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Cultivation of Sportsmanship and Physical Training Model Based on the Online Career Planning Platform—A Multidisciplinary Collaborative Education Path for Colleges and Universities

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Keywords: Sportsmanship Training; Physical Training; Career Planning Platform; Multidisciplinary Collaborative Education; Data Analysis and Intelligent Recommendation

Abstract: As society continues to increase its requirements for the comprehensive quality of college students, sportsmanship and physical training are becoming increasingly important in college education. This paper aims to solve the lack of systematicness and pertinence in the current sportsmanship cultivation and physical training model in colleges and universities. By introducing the research on sportsmanship cultivation and physical training model based on the career planning online platform, this paper explores the multidisciplinary collaborative education path of colleges and universities. To this end, this paper proposes to empower the dissemination of sportsmanship through all-media technology, optimize personalized physical training programs through data analysis and intelligent recommendation, and closely combine sports literacy with career development needs through a multidisciplinary collaborative education mechanism. Strategically, an online career planning platform is used to accurately match physical needs with career development, optimize training content, and promote the dual improvement of students' sportsmanship and physical fitness. At the same time, an interdisciplinary cooperation platform is established to promote cooperation among universities, governments, enterprises and other parties to form an all-round talent training system. The results show that the endurance running results of the experimental group finally reaches 385 seconds, which is 25 seconds shorter than the previous period (410 seconds) and further shortened by 13 seconds compared to the mid-term (398 seconds), showing a sustained and stable improvement.

1. Introduction

In the modern education system, physical training is not only a key link to enhance students' physical fitness but also an important means to cultivate teamwork, sense of responsibility and stress resistance. This study aims to explore the effects of systematic physical training on college students' physical fitness, sportsmanship cognition and professionalism. Through comparative analysis of the experimental group and the control group, the study evaluates the effects of different training methods on the improvement of students' physical fitness indicators such as endurance,

strength and flexibility, and examines the role of physical training in cultivating students' professionalism such as communication skills, leadership and adaptability. The results of this study can not only provide data support for the optimization of physical education courses in colleges and universities but also provide reference for the talent training model of enterprises, in order to enhance the comprehensive competitiveness of college students.

This paper first introduces the research background of the sportsmanship cultivation and physical training model based on the career planning online platform, and clarifies the importance of sportsmanship and physical training in college education and its relationship with career planning. Then, the literature review reviews the research progress in sportsmanship cultivation, physical training and multidisciplinary collaborative education at home and abroad, and analyzes the advantages and disadvantages of the existing model. Then, the paper describes in detail the innovative model of sportsmanship cultivation and physical training based on the online platform, focusing on how to combine the cultivation of students' sportsmanship with the improvement of physical fitness through the online platform. The following experiment and data analysis section demonstrates the application effect of this model in colleges and universities. After that, the discussion section conducts an in-depth analysis of the research results and explores the role and challenges of multidisciplinary collaborative education in this model. Finally, the conclusion section summarizes the research results, puts forward the practical significance of this model, and looks forward to future development directions.

2. Related Work

In recent years, the role of physical education in cultivating students' health literacy, character building and career development has received widespread attention. Many studies have focused on the optimization of physical education courses, the construction of sports culture, the cultivation of sports spirit and interdisciplinary integration, exploring how to improve students' comprehensive quality through scientific sports teaching and training models. Li's questionnaire survey of 53 students from the School of Physical Education and Health of East China Normal University showed that students had low participation in national policies, health knowledge learning and health education, and lacked self-control and perseverance in physical exercise[1]. Salahudin et al. explored how physical education courses can cultivate students' character through sports activities. The results showed that well-planned sports activities can effectively promote character formation[2].Li constructed a theoretical framework for campus sports culture construction based on peer education through literature analysis and case studies, and proposed specific application strategies in sports teaching, training, competition, cultural construction and social practice. The study showed that peer education can optimize the sports culture environment, enhance educational functions, and promote the healthy and sustainable development of college sports culture[3]. Salahudin et al. analyzed the implementation methods of physical education, emphasizing the integration of academic and non-academic courses to build a sustainable all-round learning environment[4]. Lai et al. aimed to develop special ability indicators for young football players and establish talent evaluation standards based on different positions. The results identified four major categories of indicators: physiological and physical fitness, body composition, football skills and cognitive ability, which can be used to select outstanding players, evaluate strengths and weaknesses, and provide reference for national team selection and international competitions[5]. Temel et al. used the "Physical Education Sports Ethics Behavior Scale" to collect data and used descriptive statistics, t-tests and ANOVA analysis. The results showed that the overall level of students' sports ethics was high, especially in avoiding negative behaviors[6]. Harner explored the interdisciplinary nature of HPER and its role in addressing public health challenges, while

analyzing the impact of social changes, technological advances and health trends on its development. The study emphasized the importance of evidence-based practice, innovative strategies and inclusive approaches in HPER education and intervention[7]. Permana et al. explored the role of sports and physical education in the development of children's attitudes and behaviors. The results showed that sports significantly promoted the development of children's character, leadership, cooperation and discipline[8]. Maharani et al. analyzed the role of sports activities in the development of adolescent personality, focusing on the implementation of the three values of fair play, problem solving and discipline among 39 roller skating athletes in Bandung. The study showed that roller skating can help shape the character of athletes, but the training strategy needs to be optimized to achieve comprehensive development[9]. Whitfield analyzed the unique features of Japanese football culture and explored why educational institutions became the main driving force behind Japanese football. They found that the development of Japanese football in schools was mainly influenced by the following factors: (1) organizing competitions helps "cultivate character"; (2) Japanese football's acceptance and reinterpretation of amateurism; (3) the connection between football participation and individualistic educational ideas; (4) the educated elite regards sports as the core of Japanese education[10]. Sembiring observed primary school basketball teaching in Sekolah Dasar Negeri 060891 Medan on January 8, 2016 and found that students were not active enough in basketball learning because the teaching materials did not meet the growth needs of students and the teaching methods and equipment were not used properly[11]. Existing research mainly focuses on the impact of physical education on health, character and skills, but there is still a lack of practical exploration in multidisciplinary collaborative education, personalized training and career development integration.

3. Method

3.1 The Path to Improve Sportsmanship

(1) Omnimedia technology empowers the cultivation of sportsmanship

The application of omnimedia technology can significantly enhance college students' cognition and understanding of sportsmanship. Through the Internet and multimedia means, the connotation and value of sportsmanship can be efficiently disseminated, so that students can intuitively and vividly experience the multi-dimensional characteristics of sportsmanship, thereby enhancing their sense of identity. In addition, using all media to spread advanced sports deeds and stories of outstanding athletes can enhance the appeal of the spirit of sports, enable students to resonate emotionally, and thus promote their practice of the spirit of sports.

(2) Establish and improve the coordination mechanism between teachers and the Student Affairs Office

In order to optimize the sportsmanship training system, it is necessary to establish a university leadership system and clarify the responsibilities of each subject. The multidisciplinary collaborative education model involves multiple departments and courses. Universities should establish a coordinated management mechanism, clarify the responsibilities of the Student Affairs Office and various departments, and ensure the integration of teaching resources. In addition, the exchanges and interactions between departments should be strengthened, especially the in-depth cooperation between the School of Marxism and the School of Physical Education, to enhance the collaborative education effect. At the same time, demonstration teaching and collective lesson preparation meetings can be used to promote collaboration among teachers and improve the teaching quality of sports spirit cultivation.

3.2 Physical Training Model Based on the Career Planning Online Platform

(1) Core elements of physical training

Strength training is the foundation of physical training and the key to improving athletes' physical fitness. Before training, it is necessary to assess physical condition, develop a reasonable plan, and dynamically adjust intensity. Strength training includes basic strength, rapid strength and endurance strength training, which respectively enhance muscle strength, improve explosive power and exercise endurance. In addition, it can be combined with short-distance running, sprinting and long-distance running training to improve comprehensive physical fitness. Speed training needs to be carried out step by step, gradually increasing the intensity and distance to improve sports performance. Flexibility and coordination training enhances stability and reduces the risk of injury through stretching and dynamic balance. Psychological training helps athletes maintain confidence in high-pressure environments, optimize their competitive state, and thus improve their physical fitness.

(2) Application of career planning platform in physical training

1) Matching physical requirements for different occupations

For matching physical requirements for different occupations, online career planning platforms can use data analysis technology to accurately assess the physical requirements of various occupations. For example, professions such as police and firefighters require high endurance, strength and agility, while professions such as teachers and business managers focus more on long-term health management and physical and mental coordination. The platform can formulate corresponding physical training plans based on the characteristics of the profession to help students improve their physical fitness in line with their future career development through physical exercise. At the same time, the personalized recommendation function can adjust the training focus according to the user's career plan, ensure that physical training matches the career development direction, and improve students' physical fitness adaptability.

2) Correlation analysis between training results and professional competitiveness

Correlation analysis between training results and professional competitiveness is an important link in the combination of physical education and professional development. Through data tracking and evaluation, the platform can quantify individual physical training results, such as endurance, strength, flexibility, reaction speed and other indicators, and correlate them with professional competitiveness. For example, excellent physical fitness can not only improve athletic performance but also enhance one's ability to withstand stress, focus and execution, thereby improving workplace competitiveness. The platform can provide users with a report on the specific impact of physical training on career growth through visual data analysis, helping students and job seekers to plan their personal development paths more scientifically, while enhancing the value of sports training in career growth.

3) Platform intelligent recommendation training program

The digital infrastructure system has been fully improved to create an intelligent infrastructure covering perception, computing, connection, carrying, storage, intelligent technology and green energy. The system integrates perception equipment, computing power center, access network, Internet network, intelligent system and green energy facilities to provide efficient data support. By deeply analyzing the training data of athletes, intelligent technology can identify their weak links, optimize training plans, and improve training quality. At the same time, data intelligence technology can also mine the laws and trends of training data to develop more targeted training plans for athletes, thereby improving the overall training effect and promoting the healthy development of China's sports industry.

3.3 Paths for Multi-disciplinary Collaborative Education in Colleges and Universities

(1) Multi-subject collaborative education model

Colleges and universities, governments, research institutes, enterprises and other parties jointly build a cooperation platform to promote the interdisciplinary integration of physical education. Curriculum design is combined with industry needs, and the construction of practical teaching bases is strengthened to form a physical education model that integrates theory, practice and career planning. Through the mentor system, two-way communication mechanism and employment resource sharing, students' physical literacy and professional competitiveness are improved.

(2) Construction of the "Internet +" multi-faceted collaborative education platform

A cooperation mechanism has been established based on the principle of "integration of advantages, equality and mutual benefit, joint promotion and common development". The needs of all parties are deeply explored, such as through visits, surveys, conference exchanges, etc., to ensure the sustainable development of the platform. University teachers are arranged to practice in enterprises, and corporate professionals are invited to give lectures at school, so that the educational content is closely aligned with industry needs. A dynamic coordination mechanism has been established to attract more partners, form a competition mechanism, and encourage all parties to actively participate in collaborative education. Excellent students are selected for joint training by multiple parties, with the government responsible for ideological and political education, university teachers conducting theoretical teaching, scientific research institutions providing the latest technical guidance, and enterprises providing practical training, forming a comprehensive talent training system.

(3) Discipline synergy model design

Combining sports disciplines with vocational education: Through the career planning platform, sports training is combined with career development needs to cultivate students' sports literacy and professional competitiveness. The course design covers sports skills, physical training and professional literacy training, making sports a strong support for students' future career development.

Integration of data science and health management: Combined with data analysis technology, real-time monitoring of athletes' training data, physical condition and health indicators can be carried out to optimize training plans and improve training efficiency. Intelligent algorithms can provide personalized exercise suggestions, prevent sports injuries, and assist in the formulation of long-term health management plans.

Interaction between psychology and sportsmanship: Psychological methods can improve athletes' psychological toughness, competitive awareness and teamwork ability. Applying psychological training, stress management and motivation incentive mechanisms can help athletes establish a positive mindset, enhance self-confidence, improve sports performance and achieve comprehensive sportsmanship cultivation.

(4) Collaborative education mechanism supported by the platform

1) Construction of a multidisciplinary teaching team

A teaching team covering fields such as sports, vocational education, data science, and psychology has been formed to jointly formulate teaching plans and achieve interdisciplinary collaborative education. The expert team shares resources through the online platform and provides comprehensive guidance to students.

2) Online interaction and interdisciplinary course system

With the help of the career planning platform, interdisciplinary courses covering physical training, sports science, mental health, data analysis, etc. can be opened. Through live lectures, interactive discussions, case analysis and other methods, personalized teaching can be achieved to

improve learning effects.

3) Evaluation system and feedback mechanism

An intelligent evaluation system has been built to provide accurate feedback based on big data analysis of sports performance, learning outcomes and psychological state. Combined with training data, professional needs and sports literacy, the training program is dynamically adjusted to ensure the efficient operation of the education mechanism.

4. Results and Discussion

4.1 Experimental and Control Group Settings

Experimental group: It adopts a sportsmanship cultivation and physical training model based on a career planning online platform.

Control group: traditional sportsmanship cultivation and physical training model, without career planning platform, and using traditional teaching methods.

4.2 Experimental Subjects

College students, students from two different majors are selected to ensure the universality of the experiment.

4.3 Experimental Process and Data Analysis

Table 1 Preliminary evaluation of physical fitness test (mean ± standard deviation)

Group	Experimental Group	Control Group
Endurance Run (seconds)	410 ± 14	425 ± 14
Push-ups (reps/min)	28 ± 4	25 ± 3
Sit-ups (reps/min)	35 ± 3	32 ± 3
Vertical Jump (cm)	47 ± 5	44 ± 4
Reaction Time (ms)	285 ± 6	300 ± 7
Sit and Reach (cm)	12 ± 1.5	10 ± 1.2

In the endurance running test, the average performance of the experimental group is 410 ± 14 seconds, slightly better than the 425 ± 14 seconds of the control group, indicating that the basic endurance levels of the two groups are similar, but the experimental group has a slight advantage. In terms of strength testing, the experimental group's push-ups (28 ± 4 times/minute) and sit-ups (35 ± 3 times/minute) are higher than those of the control group (25 ± 3 times/minute and 32 ± 3 times/minute), indicating that the experimental group has certain basic advantages in upper limb and core strength. In terms of explosive power, the vertical jump results of the experimental group (47 ± 5 cm) are better than those of the control group (44 ± 4 cm), indicating that the lower limb explosive power of the experimental group is slightly stronger. In terms of neural response ability, the reaction time of the experimental group (285 ± 6 milliseconds) is shorter than that of the control group (300 ± 7 milliseconds), which means that the motor nerve coordination of the experimental group is slightly better. The flexibility test shows that the experimental group has a better advantage in the sit-and-reach forward flexion (12 ± 1.5 cm) than the control group (10 ± 1.2 cm), indicating that the experimental group has a slightly better foundation in joint flexibility (as shown in Table 1).

Phase 2: Mid-term evaluation

The experimental group and the control group are given a mid-term physical fitness test to evaluate their physical fitness progress.

In terms of endurance running, the experimental group's average performance improves (reduces to 398 ± 12 seconds), which is 12 seconds less than the previous test, while the control group's performance also improves (reduces to 419 ± 13 seconds), but the improvement is smaller. The experimental group's endurance improvement is more obvious, indicating that targeted training intervention has a greater effect on endurance improvement. In terms of strength training, the experimental group's push-ups (increases to 32 ± 3 times/minute) and sit-ups (increases to 38 ± 3 times/minute) increase compared with the previous period, while the control group's improvement is relatively small (27 ± 3 times/minute and 34 ± 3 times/minute, respectively). The experimental group's progress is more significant, indicating that the training program has a positive effect on strength development (as shown in Table 2).

Table 2 Mid-term evaluation of physical fitness test (mean ± standard deviation)

Group	Experimental Group	Control Group
Endurance Run (seconds)	398 ± 12	419 ± 13
Push-ups (reps/min)	32 ± 3	27 ± 3
Sit-ups (reps/min)	38 ± 3	34 ± 3
Vertical Jump (cm)	51 ± 2	46 ± 4
Reaction Time (ms)	265 ± 7	281 ± 8
Sit and Reach (cm)	13 ± 1	11 ± 1

Phase 3: Final evaluation

At the end of the experiment, the experimental group and the control group are evaluated at the end, including physical fitness test, sportsmanship cognitive test, professional quality and competitiveness assessment, to comprehensively measure the effect of training and the effectiveness of the training model.

(1) Physical fitness test (final score)

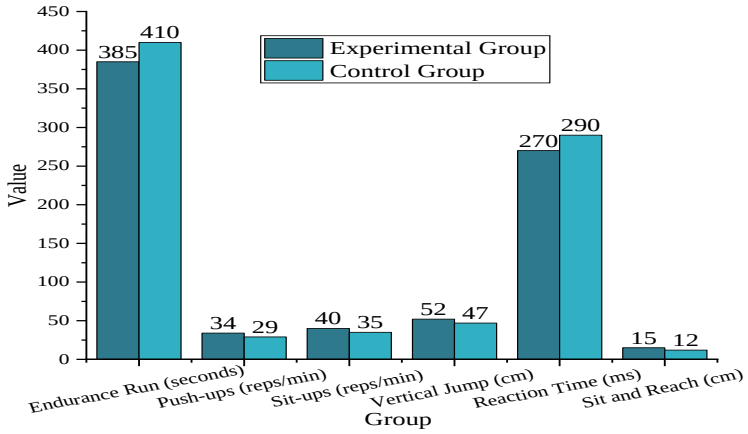

Figure 1 Physical fitness test (final results)

In the final evaluation stage of Figure 1, both the experimental group and the control group complete the final physical fitness test to evaluate the overall effect of the training program. By comparing the early (stage 1), mid-term (stage 3) and final (stage 4) data, the progress of the two groups in endurance, strength, explosive power, neural reaction ability and flexibility can be analyzed. The endurance running performance of the experimental group finally reaches 385 seconds, which is 25 seconds shorter than the early stage (410 seconds) and 13 seconds shorter than the mid-term (398 seconds), showing a sustained and stable improvement. The control group only improves to 410 seconds in the final test, which is 15 seconds shorter than the early stage (425 seconds) and 9 seconds shorter than the mid-term (419 seconds). Its improvement is significantly

smaller than that of the experimental group.

(2) Sportsmanship cognitive test (Likert scale score, 1-5 points)

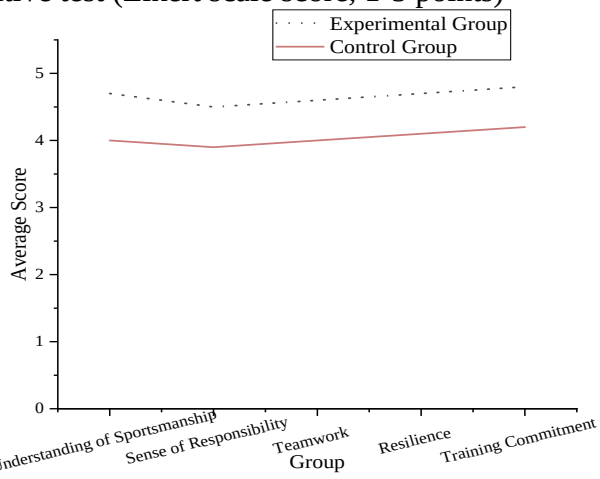

Figure 2 Sportsmanship Cognitive Test

From the data in Figure 2, it can be seen that the experimental group performs outstandingly in terms of sportsmanship understanding and sense of responsibility, with scores of 4.7 and 4.5, respectively, significantly higher than the control group (4.0 and 3.9). This gap shows that through training, the students in the experimental group not only have a deeper understanding of the connotation of sportsmanship but also show a stronger sense of responsibility and are able to take the initiative to undertake training tasks and goals. In terms of teamwork, the experimental group scores 4.6, which is higher than the control group's 4.0, indicating that the collaborative training of the experimental group significantly helps improve students' communication and cooperation skills. Through the design of teamwork tasks, students gain effective teamwork experience in actual training.

(3) Professional quality and competitiveness assessment

1) Interview performance score (full score 100)

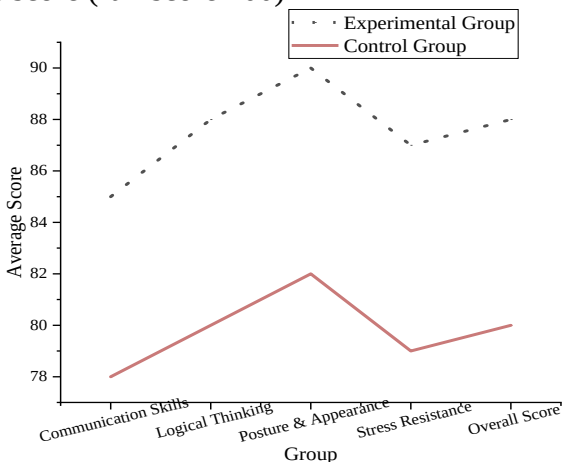

Figure 3 Interview performance score (full score 100)

The experimental group is significantly better than the control group in all professional quality assessment indicators, especially in communication skills, logical thinking and stress resistance. The experimental group scores 85 in communication skills, while the control group scores 78, showing that the students in the experimental group has higher abilities in teamwork and information exchange, which may be related to the emphasis on teamwork in the multidisciplinary

collaborative education model. In terms of logical thinking, the experimental group scores 88 and the control group scores 80, indicating that the students in the experimental group are more organized when solving problems and analyzing complex situations. This difference may be due to the training and improvement of thinking ability in the personalized training program. In terms of body appearance, the experimental group scores 90 and the control group scores 82. This gap shows that the experimental group pays attention to image shaping and body management during the training process, which has a positive impact on the improvement of students' future professional image, as shown in Figure 3.

2) Professional quality test (percentage system)

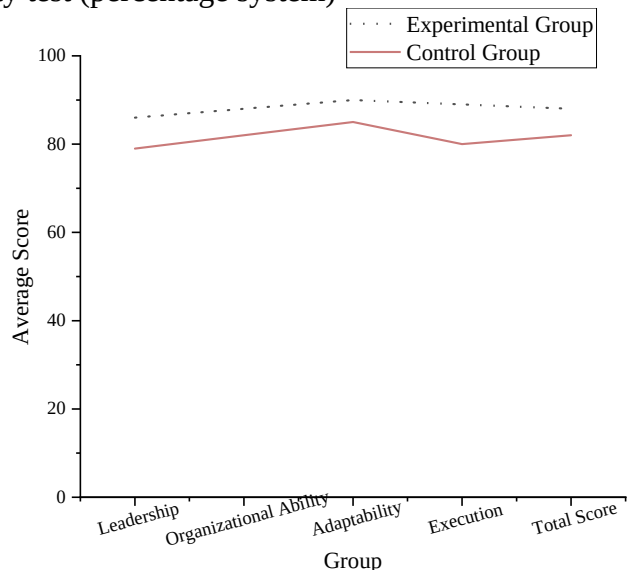

Figure 4 Professional quality test (percentage point system)

The experimental group is significantly better than the control group in terms of leadership, organizational ability, adaptability, and execution. The leadership score of the experimental group is 86, while that of the control group is 79, indicating that the students in the experimental group has stronger leadership and decision-making abilities in the team, which may be due to the in-depth training of team management and collaboration during the training process. In terms of organizational ability, the experimental group scores 88, which is higher than the control group's score of 82. This shows that the students in the experimental group have better abilities in task allocation, resource allocation and time management, and can complete complex tasks efficiently. In terms of adaptability, the experimental group scores 90, while the control group scores 85, indicating that the experimental group shows greater flexibility and adaptability in dealing with changes and new challenges. This is closely related to personalized training and career planning, which helps students better prepare for workplace challenges. In terms of execution, the experimental group scores 89 and the control group scores 80, indicating that the experimental group is able to implement tasks more efficiently, ensure the achievement of goals, and maintain a high level of execution in a high-pressure environment, as shown in Figure 4.

5. Conclusion

This study explores the effects of different training methods on physical fitness, sportsmanship cognition and professionalism. The experimental results show that the experimental group is significantly better than the control group in physical fitness tests such as endurance running, push-ups, sit-ups, and vertical jumps, and also show good improvements in reaction time and

sit-and-reach tests, showing that systematic training can effectively improve physical fitness. In addition, the experimental group shows significant progress in sportsmanship understanding, sense of responsibility, teamwork, tenacity, and training commitment, indicating that sports training can not only improve physical fitness but also enhance the students' psychological quality and collective consciousness, thereby enhancing the recognition of sportsmanship. In terms of professional quality, the experimental group's comprehensive abilities such as communication skills, logical thinking, and stress resistance are significantly improved compared with the control group, showing the positive effect of training on improving professional quality. However, the study also has some limitations. The sample size is small and limited to a specific group in a certain region, so the generalizability and external validity of the results are limited. The study mainly focuses on the impact of physical training on students and fails to fully consider the interference of other factors such as diet and lifestyle. Future research can expand the sample size and research scope to cover groups of different ages and backgrounds to further verify the generalizability of the training program.

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