Revista de Psicología del Deporte/Journal of Sport Psychology Vol. 30. n.°3. 2021. pp. 285-295
Universidad de Almería / Universitat Autónoma de Barcelona. ISSN 1132–239X ISSNe 1988–5636

Study on Physical Health Promotion of Teenagers based on Cognitive Neuropsychological Factors

Cai Jinming[1]

Abstract
Physical health is a core component of the overall development of adolescents with practical significance for promoting and sustaining teenagers' physical health. This paper explores and studies the existing problems associated with adolescent physical health and designs a health promotion program based on numerical simulation. This is done through an intervention group and a control group of students' sports variables intervention effect. A comprehensive and in-depth understanding of the implementation of students' physical health education provides impetus for the development of students' physical health education. On this basis, the primary focus is on the analysis of students' physical fitness. The study shows that some students from a few ethnic groups investigated the differences in physical fitness of some minority students according to the data obtained from the Physics research. The resulting data makes it possible to study the physical condition of students visually and intuitively. The results show that the main reasons for the decline of adolescents' physical fitness are social, school or family-related, and individual level `problems. The results of the analysis of covariance show that there are significant between-group effects on post-test Reasoning Test scores and attention allocation scores, and the experimental group has significantly higher post-test Reasoning Test scores and attention allocation scores than the control group; there are no significant between-group effects on behavioral performance scores of executive control, attention breadth, attention stability, and attention switching scores, and there are no significant differences between the experimental and control groups.
Keywords: cognitive neuropsychology; adolescents; constitution

Introduction

As the future human capital of the nation, adolescents have pointed out the strategic theme of "building and sharing, and the health of the whole people" in the Outline of the 2030 Plan for Healthy China. Health is a comprehensive social issue and the health level of adolescents is related to the future of the country (Lan et al., 2018). In recent years, teenagers' physical function, and sports ability have declined seriously. Strengthening students' physique should be regarded as the basic goal and act as an important evaluation content of school education. However, the latest "National Student Physical Health Survey Report" shows that living conditions and nutrition supply have improved significantly, and the declining trend of adolescents' physical fitness has not been effectively alleviated (De Meester, Van Dyck, De Bourdeaudhuij, Deforche, & Cardon, 2013). Many factors affect adolescents' physical health, such as gender, age, growth, and development, as well as sports habits, growth, and educational environment, lifestyle, living areas, and other social factors (Aibar, Bois, Generelo, Zaragoza Casterad, & Paillard, 2013). The reason for failure to address this problem area is that we still lack scientific understanding of the factors affecting adolescents' physical health, and cannot comprehensively solve the problems of adolescents' physical health emanating from biological, psychological, and social factors (O'Brien, Belton, & Issartel, 2016). Among them, the lack of a theoretical model that can correctly reflect the promotion of adolescent physical fitness is a significant theoretic problem affecting the success of efforts aimed at promotion of adolescent health. The construction of a theoretic model that can be used to improve the health of adolescents has become an important issue to reverse the deterioration in the physical fitness of adolescents (Brown, Pearson, Braithwaite, Brown, & Biddle, 2013; Pearson, Braithwaite, Biddle, van Sluijs, & Atkin, 2014; Zulfarina et al., 2016).

Physical imagery promotes physical activity attributed to physical imagery as a motivator to stimulate physical activity. As mentioned above, a significant positive function of physical imagery on physical activity has been reported in the literature; on the other hand, physical activity is attributed to individual personality traits. Since the causal relationship between gender roles and physical activity is relatively insignificant in the logical relationship between objective college students, and the study of body image, gender roles influence body imagery; body imagery, in turn, influences physical activity. Therefore, it is necessary to corroborate the relationship between gender roles and physical activity through body imagery. The correlation coefficients between the masculinity and femininity dimensions of gender roles and exercise intensity were 0.204 and 0.114, respectively, and were significant at the P level of 0.01, indicating a positive relationship between gender roles and exercise intensity; the correlation coefficients between the masculinity and femininity dimensions of gender roles and exercise time were 0.271 and 0.214, respectively, and were significant at the P level of 0.01. The correlation coefficients between the dimensions of masculinity and femininity and exercise frequency were 0.200 and 0.143, respectively, and were significant at the P level of 0.01, indicating a positive relationship between gender roles and exercise frequency. A positive correlation

[1] School of Teacher Education, Taizhou University, Linhai, Zhejiang, 317000, China, Email: cjm031900@sina.com

between gender role and exercise frequency was found. Physical function training first originated in the field of rehabilitation and initially used for post- operative physical function rehabilitation of the general population, and then gradually introduced into the field of competitive sports, becoming an integral physical training tool for sports teams. Although physical function training was introduced to sports teams as a physical training tool, it retains the most basic rehabilitation concept, advocating the synchronization of training and rehabilitation processes and effects, believing that training and rehabilitation are equally important, and advocating comprehensive interventions to make the body healthier in trainings. Traditional physical training methods provide localized training for various physical qualities, such as endurance training, speed training, and strength training. Unlike this, body function training is not just local training for each physical quality, but sees the body, using targeted exercises for joints, muscles, ligaments, etc., to motivate athletes to integrate the strength of the trunk and limbs under the domination of consciousness. This is so that each movement link from the inside out, from the proximal to the distal end, travels through an efficient transmission, producing a seamless elastomer, with a view to maximizing the reasonable use of the body's beneficial effects.

Research status

In 2013, the social cognitive theory was proposed to explain teenagers' sports activities (Plotnikoff, Costigan, Karunamuni, & Lubans, 2013). Following that, healthy life for children from remote and underserved minorities in the Pacific region has been proposed (Wilken et al., 2013). Since 2015, the study of minority nationalities has been put forward (Zeng & Zheng, 2020). China has gradually established a scientific and comprehensive system to promote the management of adolescent physical health promotion effectively, and gradually established a three-year cycle of national physical fitness monitoring system (Guinhouya, Samouda, & De Beaufort, 2013). According to the data of constitution monitoring information, a database of teenagers' constitution and health was established, which provides a reference for the adjustment and optimization of related work and the innovation of the management system. Based on the central idea of "health promotion," this paper attempts to construct a model of teenagers' physical health promotion from the aspects of social, psychological, and other factors, and seeks to provide theoretical support for the formulation of intervention programs for teenagers' physical health promotion (Owen, Smith, Lubans, Ng, & Lonsdale, 2014). The modern concept of physical education believes that teachers effectively and reasonably organize students' physical learning activities, focusing on teachers as the mainstay and students as the main body. Students can explore their sports skills happily, actively, and autonomously so that students can improve their physical, psychological, and social adjustments (Cheng, Mendonça, & Farias, 2014; Pearson, Braithwaite, & Biddle, 2015; Shallice, 2015). Through teaching, students cultivate their exploration spirit and sense of creativity, and hone their thinking ability and imaginative skills. Consequently, students' cooperation and coordination ability will be enhanced, and students' discipline and responsibility will be cultivated (Mahon & Costa, 2017).

From the perspective of cognitive neuropsychology, it is recommended to adopt various means to continuously optimize and innovate the management mode from multifarious levels (Fischer-Baum & Campana, 2017). On the basis of relevant examples in some areas of minority nationalities, this paper conducts necessary analysis and research on the management mode of adolescent physical health promotion and clarifies the value orientation and goal orientation of China's juvenile physical health promotion policy (Svaldi, Schmitz, & Tuschen-Caffier, 2017). In doing so, the paper seeks to analyze the limitations of a policy response to practical problems, provide a reference for policy adjustment, and continuously improve the pertinence and effectiveness of adolescent physical health promotion policy (Donahue, Långström, Lundström, Lichtenstein, & Forsman, 2017). It also seeks to promote the scientific and efficient development of physical fitness promotion work, to achieve the all-around development of young people and the improvement of their comprehensive quality. We must think about the reasons for the decline in the health of young people. It is the deviation of education orientation, the inaction of school sports, the lack of family education, and the indifference of society to unhealthy lifestyles (Champion, Young, & Rew, 2016), or the lack of supervision of the government's decisions after implementation. Optimizing the effect of physical education and improving students' physical health levels is an important and urgent issue in the field of physical education, especially within schools (Tobler et al., 2013). Emphasis on health promotion requires mastering the knowledge of health care, and constructing correct beliefs and positive health concepts, and in this way, is able to change their behavior (Rieder et al., 2013). The educational process for the development of good health habits is simply a process of "knowledge acquisition—belief establishment—behavior attempt—to form a habit. The promotion of adolescents' physical health is to achieve comprehensive and coordinated development of their bodies and minds by improving the physical condition of adolescents (Shan, J., & Talha, M.2021). First, we need to meet the health needs of adolescents, mobilize their interest in promoting, and then turn them into internal motivations, and put them into practice to achieve health. In this paper, cognitive neuropsychology is used to study the physical health promotion of teenagers (Naicker, Galambos, Zeng, Senthilselvan, & Colman, 2013).

Methods

The valid data were processed using SPSS22. First, independent sample t-tests were conducted on the pre-test energy data to test whether the experimental and control groups were homogeneous on each cognitive function index before the intervention; second, independent sample t-tests were conducted on the post-test data to test whether there were differences between the experimental and control groups in terms of each cognitive function index in the post-test; third, analysis of covariance was used to test the effect of physical function training intervention on adolescents' cognitive function using the pre-test scores as covariates. The significance level in this study was 0.05, and all tests were two-tailed.

We found that adolescents' physique mainly includes health-related physique and exercise-related physique (Caramazza, 1992). Health-related constitution mainly includes four aspects: cardiovascular and respiratory system endurance, muscle strength and endurance, flexibility, and body composition, which are closely related to health. Poor lifestyle and lack of health knowledge led to the decline of adolescents' physique. Many teenagers do not care about their physical condition. Health consciousness refers to the ability to objectively existing health problems. It is the sum of people's perception, understanding, and judgment of health and fitness. It is the responsibility of the government and all sectors of society, to pay attention to teenagers' physical health. To ensure the physical health of adolescents, we must standardize and institutionalize these efforts, and let sports policies escort the improvement of adolescents' physical fitness. The weakening trend of adolescents' physique determines the necessity and urgency of implementing the right sports policies. Improving physical fitness levels is the core content of health promotion. The purpose of physical health promotion is to enhance people's health maintenance, to achieve scientific and efficient adjustment of self-state, and to guide people to form good habits and adopt healthy lifestyles and daily routines. Effective regulation and control of insurance can reduce the incidence of unhealthy factors such as diseases and improve the health level. The process of participating in the maintenance and improvement of physical health behavior, through administrative and organizational forms, enables young people to raise awareness, actively participate in activities, and improve their lifestyles. In this process, the enthusiasm of adolescents plays an important role, so it is especially important to improve adolescents' cognitive ability. At this time, the Ministry of Education, the Sports Bureau and other administrative departments, schools, social organizations, and other institutions, physical education teachers, parents, and other individuals have become the object of physical fitness promotion and play a supporting role in promoting young people's health. The statistics of the mean and standard deviation correlation coefficients of the variables for the promotion of adolescents' physical health are shown in Table 1 and Figure 1. The results of the sub-item entry combinations of the Adolescent Physical Health Promotion Model are shown in Table 2 and Figure 2.

Table 1

Statistic average value and standard deviation of variables

variable	Average value	Standard deviation
Self-efficacy	0.82	0.65
Exercise expectation	0.71	0.63

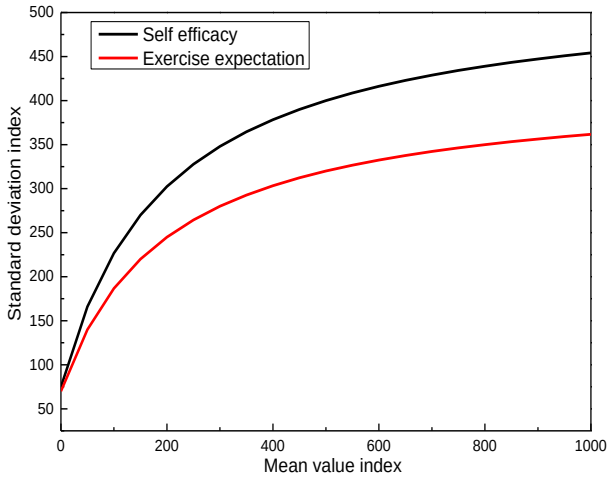

Figure 1. Average value and standard deviation of variables

Table 2

Statistic results of items in each subscale of adolescent physical health promotion model

variable	Number of variables to be observed	Number of entries
Self-efficacy	9	18
Exercise expectation	3	7

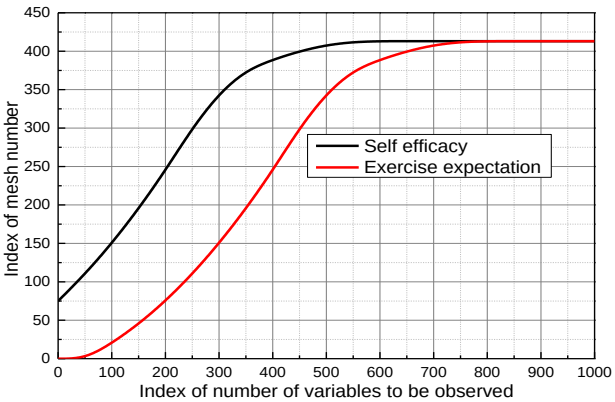

Figure 2. Results of items in each subscale of adolescent physical health promotion model

From the perspective of cognitive neuropsychology, this paper holds that the process of physical education learning is a process of combining old and new skills and knowledge (Frydman, 2016). It is a combination process of learning skills that range from theoretical knowledge to automatic application, which can only be realized through students' activities. Without the active participation of students, it is impossible to tap their learning potential, and to effectively cultivate and improve students' basic sports knowledge, skills, goodwill quality, and comprehensive ability. To improve the effectiveness of physical education teaching, we must change the traditional teaching concept. Firstly, physical education teaching should start from the perspective of students, change their thoughts, and complete the teaching. Secondly, the cultivation of lifelong sports awareness and interest in sports learning should be our ultimate pursuit, and the skill is learning of school sports is a means rather than a goal. Due to the unique psychological and physiological development characteristics of adolescents, it is necessary to have relevant experience based on past health promotion work, and it is also necessary to follow the special laws pertaining to adolescents' physical and mental development. Targeted innovation and development of the health promotion management model enables it to serve the developmental needs of adolescents. We must conscientiously organize quality physical education classes and earnestly implement the one-hour physical activity time of students every day. While the implementation of sports activities is the basic guarantee, how to implement these is the key. This requires the school to set the course content for the characteristics of young students, set up different modules for students to choose, such as fitness modules, weight loss modules, etc., in a variety of forms to carry out a variety of activities, such as holding parent-child sporting activities or competitions. Finally, schools should pay attention to creating the right environment and a good physical atmosphere for students. Interpersonal influence mainly affects physical activity through cognitive factors such as self-efficacy and athletic expectation, which then affects physical health through physical activity. The impact of interpersonal influence on adolescent sports activities is shown in Table 3 and Figure 3. The scale reliability (internal consistency coefficient) and factor analysis results of cognitive aspects related to physical activity are shown in Table 4 and Figure 4.

Table 3

The statistic influence of interpersonal influence on teenagers' sports activities

Influence	Weighted calculation	Corresponding value
Direct influence	0.063	0.085
Indirect influence	0.051	0.078

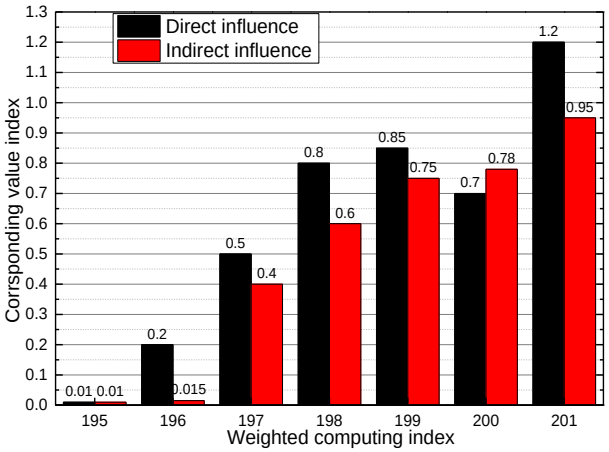

Figure 3. The influence of interpersonal influence on teenagers' sports activities

Table 4

Statistic reliability and factor analysis of cognitive questionnaires

Variable	Extraction factors	Variance of interpretation
Self-efficacy	6	12.37
Exercise expectation	5	11.21

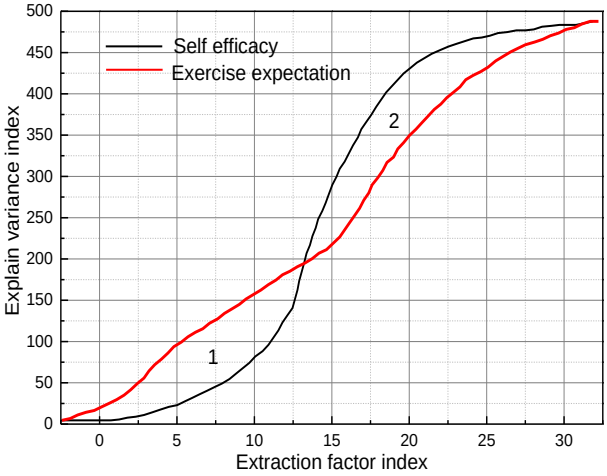

Figure 4. Reliability and factor analysis of cognitive questionnaires

We can find that physical fitness is a comprehensive and relatively stable feature of the human body, psychology, and society, and is based on both, heredity and acquirement. This concept explains the constitution from three dimensions of physiology, psychology, and society, and holds that the constitution includes physical quality, psychological quality, social quality, and comprehensive quality. Regardless of the two-dimensional view or the three-dimensional view of physical fitness, physical fitness includes physical fitness, which reflects the function of various organ systems in muscle work. It also includes strength, speed, endurance, sensitivity, flexibility, coordination,

and balance. From an institutional perspective, it is important to identify and harmonize responsibilities at all levels. Policymakers at all levels should therefore be bound by the corresponding responsibilities, given clearly defined mandates, and should enjoy reciprocal benefits. The physical health promotion of adolescents in minority ethnic minority areas is a complicated systematic project, which aims to comprehensively improve the health of adolescents. It needs government departments as the main body of management to mobilize the positive role of schools, communities, families, media, and other organizations to coordinate their work. Among them, individual characteristics and experiences are congenital factors, including gender, age, and personality, and experience which affect future behaviors. These background factors rarely changed. Behavioral and cognitive factors related to individual behavior primarily perceive behavioral interests, perceived behavioral disorders, perceived self-efficacy, and behavior-related emotions. Environmental and interpersonal factors mainly refer to social environmental factors that affect behavior, including social support, family, and site equipment. It is necessary to help them establish the right outlook on health and talents, improve their health awareness, and cultivate good lifestyle and eating habits. It is particularly important to formulate and improve the dietary health policy for adolescents and pay attention to the rational mix of nutrition. In terms of skills, a certain level of motor skills also contributes to proficiency in motor skills. Statistics on the participation of young people in different sports are shown in Table 5 and Figure 5.

Table 5

Statistic teenagers' participation in different sports events

Project	Participation value	Weight value
Run	68%	15.34
Basketball	36%	8.63
Swimming	18%	5.42

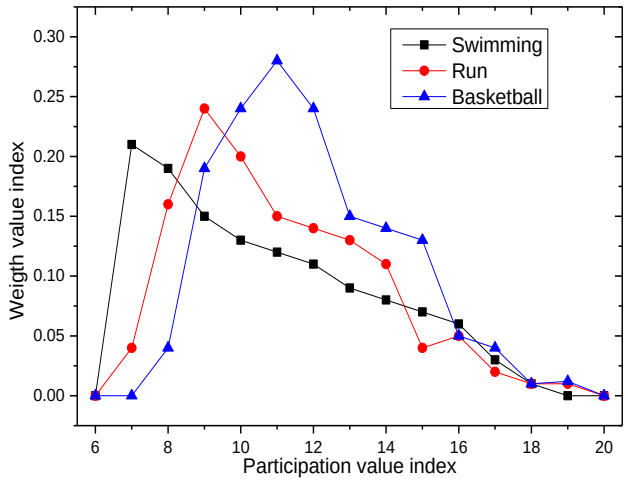

Figure 5. Teenagers' participation in different sports events

Cognition is an important step in changing behavior. For our purposes, cognition can improve the psychological consciousness of adolescents' physical health. To enable teenagers to enhance their health by participating in sports, it is important to first understand the importance of sports to health, the basic knowledge of sports, and the general knowledge of health, and only then we can adopt the best practices combining both. However, in practice, we only pay attention to monitoring and data uploading of intermediate links in monitoring and tend to ignore the physical cognitive education of young people in the front part of the monitoring. Autonomous learning and practice require students' subjectivity, unlike the traditional model of the "demonstration-imitation-correction-practice" cycle, but the students as the main body, allowing students to explore actively, in which teachers play the role of on-demand. Effective classroom teaching mode requires students to innovate and perfect their sports action skills. The cognitive theory holds that physical activity behavior is a complex process of interaction between individual factors, behavioral factors, and environmental factors. It emphasizes the social environment in which physical activity occurs and propounds that self-efficacy can be used as the main predictor of physical exercise behavior. It is also the core variable of numerous health behavior change models. Therefore, the theory of self-efficacy has become an important theoretical support for adolescents' physical health promotion. In the context of today's digital age, we can make full use of the media's star effect, video clips, related texts, and other propaganda functions, thus stimulating the enthusiasm of young students to participate in physical exercise. At the same time, through the organization of social associations such as sports associations, campus sports associations, and various youth sports clubs, we can build a diversified health service system for young students. According to the theoretical model, the intervention scheme of adolescent students' physical health promotion activities was designed, and the subjects were selected for the empirical study of health promotion. Utilizing the data obtained and further theoretical analysis, the validity of the physique health promotion model in China and the pertinence and operability of the intervention program was verified. The comprehensive assessment level of adolescents' physical health is shown in Figure 6.

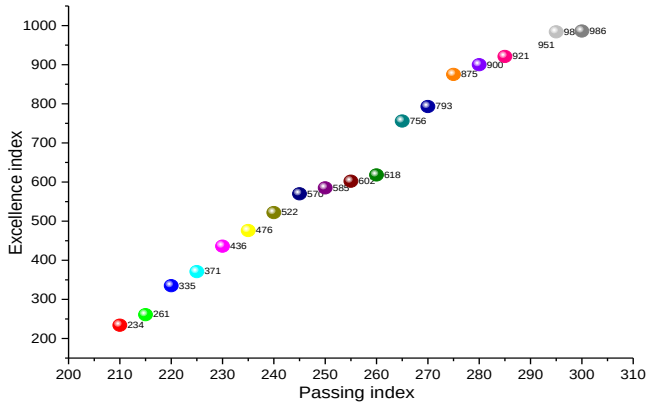

Figure 6. Comprehensive Assessment Grade of Adolescent Physical Health

Results and Discussions

This article has conducted in-depth research on adolescents' physical activities, providing a basis for constructing adolescents' physical health promotion model. However, this research has not yet investigated the physical activity, volume, and intensity of adolescents of different genders, races, and age groups. Through the analysis of the intervention effect of the intervention group and the control group, it is found that the level of physical activity of the intervention group students is significantly higher than that of the control group students. As we know, the situation of students participating in sports activities in school in the intervention group and the control group is the same, but through the intervention, the level of students participating in sports activities in their spare time (weekend and after class) in the intervention group has increased significantly. Firstly, after the intervention, the interest of the intervention group students to participate in sports activities has been effectively improved, directly promoting their participation in sports activities. Secondly, after the intervention, the cognitive level of students' self-efficacy is improved, making them more subjectively aware of the importance of participating in physical activity, and the importance of the physical activity in relation to health, starting to transform from ideology to behavioral practice. It involves the improvement of the level of sports activities. Among the cognitive factors related to physical activity, self-efficacy, perceived benefit, and perceived disorder are significantly associated with physical health. Among them, self-efficacy, perceived benefit, and physical health are positively correlated. The correlation coefficient between self-efficacy and physical health was 0.65 ($p<0.01$), and the correlation coefficient between perceived benefit and physical health was 0.50 ($p<0.01$). The perceptual disorder was negatively correlated with physical health, and the correlation coefficient was -0.28 ($p<0.01$). The differences in indicators between the intervention group and the control group before intervention are shown in Table 6.

The hypothetical model of adolescent physique health promotion is shown in Figure 7.

Table 6

The difference test of each index between the intervention group and the control group before intervention

Grouping	Age M±SD	Height M±SD	Weight M±SD	Physical health M±SD
Intervention group	15.31±0.61	169.31±6.32	55.21±13.21	65.51±11.35
Control group	15.52±0.61	172.51±8.11	58.31±11.72	68.21±10.23

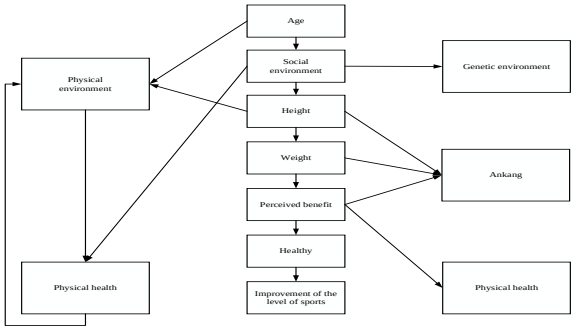

Figure 7. Hypothetical model of adolescent physical health promotion

Intelligent judgment accords with the individual's motion scheme, as follows: each selected sample is tested with the adopted sample, and the error of each sample is calculated to determine the fitness value:

$$S_{ae} = \int_0^{L_a} \frac{4Px^2}{\pi d^2 E_a {L_a}^2} dx = \frac{4PL_a}{3\pi d^2 E_a} \quad (1)$$

According to the fitness ratio selection method, the probability of sample selection is calculated as follows:

$$q_f = -\frac{dp - R_f}{dx} \quad (2)$$

For two selected samples q_f, two new individuals are obtained by crossover operation:

$$q_f = -\frac{1}{4}\pi d^2 E_a \frac{d^2 S_{as}}{dx^2} + \frac{R_f}{dx} \quad (3)$$

$$q_f = \pi df = G_s S_{as} \quad (4)$$

Random determination of the range of variation points according to probability is determined by the formula below:

$$\frac{d^2 S_{as}}{dx^2} - \frac{4G_s}{\pi d^2 E_a} S_{as} + \frac{4R_f}{\pi d^2 E_a dx} = 0 \quad (5)$$

Using the frequency set to produce the desired expectation utilizes a recursive method, expressed as:

$$S_{as} = \frac{4P}{\pi dE_a \alpha} \cdot \frac{ch\left(\alpha \cdot \frac{L_a - x}{d}\right)}{sh\left(\alpha \cdot \frac{L_a}{d}\right)} + \frac{-4R_f}{\pi \alpha^2 E_a} \cdot x \quad (6)$$

According to the weight of each indicator and standard score, design a comprehensive index evaluation formula:

$$p = P \cdot \frac{sh\left(\alpha \cdot \frac{L_a - x}{d}\right)}{sh\left(\alpha \cdot \frac{L_a}{d}\right)} - \frac{4R_f}{\pi \alpha^2 E_a} \tag{7}$$

$$f = \frac{\alpha P}{\pi d^2} \frac{ch\left(\alpha \cdot \frac{L_a - x}{d}\right)}{sh\left(\alpha \cdot \frac{L_a}{d}\right)} - \frac{4R_f}{\pi d} \cdot x \tag{8}$$

The intensity of exercise that should be achieved and maintained during the endurance exercise:

$$f(x) = \frac{1}{g(x)} \tag{9}$$

Motion intensity formula based on simulated data:

$$f' = f - \left(\overline{f} - c\sigma\right) \tag{10}$$

Student health score formula based on composite index score:

$$S = S_{as} = \frac{4P}{\pi d E_a \alpha} ch\left(\alpha \cdot \frac{L_a}{d}\right) \tag{11}$$

The evaluation level of the health comprehensive index is superior:

$$f_0 = \frac{\alpha P}{\pi d^2} \frac{ch\left(\alpha \cdot \frac{L_a}{d}\right)}{sh\left(\alpha \cdot \frac{L_a}{d}\right)} \tag{12}$$

Health comprehensive index evaluation level is medium:

$$\frac{P}{S} = \frac{\pi d E_a \alpha}{4th\left(\alpha \cdot \frac{L_a}{d}\right)} \tag{13}$$

Health comprehensive index evaluation level is inferior:

$$f' = af + b \tag{14}$$

The present study was conducted to examine the effect of physical exercise on the cognitive function of adolescents. Long-term physical exercise promotes the development of the nervous system in children and adolescents, which strengthens the coordination of excitation and inhibition in the cerebral cortex and improves the flexibility and balance of neural processes. This process is closely related to the development of fluid intelligence, which is more dependent on the development of the nervous system than crystal intelligence, which improves as the nervous system matures, decreases as the nervous system declines, and is less affected by education and culture. This shaping of the brain and nerves by physical exercise provides the physiological basis for its facilitative effect on fluid intelligence. On the other hand, physical exercise itself contains multiple intellectual components. Physical exercise modalities that contain more cognitive components require participants to fully engage with their cognitive abilities such as attention, observation, learning, and memory, and in the process, cognitive functions are improved.

This study investigates the safeguard mechanism of minority adolescents' physical health promotion and management, according to the actual situation of economy, culture, sports, and health teaching. This includes establishing continuing education and training of physical education teachers suitable for the needs of various regions, organizing and strengthening the enthusiasm of teachers to participate in health education, and adopting supportive policies to improve the awareness and responsibility of health education of physical education teachers. The adaptive cognitive participation and emotional participation of physical education teachers in health education is the medium of behavioral media. The level of students' participation is an important criterion to measure the effect of physical education teaching. According to the actual level of student's physical fitness and skills, students are encouraged to participate in the whole physical education teaching process to meet the basic teaching requirements. IT also includes ensuring provision of human resources for the physical health promotion of schools. Cognitive neuropsychology is an important genre of contemporary psychological research. It holds that the cognitive process refers to the brain processing symbolic information and the cognitive process of explaining how to encode, store and extract information in cognitive activities. The health promotion model provides a good theoretical framework for school physical education health promotion and promotes the improvement of school health concepts. However, these studies pay more attention to the conceptual positioning and the implementation steps of macro-strategies, whose effectiveness and pertinence need to be further verified in practice. Another concern to be addressed through such a program is students' weak mental capacity: most adolescents do not integrate deeply into the world, and they are often naive and childish in the face of complex social realities. Once faced with difficulties or setbacks in real life, one tends to shrink back. After repeated setbacks, it is easy to question yourself and lose confidence in the future. Therefore, it is important to strive to create a public opinion environment that values young people, and to ensure that the whole society has formed a conducive atmosphere for advocating sports and health and upwards. We should transform the development ideas of heavy competition and light groups, thoroughly implementing the central spirit, and shouldering the responsibility of strengthening students' physical health. Independent samples of cognitive neuropsychological effects on physical health t-test results are shown in Table 7 and Figure 8.

Table 7

Independent Sample t-test Results of Cognitive

Neuropsychology on Physical Health

	Grouping	Sample
Physical health	11.23	21.35

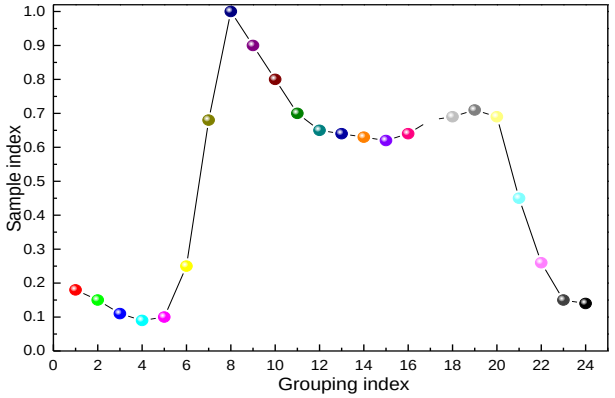

Figure 8. Independent Sample t-test Results of Cognitive Neuropsychology on Physical Health

It is important to effectively standardize the physical health of adolescents in minority areas and establish a supervision and publication system of teenagers' physical health promotion in Minority Autonomous Region according to their actual needs. Within the scope of the autonomous region, monitoring points of physical health promotion management for primary and secondary school students and monitoring points for colleges and universities have been set up, and a comprehensive management model and organizational system of physical health promotion has been established. Minority ethnic groups belong to the cold zone. The human body's metabolism is faster, and the corresponding life cycle is shorter, which determines its relatively low developmental height. At the same time, the hot climate will inevitably accelerate the activity of enzymes in the body. Nutrients accumulate less in the body and are therefore relatively lighter in weight. On the other hand, it is also related to the socio-economic and cultural environmental factors of the two regions. Economic development can promote the simultaneous improvement of students' physical form development level, and the continuous improvement of the humanistic environment is expected to advance in the peak age of student students' height and weight. It means that their psychology will change in advance. It reminds us that whether it is school education, family education, social education, or school sports health work, we must be psychologically prepared based considering this trend and change. Through simulation analysis, it is found that the decision-making ability focuses on individual behavior change, rather than social and biological influence. It is a systematic study based on the combination of multiple theories. Individual characteristics and experiences are congenital factors, including gender, age, and personality. They experience behaviors that primarily affect the future. These background factors are rarely altered. Behavioral and cognitive factors related to behavior mainly concern behavioral interests, perceived behavioral disorders, perceived self-efficacy, and behavior-related emotions. The results of the formal analysis of the physique health variable covariance are shown in Figure 9.

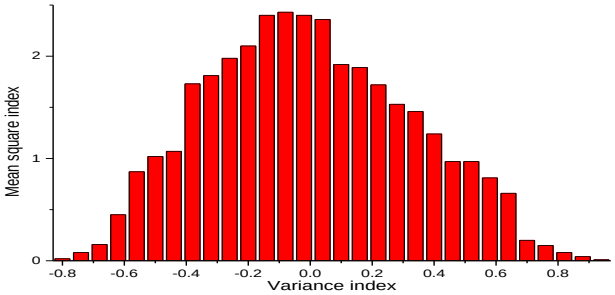

Figure 9. Results of Covariance Formal Analysis of Physical Health Variables

Through the horizontal comparison of Minority Communities, this paper analyzes the characteristics, laws, trends, differences, and causes of the changes in physical fitness of minority students in different economic, social development levels, regions, and altitudes. This is done with a view to improve the physical health level of ethnic minority students and provide a scientific basis for improving school physical education and health work in ethnic minority areas. This will provide a theoretical basis for the formulation of poverty alleviation policies, the promotion of the development of poverty-stricken regions home to ethnic minorities, and the harmonious development of society. It will also allow them to organize projects and activities related to adolescent physical health, strengthen the management of adolescents' physical health promotion exercise, and enhance the enthusiasm and initiative of relevant competent departments. It will also result in an increase in sports input and health promotion behavior; the so-called "sports input" refers to the degree of an individual's psychological identification with sports, that is, recognizing the importance of participating in sports and cultivating the value of sports for oneself. The key to sports investment is physical involvement. At the same time, to further enhance the scientific and efficacious application of the physical health promotion management model for adolescents, it is necessary to give full play to the role of the staff department and make essential adjustments to promote the operation mode and organization of the management model. To further explore the relationship between the variables of the health promotion model of adolescents, the simulation model was used to test the fitting of the hypothetical model with the test data. When testing, there should not be too many items to be measured. Otherwise, it will affect the fitting degree of the model. Therefore, measurement errors are caused by reducing too many variable entries. From a system perspective, the decision-making mechanism is the leadership of adolescents' physical health promotion. From a macro level, the main body of decision-making is the administrative department of the Ministry of

Education, school leaders, etc. They are the makers of relevant policies and regulations. From the micro-level, the main body of decision-making is parents, physical education teachers, physical fitness monitors, etc. They are both implementers of relevant policies and implementers of adolescents' physical health promotion. At the micro-level, the main body of decision-making is individual adolescents, and the awareness level, cognition, motivation, and behavioral decision-making of adolescents are the internal health standards of health promotion. The pattern of effective health promotion in schools is shown in Figure 10.

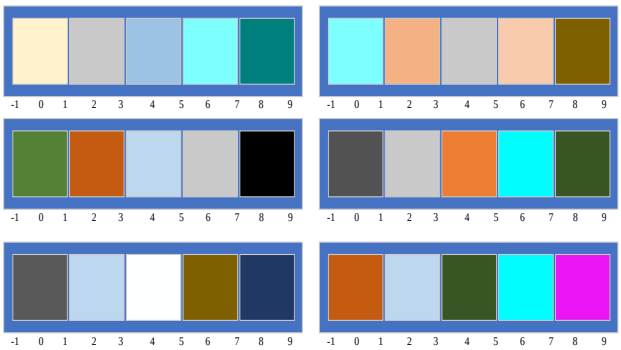

Figure 10. School Effective Health Promotion Model

Conclusions

This study attempts to conduct a simulation study of adolescent physical health promotion from the core elements of biology, society, and psychology, and carry out health promotion intervention. This model theoretically explores the relationship between self-efficacy, perceived interests, perceived barriers, interpersonal influence, physical activities, and physical health, and provides theoretical support for the formulation of intervention projects for adolescents' physical health promotion. From the perspective of management practice of physical health promotion, this paper delineates the application practice of the management model of physical health promotion. It is believed that relevant documents and administrative regulations will be issued continuously to effectively standardize adolescent health work and organized relevant departments, schools of all levels, experts, and scholars to set up specialized personnel and management institutions and promote social forces to participate in the promotion and management of youth's physical health. IT is equally important to create a positive exercise environment and strengthen youth network management. It bears to note that intervention strategies and actions such as sports risk management mechanisms and health protection have been effectively improved. Promoting adolescents' physical health is a long-term systematic project that requires a combination of theory and practice. Regular participation in physical exercise can effectively improve people's physical condition and state of health. However, choosing different exercise programs will shape different body forms, however, at the same time, it merits to note that the impact of these programs on all aspects of physical fitness and function improvement will not be the same.

Acknowledgement

Teaching reform on higher education of Zhejiang province, A Study on Talents' Training Mode of P.E. Major in Employment-oriented Local Colleges, China (Grant No. jg20160178).

References

Aibar, A., Bois, J. E., Generelo, E., Zaragoza Casterad, J., & Paillard, T. (2013). A cross-cultural study of adolescents' physical activity levels in France and Spain. *European Journal of Sport Science, 13*(5), 551-558. doi:https://doi.org/10.1080/17461391.2012.746733

Brown, H. E., Pearson, N., Braithwaite, R. E., Brown, W. J., & Biddle, S. J. H. (2013). Physical activity interventions and depression in children and adolescents. *Sports medicine, 43*(3), 195-206. doi:https://doi.org/10.1007/s40279-012-0015-8

Caramazza, A. (1992). Is cognitive neuropsychology possible? *Journal of Cognitive Neuroscience, 4*(1), 80-95. doi:https://doi.org/10.1162/jocn.1992.4.1.80

Champion, J. D., Young, C., & Rew, L. (2016). Substantiating the need for primary care–based sexual health promotion interventions for ethnic minority adolescent women experiencing health disparities. *Journal of the American Association of Nurse Practitioners, 28*(9), 487-492. doi:https://doi.org/10.1002/2327-6924.12346

Cheng, L. A., Mendonça, G., & Farias, J. C. d. (2014). Physical activity in adolescents: analysis of the social influence of parents and friends. *Jornal de pediatria, 90*, 35-41. doi:https://doi.org/10.1016/j.jped.2013.05.006

De Meester, F., Van Dyck, D., De Bourdeaudhuij, I., Deforche, B., & Cardon, G. (2013). Do psychosocial factors moderate the association between neighborhood walkability and adolescents' physical activity? *Social science & medicine, 81*, 1-9. doi:https://doi.org/10.1016/j.socscimed.2013.01.013

Donahue, K., Långström, N., Lundström, S., Lichtenstein, P., & Forsman, M. (2017). Familial factors, victimization, and psychological health among sexual minority adolescents in Sweden. *American journal of public health, 107*(2), 322-328. doi:https://doi.org/10.2105/AJPH.2016.303573

Fischer-Baum, S., & Campana, G. (2017). Neuroplasticity and the logic of cognitive neuropsychology. *Cognitive neuropsychology, 34*(7-8), 403-411. doi:https://doi.org/10.1080/02643294.2017.1389707

Frydman, J. S. (2016). Role theory and executive functioning: Constructing cooperative paradigms of drama therapy and cognitive neuropsychology. *The Arts in Psychotherapy, 47*, 41-47. doi:https://doi.org/10.1016/j.aip.2015.11.003

Guinhouya, B. C., Samouda, H., & De Beaufort, C. (2013). Level of physical activity among children and adolescents in Europe: a review of physical activity assessed objectively by accelerometry. *Public health, 127*(4), 301-311. doi:https://doi.org/10.1016/j.puhe.2013.01.020

Lan, Q., Chen, J., Guo, Y., Xie, T., Fang, Y., Jin, X., . . . Zhu, B. (2018). Genetic structure and polymorphism analysis of Xinjiang Hui ethnic minority based on 21 STRs. *Molecular biology reports, 45*(2), 99-108. doi:https://doi.org/10.1007/s11033-018-4143-6

Mahon, B. Z., & Costa, A. (2017). Theoretical and methodological issues for twenty-first century cognitive neuropsychology. *Cognitive neuropsychology, 34*(7-8), 395. doi:https://doi.org/10.1080/02643294.2018.1426606

Naicker, K., Galambos, N. L., Zeng, Y., Senthilselvan, A., & Colman, I. (2013). Social, demographic, and health outcomes in the 10 years following adolescent depression. *Journal of Adolescent Health, 52*(5), 533-538. doi:https://doi.org/10.1016/j.jadohealth.2012.12.016

O'Brien, W., Belton, S., & Issartel, J. (2016). The relationship between adolescents' physical activity, fundamental movement skills and weight status. *Journal of sports sciences, 34*(12), 1159-1167. doi:https://doi.org/10.1080/02640414.2015.1096017

Owen, K. B., Smith, J., Lubans, D. R., Ng, J. Y. Y., & Lonsdale, C. (2014). Self-determined motivation and physical activity in children and adolescents: A systematic review and meta-analysis. *Preventive medicine, 67*, 270-279. doi:https://doi.org/10.1016/j.ypmed.2014.07.033

Pearson, N., Braithwaite, R., & Biddle, S. J. H. (2015). The effectiveness of interventions to increase physical activity among adolescent girls: a meta-analysis. *Academic pediatrics, 15*(1), 9-18. doi:https://doi.org/10.1016/j.acap.2014.08.009

Pearson, N., Braithwaite, R. E., Biddle, S. J. H., van Sluijs, E. M. F., & Atkin, A. J. (2014). Associations between sedentary behaviour and physical activity in children and adolescents: a meta-analysis. *Obesity reviews, 15*(8), 666-675. doi:https://doi.org/10.1111/obr.12188

Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2013). Social cognitive theories used to explain physical activity behavior in adolescents: a systematic review and meta-analysis. *Preventive medicine, 56*(5), 245-253. doi:https://doi.org/10.1016/j.ypmed.2013.01.013

Rieder, J., Khan, U. I., Heo, M., Mossavar-Rahmani, Y., Blank, A. E., Strauss, T., . . . Wylie-Rosett, J. (2013). Evaluation of a community-based weight management program for predominantly severely obese, difficult-to-reach, inner-city minority adolescents. *Childhood obesity, 9*(4), 292-304. doi:https://doi.org/10.1089/chi.2012.0147

Shan, J., & Talha, M. (2021). Research Article Research on Classroom Online Teaching Model of "Learning" Wisdom Music on Wireless Network under the Background of Artificial Intelligence

Shallice, T. (2015). Cognitive neuropsychology and its vicissitudes: The fate of Caramazza's axioms. *Cognitive neuropsychology, 32*(7-8), 385-411. doi:https://doi.org/10.1080/02643294.2015.1131677

Svaldi, J., Schmitz, F., & Tuschen-Caffier, B. (2017). Cognitive-affective neuropsychology of binge eating disorder. *Psychotherapeut, 62*(3), 194-203. doi:https://doi.org/10.1007/s00278-017-0190-z

Tobler, A. L., Maldonado-Molina, M. M., Staras, S. A. S., O'Mara, R. J., Livingston, M. D., & Komro, K. A. (2013). Perceived racial/ethnic discrimination, problem behaviors, and mental health among minority urban youth. *Ethnicity & health, 18*(4), 337-349. doi:https://doi.org/10.1080/13557858.2012.730609

Wilken, L. R., Novotny, R., Fialkowski, M. K., Boushey, C. J., Nigg, C., Paulino, Y., . . . Kim, J. (2013). Children's Healthy Living (CHL) Program for remote underserved minority populations in the Pacific region: rationale and design of a community randomized trial to prevent early childhood obesity. *BMC public health, 13*(1), 1-13. doi:https://doi.org/10.1186/1471-2458-13-944

Zeng, Y., & Zheng, H. (2020). Physical health promotion of minority youth based on cognitive neuropsychological factors. *Revista Argentina de Clínica Psicológica, 29*(2), 1300.

Zulfarina, M. S., Sharkawi, A. M., Aqilah-Sn, Z.-S. M., Mokhtar, S.-A., Nazrun, S. A., & Naina-Mohamed, I. (2016). Influence of adolescents' physical activity on bone mineral acquisition: a systematic review article. *Iranian journal of public health, 45*(12), 1545.