

# Empirical Analysis on Effectiveness and Long-Acting Mechanism of Regional Physical Education Teaching

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**Abstract**—The physical quality of students is an important goal of quality education, and the basis for the training of high-quality talents. Physical education (PE) is of great significance to enhance students' physical fitness, and improve their awareness of lifelong physical exercise. Targeting several colleges in Guizhou Province, this paper empirically studies the effectiveness and long-acting mechanism of regional PE teaching through interview, questionnaire survey, and mathematical statistics. Firstly, the status quo of PE teaching in the colleges was surveyed. The survey results show the following problems in college PE teaching: the lack of systematic organization and management, the outdated and non-diverse forms of activities, the absence of a strong sports atmosphere, and the lack of interest among the students. To solve these problems, this paper constructs a long-acting mechanism for regional PE teaching, and verifies its implementation effect through an empirical study. The mechanism was found to enhance the students' physical fitness, help them develop a good habit of physical exercise, and boost their awareness of lifelong physical exercise. This research greatly promotes the lifelong physical exercise of college students and the PE teaching quality in colleges and universities.

**Keywords**—physical education (PE) teaching, status quo, existing problems, long-acting mechanism, empirical analysis

## 1 Introduction

With the rapid development of China's national economy and society, people's material and spiritual life have gradually improved. The changes in lifestyle do have increased people's sense of well-being, but they also have brought about more "rich man's diseases". Health problems such as poor eyesight and obesity have become increasingly serious among teenagers [1]. We often say "if the young people are strong, the country will be strong". So now these health problems have aroused widespread concern in the society. In order to build our country into "a healthy China" and a "sports power", it will be the top priority of the current physical education to improve students' physical fitness and foster their awareness of lifelong physical exercises.

In the United State, promoting health development and cultivating healthy citizens is the main purpose of physical education. In U.S. colleges, PE is mainly taught in the form of elective courses, emphasizing the evaluation process and downplaying the evaluation results [2]. In Japan, there are two types of physical education courses in colleges and universities - theoretical and practical courses, and students have the right to choose their teachers, showing the main role of students in physical education and advocating happy physical education. In addition, physical education is also extended through sports clubs to allow students to foster healthy living and fitness habits [3]. In Germany, enhancing students' physical health and stimulating their interest in physical exercise is the main goal of physical education. Students can choose the physical training programs and teachers involved in training according to their own time and preferences [4]. In short, physical education in foreign countries is student-oriented and aimed to enhance students' awareness of lifelong physical exercises and cultivate their interest in sports [5]. In recent years, the physical education in colleges and universities in China has also seen major reforms. It has gradually changed from the original test-oriented education to the quality-oriented education. What is more, students have more autonomy to choose courses and teachers, and PE teachers have also made some improvements and innovations in the teaching methods and models [6]. Since the strategically goal of building the country into a "healthy China" and a "sports power" was put forward, the "sunshine sports" program has been carried out in full swing throughout the country, and colleges and universities have attached greater importance to PE teaching and extracurricular sports activities. As a result, students' extracurricular sports activities have become more and more diverse [7]. However, the current research on PE teaching in colleges and universities is mostly theoretical or status quo research, and there is no systematic research involving both theory and practice [8].

Therefore, based on the results of previous research, this paper carried out an empirical study on the effectiveness and long acting mechanism of regional PE teaching, with a view to providing relevant theoretical and empirical basis for PE teaching in China.

## **2 Status quo of PE teaching and existing problems**

### **2.1 Respondents and methods of PE teaching status quo survey**

In this paper, on the basis of relevant domestic and foreign literatures and considering the actual situation in Guizhou Province, a "PE Teacher Survey Questionnaire" and a "Student Survey Questionnaire" [9] were designed respectively. The validity test results of the questionnaires show that they can reflect the content of the study, and that they are highly credible. In this study, teachers and students were randomly selected from 5 colleges and universities in Guizhou Province as respondents, and questionnaire surveys and interviews were conducted among them to investigate the status quo of PE teaching in Guizhou Province. Table 1 shows the statistics of the distribution and recovery of the questionnaires.

**Table 1.** Statistics of the distribution and recovery of questionnaires

<b>Respondents</b>	<b>Questionnaires distributed</b>	<b>Valid questionnaires recovered</b>	<b>Efficiency</b>
Students (300 boys and 300 girls)	600	587 (293 boys and 294 girls)	97.83%
PE teachers and college leaders	30	29	96.67%

## 2.2 Analysis of the survey results

### 1. Status quo analysis of PE teaching organization and management

Through the survey, it is found that the main organizers and managers of PE teaching and extracurricular activities in colleges and universities are the teachers of the PE department. PE teachers plan and design the PE teaching and extracurricular sports activities, and submit them to the dean in charge for approval. Faculties and secondary colleges are to execute the plans. In addition, the students' union at each faculty or secondary college is also responsible for the organization and management of sports activities. However, since the colleges and universities did not raise any quantitative and rigid assessment requirements for extracurricular sports activities, the faculties and secondary colleges were not very active in participating, and other departments did not fully participate in PE teaching and extracurricular sports activities, either. If collaboration is required from relevant departments, the teachers of the PE Department or the faculties and secondary colleges need to file a request to the dean in charge, and then other departments will collaborate. This shows that none of the colleges and universities has yet formed a mature PE teaching organization and management system.

### 2. Forms and types of sports activities

Figure 1 shows the survey results of the forms of sports activities students participate in besides physical education classes. It can be seen that more than half of the students take part in the spontaneous extracurricular sports activities to exercise their bodies, that some students also take part in the theme contests (such as basketball and football games) organized by the colleges/universities, faculties or secondary colleges, and that only a few students participate in fun sports activities and sports meetings.

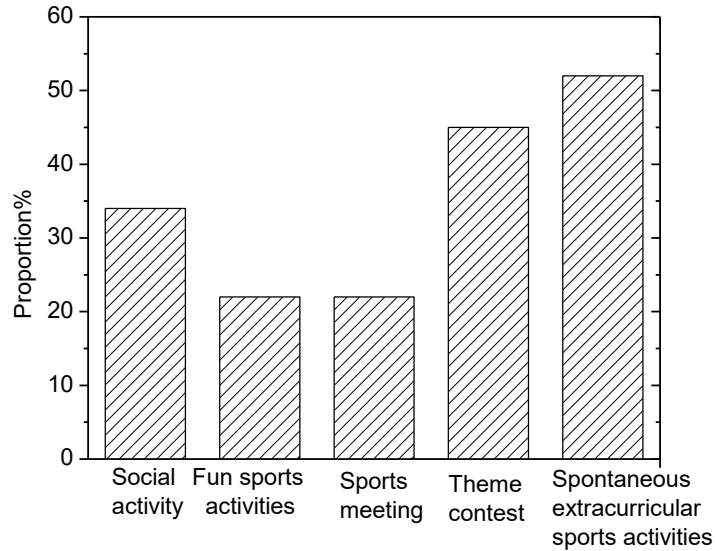


Fig. 1. Forms of sports students participate in

Figure 2 shows the survey results of the types of sports students participate in. It can be seen that both boys and girls prefer to do some running in their spare time. In addition, boys prefer basketball, football and volleyball, while girls prefer badminton, table tennis and volleyball.

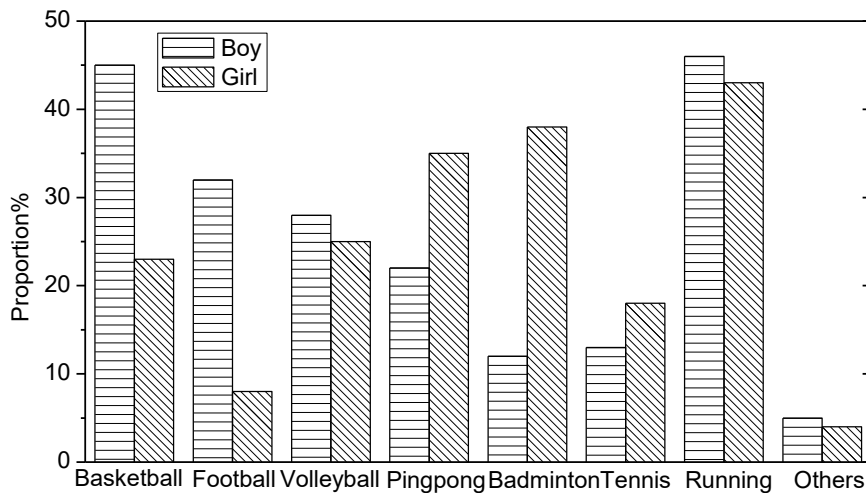


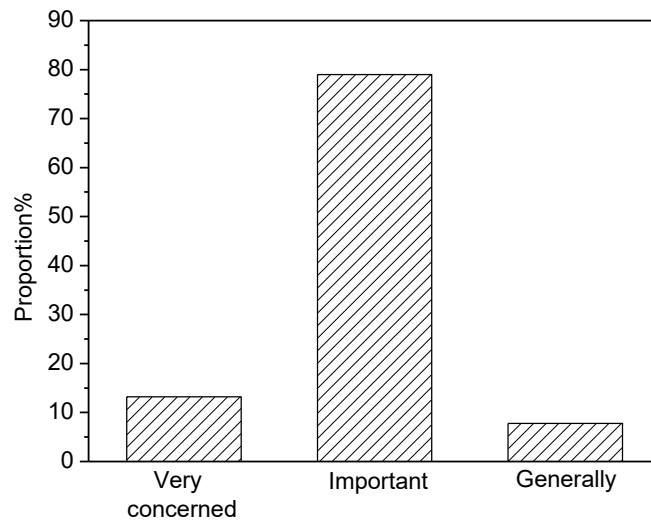
Fig. 2. Types of sports students participate in

The survey results indicate to a certain extent that the forms and types of extracurricular sports activities in colleges and universities are not diverse and not enough to

fully meet the needs of students for sports, nor have they aroused students' enthusiasm for participation.

### 3. Degrees of importance that colleges/universities attach to PE teaching and extracurricular sports activities

Figure 3 shows the survey results of the degrees of importance that colleges/universities attach to PE teaching and extracurricular sports activities. From the figure, it can be seen that 92.2% of the college teachers and leaders attach importance or great importance to PE teaching and extracurricular sports activities, indicating PE teaching and extracurricular sports activities are highly valued at the university or college level.



**Fig. 3.** Degrees of importance colleges/universities attach to physical education and extracurricular sports activities

### 4. Students' satisfaction with PE teaching and extracurricular sports activities

Figure 4 shows the survey results of how satisfied the students are with PE teaching and extracurricular sports activities. It can be seen that more than 40% of the students find PE teaching and extracurricular sports activities in colleges and universities of average level, and 44.1% are satisfied or very satisfied, 11.4% are not so satisfied and 2.3% are dissatisfied. Through further interviews, it is found that students think the PE classroom teaching is relatively boring, that the forms of extracurricular sports activities are non-diverse in campus, and that the sports venues and facilities could not meet their sports needs.

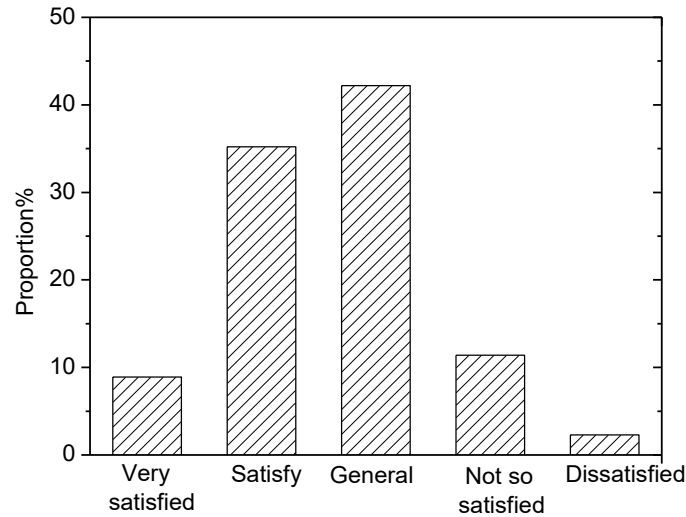


Fig. 4. Student's satisfaction with physical education teaching and extracurricular sports activities

### 2.3 Problems existing in PE teaching

#### 1. Lack of systematic organization and management

Although college leaders and PE teachers attach great importance to PE teaching and extracurricular sports activities, there are still a lot of problems in this field. For example, the lack of a mature organization and management system has resulted in the improper planning of sports activities and little communication and collaboration between various departments. Therefore, it is very difficult to carry out sports activities. PE teachers themselves are not very motivated to carry out such activities, and what is more, site conflicts always occur. In addition, due to the lack of special management funds, the sports infrastructures constructed cannot meet the PE teaching and learning needs of teachers and students.

#### 2. Outdated and non-diverse forms of activities

At present, the models of PE teaching and extracurricular sports activities in colleges and universities are relatively outdated, and the forms of activities are non-diverse. Besides the key events and comprehensive sports meets held at the college level each year, the sports activities usually mainly include basketball and football games organized by various faculties, secondary colleges or student associations. The activities are not large-scale, systematic, coherent or innovative, and as a result, students are not interested or motivated enough to participate in these activities.

### 3. Absence of a strong sports atmosphere and lack of interest among the students

Due to the lack of appropriate sports planning and organization, college students carry out physical exercises mainly according to their own interests and hobbies. The sports atmosphere is not strong enough in colleges and universities, and the PE teachers fail to give sufficient guidance to the sports awareness of students, so students have not developed a habit of doing physical exercise, and some students who originally do not love physical exercise are still not attracted to sports.

## 3 Construction of the long-acting mechanism for PE teaching

Constructing a scientific long-acting mechanism for PE teaching is necessary not only for fostering a scientific outlook on physical education development and consolidating and expanding the achievements of physical education in colleges and universities, but also for ensuring the healthy growth of young people, improving their physical fitness and cultivating their awareness of lifelong physical exercises. Therefore, regarding the status quo and existing problems of PE teaching in Guizhou Province, this paper attempts to build a regional long-acting mechanism for PE teaching from the following three aspects, so that everyone in every class will be able to participate in sports activities every week and sports events every month and PE teaching and extracurricular sports activities will be carried out smoothly [10].

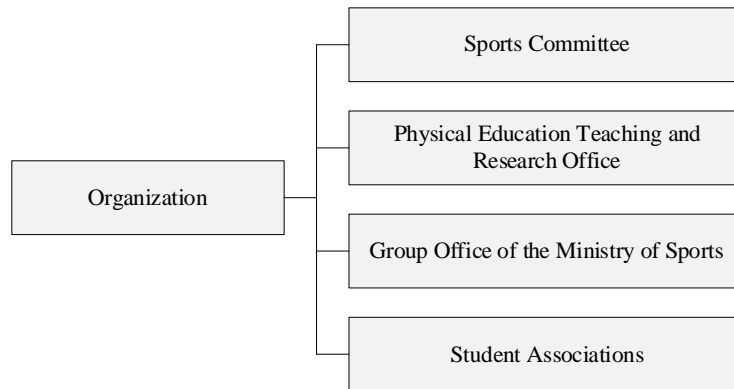
### 3.1 Establish and improve the organizational mechanism and management systems

A mature organization mechanism and proper management systems are the prerequisite and basis for the smooth development of PE teaching and extracurricular sports activities. These measures can ensure the high-quality and efficient operation of PE teaching and extracurricular sports activities, and promote the smooth achievement of PE development targets.

#### 1. Organizational mechanism

Figure 5 shows an organization chart for PE teaching and extracurricular activities, which is composed of three parts: the Sports Committee, Teachers of the PE Teaching and Research Office, Group Activity Office of the PE Department, and Student associations [11]. The Sports Committee is composed of the dean in charge and the heads of all departments. The main task is to discuss and determine the college's sports program for the whole year. The teachers of the PE Teaching and Research Office are responsible for carrying out daily PE teaching activities, and also formulating the sports program for the year. After the program is approved, the teachers will be responsible for formulating the detailed rules and procedures for sports activities and events and send them to the Group Activity Office of the PE Department for implementation [12]. The Group Activity Office of the PE Department is responsible for the sports group activities for students. It is responsible for communicating and coor-

dinating with other departments of the college in advance according to the sports program, issuing notices of sports events, and directly interfacing with the student associations of the college. Upon receiving the notices of sports events, the student associations will actively carry out publicity and mobilization activities in the campus.



**Fig. 5.** Physical education and extracurricular activities organization chart

## 2. Management systems

Based on the original rules and systems for PE teaching and extracurricular activities, establish a target responsibility system, a project process supervision system and a reward and punishment system.

Target responsibility system: in order to ensure the smooth development of physical education teaching and extracurricular sports activities, a college should, based on the development plan for sports activities, assign the sports activities into various functional departments and individuals, specify the activity owners and the responsibilities, rights and benefits of each department, and use them as one of the important indicators in year-end assessment, thereby improving the sense of responsibility and management capabilities of various departments [13].

Project process supervision system: after the development plan for sports activities is formulated, the sports committee, various functional departments, and student leaders and representatives shall form a special supervision group to monitor the progress in the implementation of PE teaching activities and sports development plans and the use of funds, check whether the activities are carried out in accordance with the original design plan, the implementation effects and the safeguard measures taken on a regular and irregular basis, and put forward opinions and suggestions for the problems encountered in the process to ensure that PE teaching and extracurricular sports activities can be carried out in an orderly and effective manner [14].

Reward system: in order to better stimulate the enthusiasm of teachers and students in participating in sports activities, and cultivate students' sportsmanship and lifelong sports awareness, colleges and universities should set up more sports-related rewards and awards according to their own conditions and financial resources. For example,



they can set up more small prizes and only a few big prizes, or they can set up an outstanding individual award for students participating in the sports activities and events and include this as an indicator in the assessment on students. For teachers, colleges and universities can set up some group awards and individual awards in sports activities and events, and include these as an indicator in the year-end work assessment [15].

### 3.2 Formulate scientific development plans for sports activities

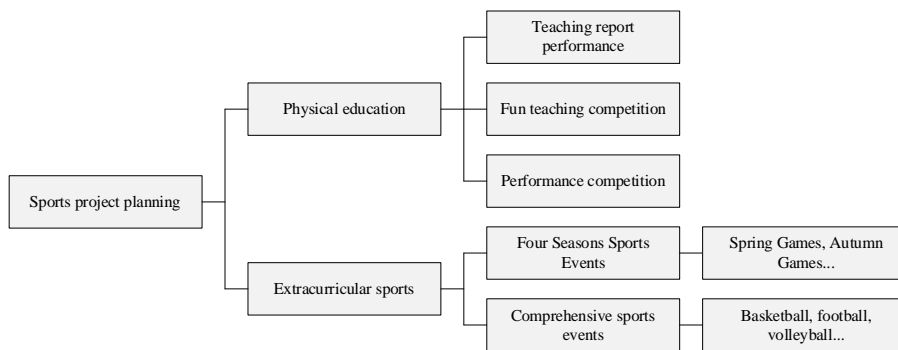
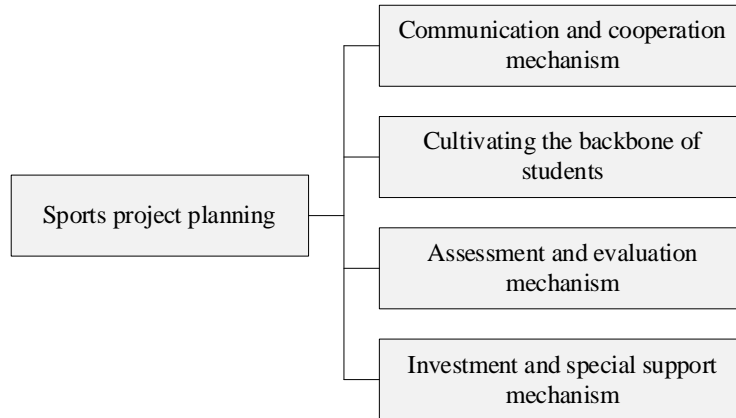


Fig. 6. Schematic diagram of sports activity project planning

Whether the development plan for sports activities is scientific and reasonable will directly affect the development direction and implementation of all the sports activities. Therefore, when formulating the development plan, a college should consider its actual conditions, future development and talent training. In addition to a short-term plan for the sports activities in the current year or the next year, the college should also formulate a long-term sports development plan for the next four to eight years, and take the scale of sports activities and the desired results as the focus of the plan. The planning and design should place more emphasis on the group sports activities, and be aimed to mobilize students' initiatives to participate in sports learning and physical exercises. To this end, the planning and design should start from two aspects - teaching and extracurricular sports activities. Figure 6 shows the schematic diagram of sports activities planning [16].

### 3.3 Creating new mechanisms for PE work

In order to ensure the diversity of sports activities in colleges and universities and attract more students to participate in sports learning and extracurricular sports activities voluntarily and actively, a college also needs to establish various new mechanisms for PE work as supplements to the long-acting mechanism for PE teaching. This is shown in Figure 7 [17].



**Fig. 7.** New mechanisms for sports work

### 1. Communication and cooperation mechanism

A college or university generally has different secondary colleges, faculties or departments. In addition to the sports activities planned at the college level, the secondary colleges, faculties, departments and student associations will also carry out some sports activities according to teaching or activity needs. However, the campus has limited space and resources. To avoid conflicts in the use of sites and waste of human, material, financial and other resources, these organizations should communicate and coordinate with each other well before carrying out any sports activities. In addition, the smooth implementation of sports activities planned at the college level is also inseparable from the cooperation and collaboration between various organizations.

### 2. Student leader training mechanism

In a college, leaders at all levels and PE teachers are mainly responsible for developing sports activity plans while the chairperson, directors and student leaders of sports of the students' union are the specific organizers and implementers of extracurricular sports activities and events in the college. However, the students' union has a high turnover rate and also lacks relevant organization and management experience and professional sports knowledge. Therefore, to improve the efficiency of sports activities, the college should also strengthen the training of student leaders on professional sports knowledge, organization and management methods and sports events, etc., and at the same time ensure there are backup resources for student leaders so that there will be no shortage of personnel that might affect the normal implementation of sports activities due to change of members in the students' union.

### 3. Assessment and evaluation mechanism

In order to enable PE teaching and extracurricular sports activities to be carried out smoothly and stimulate the enthusiasm of teachers and students for participation, a college should establish a complete assessment and evaluation mechanism and organ-

ize a special assessment and evaluation team to conduct process, semester and annual work assessment and evaluation on all faculties, secondary colleges and departments in charge of PE teaching and extracurricular activities and activity owners. The assessment and evaluation consists of self-evaluation, peer evaluation and evaluation by the evaluation group, focusing on the effects of PE teaching and extracurricular sports activities. The evaluation and assessment results will be incorporated into the comprehensive appraisal of teachers, departments and students. Through such assessment and evaluation, the efficiency of PE teaching and extracurricular sports activities will be continuously improved, and participants will be more motivated to participate in the activities.

#### 4. Investment and special support mechanism

Colleges and universities are indeed paying more and more attention to PE teaching and extracurricular sports activities. But to further improve the quality and efficiency of PE teaching and meet the needs of PE teaching, colleges and universities should still increase the investment in PE teaching and extracurricular sports activities, including setting up a special sports funds, formulating detailed capital investment and special support plans, strengthening the construction of sports infrastructures in the campus, promoting the development and implementation of in-campus and off-campus sports events, and rewarding organizations and individuals who have delivered outstanding performance in PE teaching and activities.

## **4 Empirical analysis on the application effect of the long acting mechanism for PE teaching**

### **4.1 Evaluation on the long-acting mechanism for PE teaching in colleges**

A college and its teachers, as the main implementers of the long-acting mechanism for PE teaching, are responsible for creating a good sports culture environment in the campus, providing sports education and teaching for students, and cultivating the sports awareness and habits of students. Figure 8 shows the survey results of the changes in the sports culture environment in the campus after the implementation of the long-acting mechanism for PE teaching perceived by teachers. From the figure, it can be seen that the sports cultural environment in the campus has been significantly improved after the implementation of the long-acting mechanism for PE teaching. The sports culture environment in the campus is influential to students' active participation in sports, and helps promote the smooth development of PE teaching and extracurricular sports activities.

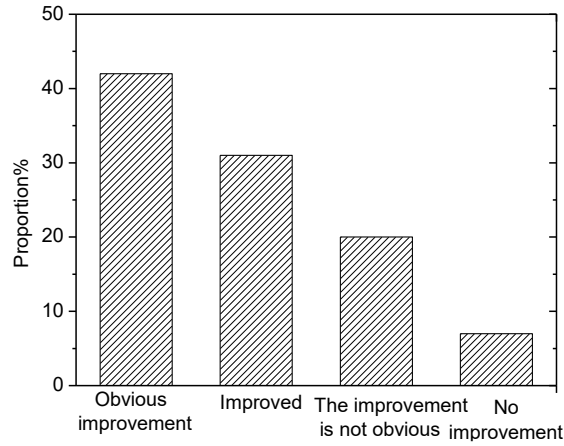


Fig. 8. Changes in campus sports culture environment

Figure 9 shows the teacher's evaluation on students' learning interest and achievement of PE targets after the long-acting mechanism for PE teaching is implemented. It can be seen that 75% of the teachers believe that students' interest in sports learning and their passing rate of PE tests and achievement of targets have been significantly improved or improved to some extent. Through further interviews, it is found that teachers believe the rich and diverse sports activities and mature management mechanisms have aroused students' interest in sports and encouraged them to actively participate in sports, thereby improving PE teaching efficiency and students' physical fitness.

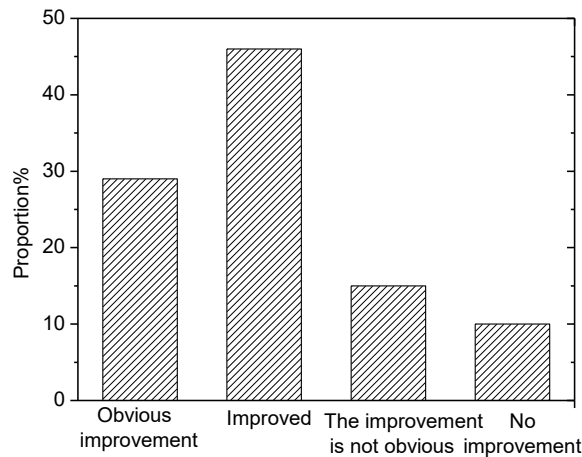
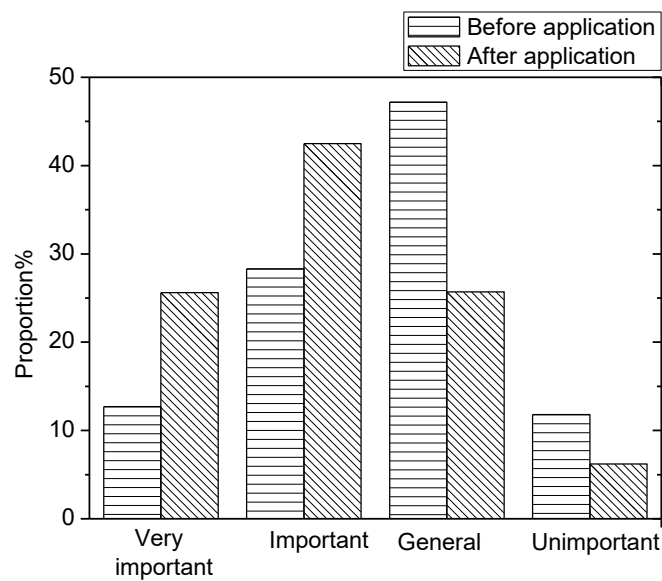


Fig. 9. Teachers' evaluation on students' learning interest and achievement of PE targets

#### 4.2 Changes in students' self-awareness of sports and sports behaviors

Figure 10 shows a comparative analysis of the students' attention to sports before and after the application of the long-acting mechanism for PE teaching. It can be seen that the students' attention to sports has significantly increased after the application of the long-acting mechanism for PE teaching. Most of the respondents claim that they are more interested in physical exercises, indicating that the implementation of the long-acting mechanism for PE teaching has a certain role in improving students' awareness of physical exercise.



**Fig. 10.**Comparative analysis of students' attention to sports

Figure 11 shows the comparative analysis of the students' participation in sports in their spare time before and after the application of the long-acting mechanism for PE teaching. It can be seen that since the long-acting mechanism for PE teaching was applied, the students have participated in sports activities in their spare time much more frequently every week. The proportion of students who participate in sports 3 or more times per week has increased from 75% to 84.7%, and that of students who do not participate in or only participate in extracurricular sports activities once a week has decreased from 17.2% to 5.1%, indicating that the long-acting mechanism for PE teaching has effectively changed the students' sports behaviors and played a positive role in cultivating students' good sports habits.

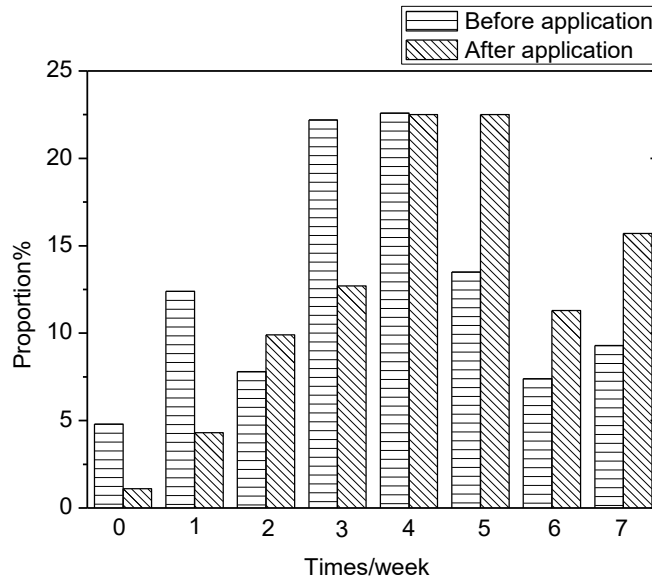


Fig. 11. Comparative analysis of students' participation in sports in their spare time

### 4.3 Changes in the students' physical health monitoring results

According to the relevant test requirements and the specific rating standards provided in the *National Standards for Students' Physical Fitness and Health*, the physical health of college students was tested and evaluated. In addition, 300 students were randomly selected from 5 colleges and universities in Guizhou Province to evaluate the changes in the physical health of students before and after the application of the long-acting mechanism for PE teaching, with the results shown in Table 2. It can be seen that after the application of the long-acting mechanism for PE teaching, all test indicators of students have been significantly improved ( $P < 0.05$ ), indicating that the long-acting mechanism for PE teaching has an obvious positive effect in improving the physical health of students.

Table 2. The health changes of the student system before and after the application of the long-term physical education mechanism

Test items	Before application	After application	T	P
Vital capacity	3392.21±779.431	3145.35±731.325	03.872	0.002
Standing long jump	201.43±36.42	193.47±30.86	-1.239	0.004
Sit and bend forward	19.21±5.124	17.26±5.004	4.892	0
Sit-ups	41.63±7.53	38.43±5.32	-0.674	0.04
50m run	7.747±0.871	7.929±0.9541	-2.579	0.01
800m run	226.59±23.75	232.67±26.58	2.222	0.027
1000m run	250.86±29.87	261.56±31.23	2.682	0.006

## 5 Conclusion

As the important bases for training talents and disseminating the concept of health, colleges and universities are responsible for cultivating students' awareness of life-long physical exercises and implementing the education principle of "health first". Based on this, this paper conducts an empirical study on the effectiveness and long-acting mechanism of regional PE teaching. The specific conclusions are as follows:

1. The questionnaire survey and interview methods were used to investigate the status quo of PE teaching. The results show that PE teaching in colleges and universities has a number of problems, including the lack of systematic organization and management, the outdated and non-diverse forms of activities, the absence of a strong sports atmosphere, and the lack of interest among the students.
2. According to the status quo of PE teaching in colleges and universities, analysis and discussion were given on the construction of the long-acting mechanism for PE teaching from three aspects: establishing and improving the organizational mechanism and management systems, formulating scientific development plans for sports activities and creating various new PE work mechanisms.
3. Empirical analysis was performed to compare the effects before and after the application of the long-acting mechanism for PE teaching, and the results show that the application of the long-acting mechanism for PE teaching can improve the physical fitness of students, help students develop good sports habits and cultivate their awareness of lifelong physical exercises.

## 6 References

- [1] Tinning, R. (2002). Engaging sedentarian perspectives on content knowledge for physical education. *Journal of Teaching in Physical Education*, 21(4): 378-392. <https://doi.org/10.1123/jtpe.21.4.378>
- [2] Liu, Y.R. (2020). An artificial intelligence and machine vision based evaluation of physical education teaching. *Journal of Intelligent and Fuzzy Systems*, 40(1): 3559-3569. <https://doi.org/10.3233/jifs-189392>
- [3] O'Sullivan, M., Siedentop, D., Tannehill, D. (1994). Breaking out: codependency of high school physical education. *Journal of Teaching in Physical Education*, 13(4): 421-428. <https://doi.org/10.1123/jtpe.13.4.421>
- [4] Giebink, M.P., McKenzie, T.L. (1985). Teaching sportsmanship in physical education and recreation: an analysis of interventions and generalization effects. *Journal of Teaching in Physical Education*, 4(3): 167-177. <https://doi.org/10.1123/jtpe.4.3.167>
- [5] Zhou, Y., Zhou, F. (2019). Cognitive neural mechanism of sports competition pressure source. *Translational Neuroscience*, 10(1): 147-151. <https://doi.org/10.1515/tnsci-2019-0025>
- [6] Pellett, T.L., Lox, C.L. (1997). Tennis racket length comparisons and their effect on beginning college players' playing success and achievement. *Journal of Teaching in Physical Education*, 16(4): 490-499. <https://doi.org/10.1123/jtpe.16.4.490>
- [7] Zeng, Y.S. (2020). Evaluation of Physical Education Teaching Quality in Colleges Based on the Hybrid Technology of Data Mining and Hidden Markov Model, *International Jour-*

- nal of Emerging Technologies in Learning, 15(1): 4-15. <https://doi.org/10.3991/ijet.v15i01.12533>
- [8] Kao, C.C., Luo, Y.J. (2020). Effects of Multimedia-Assisted Learning on Learning Behaviors and Student Knowledge in Physical Education Lessons: Using Basketball Game Recording as an Example, *International Journal of Emerging Technologies in Learning*, 15(1): 119-139. <https://doi.org/10.3991/ijet.v15i01.11393>
- [9] Alhumaid, M.M., Khoo, S., Bastos, T. (2021). The Effect of an Adapted Physical Activity Intervention Program on Pre-Service Physical Education Teachers' Self-Efficacy towards Inclusion in Saudi Arabia. *Sustainability*, 13(6): 3459. <https://doi.org/10.3390/su13063459>
- [10] James, F., Thomas, L., John, E. (1997). The effects of a 2-year physical education program (SPARK) on Physical Activity and Fitness in Elementary School Students. *American Journal of Public Health*, 87(8): 1328-1334. <https://doi.org/10.2105/ajph.87.8.1328>
- [11] Wallhead, T.L., Ntoumanis, N. (2004). Effects of a sport education intervention on students' motivational responses in physical education. *Journal of teaching in physical education*, 23(1): 4-18. <https://doi.org/10.1123/jtpe.23.1.4>
- [12] McKenzie, T.L., Stone, E.J., Feldman, H.A., Epping, J.N., Yang, M., Strikmiller, P.K., Lytle, L.A., Parcel, G.S. (2001). Effects of the CATCH physical education intervention: teacher type and lesson location. *American journal of preventive medicine*, 21(2): 101-109. [https://doi.org/10.1016/s0749-3797\(01\)00335-x](https://doi.org/10.1016/s0749-3797(01)00335-x)
- [13] Ward, J., Wilkinson, C., Graser, S.V., Prusak, K.A. (2008). Effects of choice on student motivation and physical activity behavior in physical education. *Journal of teaching in physical education*, 27(3): 385-398. <https://doi.org/10.1123/jtpe.27.3.385>
- [14] Andriyanova, E.Y., Lanskaia, O.V. (2014). Functional plasticity of spinal circuits in long-term sports activity adaptation. *Human Physiology*, 40(3): 299-309. <https://doi.org/10.1134/s0362119714030025>
- [15] Houston-Wilson, C., Dunn, J.M., Mars, H.V. D., Mccubbin, J. (1997). The effect of peer tutors on motor performance in integrated physical education classes. *Adapted Physical Activity Quarterly*, 14(4): 298-313. <https://doi.org/10.1123/apaq.14.4.298>
- [16] Maric, L., Krsmanovic, B., Mraovic, T., Gogic, A., Sente, J., Smajic, M. (2013). The effectiveness of physical education of the military academy cadets during a 4-year study. *Vojnosanitetski Pregled: Military Medical & Pharmaceutical Journal of Serbia*, 70(1): 16-20. <https://doi.org/10.2298/vsp1301016m>
- [17] Aguilar-Farias, N., Martino-Fuentealba, P., Carcamo-Oyarzun, J., Cortinez-O'Ryan, A., Cristi-Montero, C., Von Oetinger, A., Sadarangani, K.P. (2018). A regional vision of physical activity, sedentary behaviour and physical education in adolescents from Latin America and the Caribbean: results from 26 countries. *International Journal of Epidemiology*, 47(3): 976-986. <https://doi.org/10.1093/ije/dyy033>

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