



Multi-Level Influences on Physical Exercise Behavior of High School Students: A Social Ecological Approach

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Abstract

This study, based on the social ecological model, investigates the multifaceted factors influencing the physical exercise behavior of senior high school students through an extensive literature review and logical analysis, and subsequently offers targeted recommendations. The findings reveal that high school students' physical activity is shaped by a complex interplay of influences across several levels. At the individual level, factors such as gender and physical health are significantly associated with exercise behavior. Males tend to be more active than females, and students in better physical health are more likely to engage in regular physical activity. Family dynamics also play a crucial role. Support and encouragement from family members, particularly parents, greatly enhance students' likelihood of participating in sports and other physical activities. When families prioritize and value physical exercise, students are more inclined to adopt similar behaviors. The school environment further contributes to shaping exercise habits. The presence of adequate sports facilities and comprehensive physical education programs within schools are positively correlated with higher levels of student participation in physical exercise. Schools that invest in well-maintained sports infrastructure and offer diverse physical education curricula create conducive environments for students to be active. Social factors are equally influential. Peer participation in sports activities serves as a strong motivator for students. When peers are actively involved in sports, students are more likely to join in due to social bonding and peer pressure. Competitive pressure, while sometimes a source of stress, can also drive students to participate more in physical activities to excel and fit in socially. Based on these insights, the study suggests a multi-level intervention approach. Strengthening family support systems, improving school sports facilities, and fostering a supportive social environment are critical. These measures aim to promote healthier and more active lifestyles among high school students, addressing the issue from multiple angles to ensure a comprehensive and effective strategy.

Keywords: *Social Ecological Model, High School Students, Physical Exercise Behavior, Attribution Analysis*

A. Introduction

The party and the country have always paid great attention to the health of teenagers, and clearly emphasized that the physical and mental health and good physical quality of teenagers are an important symbol of the country's vitality and an important embodiment of the country's overall strength, so the health of teenagers is a major challenge facing China at present. In the Special Action Plan for Comprehensively Strengthening and Improving Students' Mental Health in the New Era (2023-2025). It is clearly stated in the document that students should enjoy the fun brought by sports, improve their physical fitness, improve their personality and temper their will when doing physical exercise, which embodies the concept of "strengthening their hearts with their bodies". This concept emphasizes the benefits of physical exercise on emotional

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regulation and stress release. It is an important topic with wide social significance to reflect the physical exercise behavior of senior high school students.

Adolescence is a critical period for physical development and habit formation, and moderate physical exercise is very important for their health and overall development. Under the background of "healthy China", teenagers' physical exercise should be paid more attention to. With the economic growth of our country, the number of overweight and obese teenagers is increasing. There are many reasons for adolescent obesity, among which the most critical factor is diet. With the improvement of people's material level, the dietary structure and dietary pattern of teenagers have changed, which makes them overeat foods with high fat, high sugar and high salt. Teenagers are in the golden age of physical development, too much fat intake will affect the level of hormones in the human body, and the decrease of growth hormone will limit the development of height. In view of this situation, it is necessary to take more targeted and effective measures to promote the healthy lifestyle of teenagers, so as to comprehensively improve their diet quality and physical health.

Attribution of high school students' physical exercise behavior (why they choose or don't choose to exercise) is a complex and worthy of study. Attribution theory provides a framework for understanding the motivation behind individual behavior. Attribution is usually divided into internal attribution and external attribution. Internal attribution emphasizes individual internal factors (such as interest, motivation and self-efficacy) (Dong & Mao, 2020; Su, Ping & Tian, 2017). External attribution emphasizes the influence of external factors (such as family, peers, social and cultural factors) on behavior (Cobley, et. al., 2012; Lee & Kim, 2022). Therefore, this study aims to deeply study the attribution of high school students' physical exercise behavior, so as to explain why some high school students are more inclined to actively participate in physical exercise, while others show lower exercise behavior. Different from previous studies, we will adopt a social ecological model, which considers the interaction among individuals, families, society and culture. The social ecological model emphasizes the importance of environment, especially the influence of family and peer relationship on shaping individual behavior.

B. Methods

This study employs a qualitative research design, utilizing a literature review and logical analysis approach. This method is chosen to deeply understand the multifaceted factors influencing high school students' physical exercise behavior based on the social ecological model. The research procedure begins with the identification and selection of relevant literature related to the factors affecting high school students' physical exercise behavior. The selected literature includes empirical studies, theories, and reports related to individual, family, school, and social factors. Following the selection, the literature is logically analyzed to identify patterns, themes, and relationships among the factors.

Data is collected through an extensive literature review. The data sources include scientific journals, books, research reports, and relevant articles. The data collection process involves searching academic databases, libraries, and online sources to find literature that supports the research objectives. The data is analyzed using thematic analysis. Initially, the data from the collected literature is coded to identify the main emerging themes. These themes are then further analyzed to explore the relationships and interactions among factors at various levels (individual, family, school, and social). This analysis allows the researchers to identify key factors and understand how they influence high school students' physical exercise behavior. The results of the analysis are then used to formulate targeted, evidence-based recommendations to enhance physical activity participation among students.

C. Findings and Discussion

1. A Social Ecological Model Approach

Physical Exercise Behavior

Physical exercise behavior, also known as sports activities, sports activities or sports participation, refers to individuals participating in any form of planned and structured physical activities, aiming at improving physical health, improving physical fitness and promoting physical development. These activities can include, but are not limited to, running, swimming, basketball, football, yoga, fitness exercise, mountain climbing, cycling and other sports and sports activities. Zhang & Shu (1984) sports dictionary Physical exercise is defined as an activity that uses various sports means, actively chooses different sports methods according to physical needs, and combines natural environment and health care methods to promote physical health and development, improve physical fitness, adjust emotional state, enrich life experience and enrich spare time. It can be said that physical exercise not only covers all kinds of sports, but also includes all kinds of ways and methods of physical exercise, such as yoga and Tai Ji Chuan, healthy eating, maintaining good living habits and positive attitude. In Xia (1979) It is believed that physical exercise is a way for individuals to get in touch with fresh air, sunshine, water and other elements in nature in the sports field and improve their resistance and physical fitness. In addition, physical exercise has been widely defined in academic circles. Xi (2022) The professor clearly pointed out that physical exercise, as a means of physical exercise, its core content mainly lies in fitness, entertainment and psychological and intellectual exercise. Through physical exercise and practice, people can achieve the purpose of promoting health and strengthening the body. In addition, physical exercise can also be used as a form of entertainment to meet people's cultural and social needs. At the same time, physical exercise also has the function of health care and mental intelligence adjustment. Through exercise, it can relieve stress, improve mood, and enhance self-confidence and willpower. Its main purpose is to strengthen individual physique, promote physical and mental health, and improve and maintain physical function. Compared with physical education, sports training and sports competitions, physical exercise has obvious differences. Lu (2011) It is believed that physical exercise can be carried out in an individual way, or you can choose to participate in group activities, and it is usually carried out in the form of leisure activities or fitness, which is helpful to improve physical and mental health and social skills. Ji, Wang & Li (2000) It is pointed out in the research that physical exercise is a planned, regular and effective activity, including various forms involving cardiopulmonary function, muscle endurance and strength, aiming at enhancing physical fitness. This kind of exercise not only plays a positive role in promoting the health of individuals, but also can improve the sports quality of the whole society, which is of positive significance to individuals and society. To sum up, although scholars have different understandings of the definition of physical exercise, they can sum up that they all think that physical exercise contributes to the healthy development of body and mind and enhances the positive role of physique through relevant definitions.

In the group of senior high school students, physical exercise behavior usually refers to physical activities actively participated in school physical education class, sports clubs, after-school activities or personal time. This includes participation in sports competitions, exercise, training and various forms of sports. Physical exercise is very important for the development of physical and mental health in adolescence, which helps to cultivate a healthy lifestyle, improve physical fitness, reduce stress, enhance self-esteem, and has the potential to prevent chronic diseases.

Social Ecological Model

Social ecological model is a theoretical framework, which is widely used to study and explain various behaviors in the social sciences, especially in the fields of health and education,

including health behaviors, educational behaviors and physical exercise behaviors (Xia, 1979). The core idea of social ecological model is that individual behavior and decision-making are determined by the interaction of multiple levels and multiple environmental factors. The model is an American psychologist Bronfenbrenner (Bronfenbrenner & Ceci, 1994). First introduced in 1977, this model aims to explore and clarify the multiple influencing factors in the field of children's growth and educational psychology, that is, the individual's development process and its adaptability to the external environment. Bronfenbrenner divides the factors that affect individual development into four levels: micro system, meso system, external system and macro system. By analyzing the interaction between these four systems and individual development, this model can help us better understand the growth and adaptation process of individuals in different social and environmental backgrounds. Subsequently, McLeroy, et al. (1988) In their research, scholars extend the social ecological model from the near end to the far end, and divide the micro-system into individual layer and interpersonal layer, the meso-system into organization layer and community layer, and the macro-system into policy layer, in order to consider the social influencing factors more comprehensively and systematically. The individual layer is the closest end of the model, which mainly includes personal internal factors such as motivation, ability and self-efficacy. The interpersonal layer includes interpersonal relationships such as family and friends, while the organizational layer includes factors such as schools, institutions and places. The community layer includes various environments, community sports facilities and community sports atmosphere, and the policy layer is the farthest level of the model, including national policies and local policies. This division is helpful to deeply understand the interaction between different levels in the social ecosystem, and provides a more comprehensive perspective and analytical framework for the research in the field of social ecology. By using the social ecological model, we can fully understand the attribution of high school students' physical exercise behavior, and provide targeted intervention measures and policy suggestions. In the study of high school students' physical exercise behavior, the social ecological model provides a broader perspective for studying the influencing factors.

2. Key Factors Influencing High School Students' Physical Exercise Behavior

The Decision-Making Role and Influence of Individual Factors

Individual factors play a vital role in the physical exercise behavior of senior high school students. Personal factors such as health, ability and attitude are closely related to physical exercise. Kiyani, et al. (2022) According to the social ecological model, others put forward to formulate intervention strategies based on personal health and ability, and found that the intervention measures based on the social ecological model have fully and effectively improved the physical activities of school-age adolescents in Pakistan. Personal health directly affects a person's ability and willingness to do physical exercise. Healthy people are more likely to take an active part in sports activities, because they have higher sports ability and endurance, and can better enjoy the benefits brought by physical exercise. On the contrary, if a person is in poor health, he may feel tired and unwell, thus reducing his enthusiasm for physical exercise. In addition, the individual's physical condition and ability level will directly affect what type and intensity of sports activities they participate (Wang, Liu & Lu, 2022). Some students may be more suitable for endurance sports, while others may be more suitable for strength activities. Understanding and respecting the individual's physical differences is helpful to make a physical exercise plan that is more in line with their actual needs. The personality and personality traits of different individuals have an impact on the choice and persistence of physical exercise. For example, some people may prefer team sports because it can provide social interaction, while others may prefer to exercise alone because it conforms to their independent personality. Studies have also confirmed that academic burden, social activities and other life stress factors will also affect whether individuals have time and energy to participate in physical exercise. Students may

reduce the frequency of exercise because of limited time or excessive tension. Therefore, considering their daily life is an important factor in making a physical exercise plan.

Similarly, internal motivation, such as pursuing health and challenging oneself, will also directly affect individual physical exercise behavior (Zhang, Zhou & Wang, 2023). Liu, et al (2020) Others use the social cognitive theory model to deeply explore the related factors that affect teenagers' physical activities. The results show that self-efficacy is an important index to predict adolescents' physical activity. On this basis, in order to promote the healthy development of teenagers, we should pay attention to improving the self-efficacy of teenagers. Individual interest and motivation are the core driving forces of physical exercise behavior. When students show strong interest in a certain sport or activity, they are more likely to take an active part. Copley, et al. (2012) The research of others shows that among teenagers, factors such as individual's ability to resist stress and mental health will have different effects on their physical activities. Anti-stress ability is one of the important factors that affect teenagers' physical activity level. Some teenagers may have strong anti-stress ability, can maintain a positive attitude when facing challenges and pressures, and release pressure and consume energy through physical exercise. On the contrary, some teenagers may lack the ability to cope with stress effectively, which leads to their low interest and participation in sports activities. Teenagers with good mental health usually have a positive attitude and vitality, and are more willing to actively participate in physical exercise activities. Mental health problems (such as anxiety and depression) may reduce teenagers' interest in sports activities, and even affect their willingness and ability to do physical activities.

In addition, the perspective of gender differences, other scholars have found that there are significant differences between boys and girls in the influencing factors of physical exercise (Dong & Mao, 2020; Biddle, et al., 2005). They pointed out that the influence of gender on physical exercise is a result worthy of in-depth study, which provides an important theoretical basis for in-depth understanding and exploration of the role of gender factors in physical exercise.

The Implication, Influence and Shaping of Family Factors

Parents' attitudes and behaviors often become the objects of children's imitation. Students with positive family factors are more likely to show higher enthusiasm in physical exercise. If parents have correct values and stable emotions (Lampard, et al. 2013). And have a positive attitude towards physical exercise and actively participate in sports activities, then children are likely to be interested in physical exercise and will be willing to participate. On the contrary, if parents have a negative attitude towards physical exercise or seldom participate in it, or even oppose their children's participation in it, then children may think that physical exercise is not important, thus reducing their willingness to actively participate. In addition, family support is also one of the key factors that affect high school students' physical exercise behavior (Meninges, et. al., 2015). It is very important for them to get active support from their families for physical exercise. This kind of support can be reflected in parents' encouragement, companionship and providing sports opportunities. With active family support, students are more likely to establish a good habit of continuous exercise. Secondly, family atmosphere also plays a significant role in shaping high school students' physical exercise behavior. Those students who live in a positive and healthy family atmosphere are more likely to be exposed to the positive information of physical exercise, thus increasing their desire to participate in exercise. This positive family

atmosphere can be cultivated through positive interaction among family members, joint participation in sports activities and emphasis on healthy lifestyle.

The Significant Role and Influence of School Factors

Students' physical exercise is the most important part of school physical education teaching. High school is a critical period for teenagers' physical development, and physical exercise is very important for their physical health and development. High school students are faced with great learning pressure because of the heavy learning tasks. Students can release their pressure through physical exercise, relieve their anxiety and depression, and improve their mental health level, so that they can better cope with the challenges in their study and life. In addition, the physical exercise opportunities provided by the school for students, such as physical education class, campus sports meeting and club activities, are also crucial to the healthy growth and all-round development of high school students.

Stelzer, et.al., (2004) The investigation by others shows that if students have good sports consciousness in physical education teaching, it will help to improve their understanding of physical education class. Schools have the responsibility and obligation to help students establish a correct attitude towards sports. The results show that the negative attitude towards sports is likely to cause students to ignore the value of sports, and the attitude towards physical exercise reflects students' understanding of sports to some extent. Su & Zhang (2014) Scholars have made a detailed study on college students' physical exercise, and analyzed its present situation and related influencing factors. The survey results show that school leaders' love and active promotion of sports activities, as well as activities organized by classes and various sports events, have played a positive role in promoting students' participation in extracurricular physical exercise, which is helpful to promote college students to form the behavior habit of participating in physical exercise regularly. In addition, the sports facilities provided by the school also have an important impact on the physical exercise behavior of senior high school students. Good sports facilities not only provide a variety of exercise venues, but also create a good physical exercise environment for students. This environment helps to stimulate students' interest in sports and make them more willing to actively participate in various sports activities. Xu zhaowen (2018), Yi Jun (2014), Yang Ye (2011), Zhang Limei (2015) In the investigation, other scholars found that the sports facilities and school physical exercise atmosphere provided by the school played an important role in students' physical exercise. In the suggestions, they put forward some intervention measures in this field, which provided valuable reference for subsequent scholars. These interventions are helpful to improve students' enthusiasm to participate in physical exercise and promote the development of students' physical and mental health.

Therefore, in the field of school education, schools must build an atmosphere of attention and attention to physical exercise from top to bottom and from inside to outside. From top to bottom, we should not only advocate this kind of atmosphere in the school leadership, but also need the full support of the propaganda department, the Youth League Committee, the physical education department and other functional departments. At the same time, at the level of class teachers, student cadres and ordinary students, physical exercise must be included in their own work and study plans in order to establish a comprehensive physical exercise habit. From the inside out, it is not only to guide students to establish correct values and stimulate their own understanding and attention to physical exercise, but also to take corresponding measures and policies to supervise and promote students' physical exercise.

Interaction and Influence of Social Factors

Mieziene, et al. (2021) some scholars pointed out that the future intervention strategy should focus on strengthening the motivation of sports activities by encouraging the development of social networks and social participation and social capital such as family, neighborhood and school within the framework of ecological model. Whether there are convenient physical exercise facilities (such as parks, gyms and sports venues) in the community is very important for high school students' physical exercise. If the community lacks these facilities or these facilities are not easy to reach, high school students may face difficulties in physical exercise, thus affecting their exercise behavior. Community culture and social norms will also affect the attitude and behavior of high school students towards physical exercise.

Fagan, et al. (2023) By applying the social ecological model, others found that the strategy to increase the population's participation in physical activities is to rebuild the "social climate" by changing social norms and beliefs about physical activities (PA). By improving the social sports atmosphere, it plays a positive role in people's physical activities. If the community attaches importance to physical exercise and regards it as an important value, high school students may be more inclined to actively participate in sports activities. On the contrary, if the community does not attach importance to physical exercise or has negative prejudice against sports, it may inhibit the high school students' willingness to exercise.

Good peer relationship and positive social expectation are also generally considered as the key factors to stimulate the motivation of physical exercise. In terms of peer relationship, close friendship and supportive group environment help to establish a common physical exercise culture. Such an environment makes physical exercise no longer an individual behavior, but a common goal, thus inspiring students to participate in various sports activities more actively. Generally speaking, peer relationship, social expectation and physical exercise behavior of senior high school students at the social level form a mutually reinforcing relationship network. Understanding and paying attention to the influencing factors at this level will help to provide a deep theoretical basis for designing more effective intervention measures to promote physical exercise of senior high school students.

There is interaction between individual factors and family factors, and the active support of family can strengthen individual interest and motivation. Similarly, school and social factors also interact with each other to some extent, and jointly affect students' physical exercise behavior. Therefore, from the perspective of social ecological model, we can fully understand the attribution factors of high school students' physical exercise behavior, and provide empirical support for formulating personalized and targeted intervention measures in the future.

3. Strategies to Improve High School Students' Physical Exercise Behavior.

Personal Level

First of all, senior high school students should make a personalized exercise plan according to their physical fitness level, hobbies and time schedule, so as to ensure the scientificity and sustainability of physical exercise. This not only helps to enhance physical fitness, but also effectively prevents sports injuries. Secondly, students should set clear physical exercise goals, including short-term goals and long-term goals. These goals can be specific, such as "running three times a week" or "increasing the number of one-minute sit-ups in three months". By setting and achieving these goals, students' enthusiasm and intrinsic motivation can be stimulated, thus improving the exercise effect.

In addition, it is the key to cultivate self-discipline ability. Students should arrange their academic and physical exercise time reasonably, avoid excessive dependence on external supervision, and improve the frequency and effect of independent exercise. Self-discipline can not only help students manage their time better, but also enhance their sense of responsibility and self-management ability. Furthermore, students can establish an effective self-monitoring mechanism by recording exercise results and making weekly or monthly exercise plans. This mechanism includes recording the content, duration and effect of daily exercise, reviewing and adjusting the exercise plan regularly, so as to better understand and improve one's exercise state. Through digital self-monitoring, students can see their progress more clearly, thus gaining a sense of accomplishment and motivation for continuous exercise. At the same time, regular self-assessment can also help students find problems and adjust them in time to ensure the effectiveness and durability of exercise.

To sum up, by making a personalized exercise plan, setting clear exercise goals, cultivating self-discipline and establishing a self-monitoring mechanism, high school students can significantly enhance their enthusiasm and effect of physical exercise at the individual level, thus promoting the all-round development of physical and mental health.

Family Level

At the family level, it is particularly important to strengthen family education in promoting the physical exercise behavior of senior high school students. First of all, parents can be trained and discussed to convey the importance of physical exercise to the physical and mental development of teenagers. Through these activities, parents fully realize that physical exercise can not only improve the physical quality of teenagers, but also promote the improvement of mental health and academic performance. In addition, relevant popular science materials and information manuals are provided to help parents better understand the positive impact of sports on students' studies and health. These materials can include the results of scientific research, the sharing of practical cases and specific exercise suggestions, aiming at making parents aware of the importance of physical exercise and actively encouraging and supporting their children to engage in physical activities in their daily lives.

In order to further encourage families to participate in exercise activities together, family sports days or sports festivals can be organized. These activities can not only enhance the intimate relationship between family members, but also set an example for students to actively participate in physical exercise. By participating in sports activities with their families, students can feel the support and encouragement from their families, thus enhancing the motivation and fun of exercise. Families can also make a common exercise plan and encourage parents to provide necessary support and resources for their children. For example, purchase appropriate sports equipment, enroll children in relevant courses or clubs, etc. These measures can create an atmosphere that supports physical exercise in the family environment, so that students can get continuous exercise motivation and opportunities at home.

School Level

At the school level, strengthening the construction of sports environment and policies is very important to improve the physical exercise behavior of senior high school students. In addition to continuing to strengthen the construction of school sports hardware conditions on the existing basis, we should pay more attention to the construction of sports health promotion software conditions, including the recognition, implementation and publicity of policies by

teachers and students and the creation of sports cultural atmosphere. First of all, it is very important to optimize the physical education curriculum. Schools should ensure that the content of physical education courses not only meets students' hobbies, but also meets their exercise needs. Therefore, innovative sports such as adventure sports and yoga can be introduced to stimulate students' unique interest in sports. Schools should formulate and implement "Physical Education and Health Curriculum", and carry out the sunshine sports program integrating large recess (recess exercise) and extracurricular sports activities. The contents, methods and carriers of these innovative sports activities need not only the support of schools, but also the active participation of parents and communities, and gradually form a mechanism in which families, schools and communities jointly guide students' physical exercise. Secondly, through physical test data and students' interest survey, make a personalized exercise plan. These plans can tailor the exercise program according to each student's specific situation, so as to better meet their exercise needs and improve their enthusiasm and effectiveness in participating in sports activities.

Finally, improving the education level of PE teachers is also the key to improve the effect of students' physical exercise. Schools should provide more training opportunities for physical education teachers on how to stimulate students' interest and improve the exercise effect, so as to make them more professional and pay attention to students' all-round development. By continuously improving the teaching quality of physical education teachers, schools can provide more scientific and effective physical education guidance for students, thus comprehensively improving students' physical education literacy and physical and mental health. To sum up, schools can play an important role in improving the physical exercise behavior of high school students by optimizing the physical education curriculum, making personalized exercise plans and improving the education level of physical education teachers. The linkage mechanism of family, school and community can create an all-round supporting physical exercise environment for students and promote their all-round and healthy development.

Social Dimension

At the social level, we can strengthen the spread of sports culture through media and social platforms. Promote sports idols and successful sports stories to stimulate students' enthusiasm for sports and make them realize the positive value of physical exercise. Actively participate in and promote the improvement of relevant sports policies, ensure that sports resources in schools and communities are more balanced and abundant, and provide students with more opportunities to participate in physical exercise. Through various activities and advocating sports culture, we will create a positive social atmosphere that attaches importance to sports. Social recognition and support will help to improve the enthusiasm of senior high school students for physical exercise.

In addition, the social ecological model of adolescent physical health promotion needs the government's efforts. The government should increase the support and capital investment for schools, refine and implement the Law on the Protection of Minors, the Regulations on School Physical Education and the Regulations on School Health Work in light of local conditions, and conscientiously implement the Opinions on Strengthening Youth Physical Education to Enhance Youth's Physical Fitness, Healthy China Action (2019-2030), Opinions on Deepening the Integration of Physical Education and Promoting the Healthy Development of Teenagers, and Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era. Schools should fully implement the National Standards for Students' Physical Fitness

and Health, regard physical fitness as an important indicator to evaluate students' all-round and healthy development, actively strive for special funds for the construction of sports venues and equipment, and strengthen the construction of physical education teachers and health education teachers. Gradually establish a joint meeting system under the leadership of the government, with the participation of education, sports, health and other departments, and make overall plans to solve problems related to school sports and health; Public security, justice, industry and commerce, culture and other relevant units assist in management, strengthen the rectification of the surrounding environment and entertainment places on campus, and parents of students should actively cooperate to create a good internal and external environment for the healthy growth of teenagers.

D. Conclusion

It is a difficult problem that must be overcome on the road of building a sports power in China to promote young people's physical exercise and improve the national health level. Using social ecological model to discuss the problem of teenagers' physical exercise can consider the influence of multiple environmental factors such as policy, society and family on teenagers' physical exercise behavior to the greatest extent. This model provides important theoretical support for building a harmonious sports ecological environment and solving the problems of adolescent health and sports participation in the future.

The socio-ecological model of adolescent physical health promotion is a complex systematic project, which requires not only the cooperation of multiple departments, but also the extensive participation of all sectors of society. Therefore, the operation of this model must fully consider the comprehensive influence of internal and external factors, eliminate the "institutional barrier" between departments, and establish a multi-department linkage operation guarantee mechanism. Only by forming scientific guiding opinions and policies and implementing various measures can we comprehensively promote the physical health of teenagers. Specifically, we must first strengthen policy guidance and support. The government should introduce relevant policies that are beneficial to young people's physical exercise and provide necessary funds and resources. At the same time, it is necessary to strengthen the publicity and implementation of policies to ensure that all measures can really be implemented. Secondly, all sectors of society should actively participate in the promotion of youth sports health. Schools, families and communities need to work closely together to create a good environment to support young people's physical exercise. Schools should optimize the physical education curriculum, families should actively encourage and support children to participate in sports activities, and communities should create convenient conditions for young people's sports activities. Finally, we should pay attention to scientific research and professional guidance. Through the physical test data and students' interest survey, we can make a personalized exercise plan to improve the education level of physical education teachers and provide scientific and effective exercise guidance for teenagers. The government, schools and scientific research institutions should cooperate to carry out relevant research to provide theoretical support and practical guidance for young people's physical exercise.

To sum up, the effective operation of adolescent physical health promoting social ecological model needs the joint efforts of all parties. Only through multi-sectoral cooperation and extensive social participation can we build a scientific, systematic and sustainable youth sports

health promotion system, comprehensively improve the physical health level of young people, and lay a solid foundation for building China into a sports power.

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