physical education and health courses can make a real contribution to the physical health of students. The Central Committee of the Communist Youth League, the Ministry of Education, and the General Administration of Sports have formulated relevant regulations and policies, and vigorously launched the "Sunshine Sports" campaign to ensure that primary and secondary school students exercise for 1 hour a day to reduce the workload of primary and secondary school students to continuously improve the physical fitness of students. However, at present, the behavior problems, psychological crisis and illness problems, Internet addiction problems, aggressive behavior problems, school violence incidents and the decline of their physical health in primary and middle school students in China cannot be effectively solved[2]. The China Youth Research Center surveyed the whole country. Children and adolescents under the age of 17 have found that at least 30 million children and adolescents have experienced various emotional disorders and behavioral problems, and there is an increasing trend [3]. Some mental illnesses in adolescence have a correlation with adult mental illnesses, and their mental health problems will affect the physical and mental health of adulthood[4]. In recent years, the obesity rate and myopia rate of primary and middle school students in our country have shown an increasing trend, and their endurance, strength and flexibility have declined. The health level of primary and middle school students in China is really far from the national requirements.

The purpose of measuring the physical and mental health of primary and middle school students is to understand their physical health, mental health and social health, not just physical and physical health issues[5]. Based on the previous studies, this study has compiled a topic structure that is reasonable and easy to operate (about Completed in 3-5 minutes), the physical and mental health scale for

primary and middle school students, comprehensively and systematically explores the current physical and mental health status of primary and secondary school students in China and the factors that affect the physical and mental health of primary and secondary school students, and formulates exercise prescriptions to intervene in the physical and mental health of primary and secondary school students in order to cultivate elementary and middle school students have a sense of fitness, develop exercise habits, enhance physical fitness, and improve physical and mental health.

2. Research orientation of sports core literacy

Schools at all levels should combine their own students' actual conditions, tap their own characteristics and advantages, and implement the core qualities of training students and the requirements of teaching quality into the actual teaching of each school segment and subject, between each subject There is a common core literacy, and each discipline has its own special discipline literacy. By studying the characteristics and advantages of core literacy, scholars link core literacy with various disciplines to study the relationship between them, and basically define the connotation of core literacy in disciplines. The cultivation of the core competence of the subject is a concrete manifestation of the core literacy of the subject, and the organic integration of multiple subjects is a new course to cultivate the comprehensive quality of students. The core literacy of the subject itself reflects the fundamental value of subject education[6].

In the curriculum standards revised by the Ministry of Education in 2016, the core literacy concept of the subject was included in the curriculum standards of high schools for the first time[7]. Discipline core literacy refers to the integration of basic knowledge, skills, qualities and learning experience with the characteristics of the discipline formed by students in the learning and practice of curriculum standards. It is the most primitive, most critical and most important literacy in curriculum learning. In the list of core literacy standards of high school curriculum standards, the core literacy framework system, basic connotation, important indicators and main contents of each discipline are specifically expressed, and the aspects involved are very comprehensive. After that, the research on core literacy in various stages and disciplines mostly focused on the characteristics of the discipline itself. This seems to be somewhat limited, and it cannot be connected with the core literacy of other disciplines, and it cannot play the characteristics of comprehensive core literacy[8-13].

As early as the 1990s, scholars had called for attention to students 'sports literacy and improve students' physical fitness. It is believed that "sports literacy should specifically include basic sports activities, sports awareness and habits, basic sports knowledge, mastering certain sports skills, and the ability to watch sports games." Some scholars believe that the inheritance of sports culture, the

improvement of individual physique and the accumulation of sports spirit should constitute a three-dimensional picture of sports literacy. The quality and ability formed by students after receiving physical education in the corresponding semester is a concentrated reflection of the core qualities of physical education.

Sports core literacy is the embodiment and extension of the development of students' core literacy. The list of core achievements of various subjects in the general high school proposed by the Ministry of Education Curriculum Standards Revision Group emphasizes that the core literacy of students in physical education subjects is the overall performance of physical fitness, healthy behaviors and physical ethics. It can be seen from the connotation of core literacy that sports core literacy emphasizes the comprehensive performance of sports skills, the learning process of health behavior knowledge, the self-improvement of sports ethics and the reflection of social values, and the value orientation of high-level training.

3. Research objects and research methods

3.1 Research object

Randomly select 24 primary and secondary schools in the urban area of Xiamen, with a total of 1,286 primary and secondary students as the research object.

3.2 Research methods

3.2.1 Self-made questionnaire

Based on previous research results, compile physical and mental health scales for primary and middle school students. It includes primary and secondary school physical health subscale, mental health subscale and social health subscale. The physical health subscale includes dimensions: physical symptoms, physical exercise, sleep status, hygiene habits, healthy diet and health awareness. The mental health subscale includes dimensions: mental illness, emotional stability, self-identity, and motivation for academic achievement. The social health subscale includes dimensions: interpersonal interaction, life adaptation, and pro-social behavior. The physical and mental health scale and the three subscales of primary and secondary schools all use a 5-point scoring method. The higher the score, the better the physical and mental health (the two dimensions of "physical symptoms" and "mental illness" are reversed). After examination, the Cronbach coefficients of the total physical and mental health scales and the subscales of primary and middle school students are above 0.90, Guttman's half-reliability is between 0.86--0.89, and the retest validity is between 0.84--0.96, which shows The compiled physical and mental health scale for primary and middle school students has high reliability and validity.

3.2.2 Experimental method

Sports prescription implementation: prescription 1: football practice games, small football games, supplemented by small basketball exercises. First practice football practice games, after about 15 minutes, small football games, after about 20 minutes, then practice small basketball, about 15 minutes. Prescription 2: Jiansheng exercises games, Jiansheng exercises, supplemented by aerobics exercises. Perform the rope training exercise game first, about 15 minutes later, and the rope training small game, about 20 minutes later, and then exercise the gymnastics exercise for about 15 minutes. Prescription 3: Roller skating practice games, roller skating mini games, supplemented by basic roller skating technical exercises. Start the roller skating practice game. After about 15 minutes, perform a small game of roller skating. After about 20 minutes, perform the basic technical practice of roller skating for about 15 minutes. Before and after exercise prescription intervention, the physical and mental health of primary and middle school students in the experimental group were compared.

Exercise intensity is medium intensity: the pulse measurement of the radial artery of primary and middle school students, each measurement is 15s, multiplied by 4 to reflect the heart rate of primary and middle school students for 1 minute, generally control the heart rate at 120 ~ 140 beats / min. Each exercise time is 40 ~ 60 min, 3 ~ 4 times a week, exercise time is scheduled to take place in the afternoon extracurricular activities every day, the duration is 12 weeks.

3.2.3 Mathematical statistics and analysis

All data are managed and statistically analyzed using SPSS25.0 software.

4. Results and analysis

4.1 Status of physical health of primary and middle school students

The descriptive statistical analysis of physical and mental health of primary and middle school students shows that on a 5-point scale, the average physical health of primary and secondary school students is 3.23 points, the average of mental health is 3.14 points, and the average of social health is 3.07 points. Analyzed from various dimensions, in terms of physical health dimensions, primary and middle school students have the highest scores for health awareness (4 points) and hygiene habits (4 points), followed by physical symptoms (3 points) are moderate, and healthy diet (2.5 points) can only achieve Passing the line, but the lowest in physical exercise and sleeping conditions, failed to reach the pass level. In terms of mental health, elementary and middle school students have the highest self-identity (4.5 points)

scores, followed by emotional stability (3 points) and mental illness (3 points) at a medium level, and only achieve a pass in academic achievement motivation. In terms of social health, pro-social behavior (4.5 points) has the highest score, interpersonal relationships (3 points) are at a moderate level, and fail to meet the pass line in terms of life adjustment. The above phenomenon shows that although primary and middle school students currently have good hygiene habits and health awareness, they have a weak sense of physical exercise, insufficient sleep, and many problems in life adaptation.

In today 's society, parents are "looking for success", and the school tries its best to increase the learning time of primary and secondary school students, regardless of the interest and hobbies, psychological tolerance and physical exercise time of primary and secondary school students. Most of them focus on static activities such as watching TV, playing computers, and playing games online. Their sleep quality is also severely affected. Primary and middle school students often live a tense learning life, accumulate over time, their life adaptability problems, and even have a world-missing mood. The direct result of the lack of participation in sports is that it is easy to cause obesity to increase and physical decline. These unreasonable phenomena have caused many problems for the physical and mental health of primary and middle school students in China.

4.2 The impact of primary and middle school students' physical health

There are significant differences in physical and mental health, physical health, mental health, and social health of primary and secondary school students of different genders and grades. The physical and mental health of boys in primary and secondary schools is significantly better than that of girls, and the social health of girls in primary and secondary schools is better than that of boys; the physical and psychological health of boys in primary schools is better than that of junior and high school students, and the physical and mental health of boys in junior high schools is better than High school students; the social health of high school students is better than that of junior high school students and primary school students, and the social health of junior high school students is also better than that of primary school students. These research results are partially consistent with those of Hamilton and Cung. The reason for the analysis may be that the life of boys in primary and middle schools is active and likes sports. Girls in elementary and middle school like to be quiet, pursue fashion beauty, and prefer healthy and entertaining activities. Therefore, boys are significantly better than girls in physical exercise, sleep status, emotional health, self-identity, interpersonal interactions and prosocial behavior. The study also showed that girls 'health habits and healthy diets in primary and secondary schools are better than boys', which may be related to their increased attention to the possible changes in diet.

With the increase of grades, the physical and mental health, physical health and

mental health of primary and middle school students have more and more problems. This result is consistent with the results of studies such as Hale III. This may be related to Chinese current education and examination system. With the increase of grades, the social health of primary and middle school students is getting better and better, indicating that they can accept new things, and can gradually communicate with parents, elders, teachers, get along with classmates, communicate with friends who have similar interests, and make friends , do some pro-social behaviors, so that they gradually adapt to the social environment and life.

Primary and middle school students with good academic achievements show a high degree of cognition towards things, are more likely to accept new things, and have perseverance and confidence in doing things. They are good at communicating with teachers and classmates and have a strong sense of self-efficacy. During extracurricular activities, they like to participate in various physical exercises. They know more clearly that participating in exercises can improve their learning and physical health. They can enjoy the pleasure of sports during exercise and release them in their studies and work. Under the pressure, and made a lot of like-minded friends and children. The academic achievements are generally opposite to the poor primary and secondary school students. During extracurricular activities, they do not like to participate in physical exercise and have a relatively vague understanding of the benefits of exercise. The above reasons indicate that the physical and mental health of elementary and middle school students with good academic achievements are better than those with average and poor academic achievements.

4.3 Exercise intervention for physical health of primary and middle school students

After 16 weeks of exercise intervention, the physical and mental health of primary and middle school students in the experimental group was improved. After participating in sports prescription 1, prescription 2, prescription 3, their physical and mental health was significantly improved and improved. In terms of physical health, physical symptoms, physical exercise, sleep status, and health awareness of primary and middle school students are significantly related to the three exercise prescriptions they participate in. After participating in exercise prescriptions, primary and middle school students have basically disappeared their physical fatigue symptoms and physical pain symptoms, improved their sleeping conditions, cultivated health awareness, and had a good habit of participating in physical exercise in their spare time. In terms of mental health, the mental illness, emotional stability, self-identity, and academic achievement motivation of primary and middle school students are significantly related to the three exercise prescriptions they participate in. After participating in sports prescriptions, primary and secondary school students have significantly reduced their symptoms of mental illness, learning anxiety, helplessness, depression, etc. have improved significantly, showing improved emotional stability, enhanced self-identity, able to think quickly in learning, self-adjustment ,and maintain good self-discipline and self-control. In

terms of social health, interpersonal interaction, life adaptation, and pro-social behavior of primary and middle school students are significantly related to the three exercise prescriptions they participate in. After participating in sports prescriptions, primary and middle school students have obviously improved their interpersonal interaction and life adaptation. This is because they must adapt to the changes in sports scenarios and participate in various sports prescriptions. After participating in the exercise prescription, the interpersonal interaction of primary and middle school students can be produced with good results. It can communicate well with teachers, students, friends and parents, and can adapt to the influence of school life and social environment. At the same time, after participating in sports prescriptions, primary and middle school students also have a good effect on their pro-social behaviors, reducing aggressive and violent behaviors such as aggressive and violent behaviors of primary and secondary school students, which is conducive to their physical and mental health.

5. Conclusion

(1) The overall physical and mental health of primary and middle school students is at the upper middle level. The social health of primary school students is worse than that of junior high school students and high school students. The physical and mental health of high school students is worse than that of junior high school students and primary school students. In all aspects of physical and mental health of primary and secondary school students, primary and secondary school students suffer from severe sleep deprivation and have a weak sense of participation in physical exercise. It is also difficult to adapt to changes in social environment and learning life in life.

(2) There are significant differences in physical and mental health of primary and secondary school students of different genders and grades. The physical and mental health of primary school boys is better than that of girls, and the social health of primary and secondary school girls is better than that of boys. As grades rise, the physical and mental health problems of primary and middle school students become more serious.

(3) The physical and mental health of primary and middle school students with different body types and academic achievements is very different. The physical and mental health of middle and elementary school students with a moderate body shape is better than that of obese and thin bodies. Primary and middle school students with good academic achievements are better than those with average and poor academic achievements.

(4) There are very significant differences in physical and mental health of primary and middle school students with different family backgrounds and economic incomes. The physical and mental health of primary and middle school

students in two-parent families, high-education families, and high-income families is better than that of single-parent families, reorganized families, low-education families, and low-income families.

(5) There are very significant differences in the physical and mental health of primary and middle school students with different boarding forms and school types. The mental health and social health of non-boarding and urban school pupils are better than those of boarding and township schools. There is no significant difference in the physical health of boarding and non-boarding pupils, while that of urban schools is better than primary and secondary school students in township schools.

(6) Suitable exercise prescription intervention can promote the development of physical and mental health of primary and middle school students. Exercise prescription intervention has a significant correlation with physical and mental health of primary and middle school students. After exercise intervention, the effect of physical and mental health intervention of high school students is better than that of junior high school students and elementary school students, and the effect of social health intervention of elementary school students is better than that of junior high school students and high school students.

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