

A Study of the Effect of Functional Fitness Training on the Physical Fitness of University Students

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Abstract: This study applies functional fitness training to the physical education of college students, demonstrating the value of functional fitness training and its significance in improving the physical fitness of college students. The article outlines functional fitness training and its core advantages, and uses quasi-experimental design to demonstrate the role of functional fitness training in the development of college students' physical fitness. Based on the analysis of the impact of functional fitness training on college students' physical fitness, the article puts forward suggestions for improving college students' physical fitness through functional fitness training.

Keywords: Functional fitness training; College students; Physical fitness; Quasi-experimental design

1. Introduction

In recent years, functional fitness training has become increasingly recognised and widely used as an advanced training modality^[1]. Functional fitness training initially involved physiotherapists providing movement instruction to patients for the treatment of their own illnesses, and was used in both the medical and fitness fields, while providing strong support for human health^[2]. With the gradual deepening of related research, this training has begun to develop in the field of sports and fitness, in order to improve the physical quality of people to lay a solid foundation, in the process, some scholars pointed out that functional fitness training can strengthen the human neuromuscular system^[3]. As an important part of physical training, this training method mainly focuses on the structure of the human body, and applies a variety of disciplines to form a complete set of movement patterns.

Therefore, integrating functional fitness training into university physical education teaching practice can bring beneficial effects on further improving college students' physical fitness. It is also the path that this study proposes to explore.

2. Problem Statement

After the reform and opening up, China's economy has developed rapidly, and the people's living standards have improved significantly, but the proportion of obese students has risen year by year, and the indicators of endurance, strength, and speed of adolescent students have continued to decline^[4]. According to the physical fitness monitoring survey data from the Ministry of Education, the State General Administration of Sport (2019) and other departments, the indicators of speed, endurance, flexibility and other indicators of college students have significantly decreased and have a continuing downward trend, and the problem of obese students' physical fitness is becoming more and more serious^[5]. In particular, undergraduate college students' physical fitness quality assessment data show that most undergraduate college students' physical fitness quality is weakening year by year^[6], which indicates that physical education in colleges and universities is not yet able to encourage students to commit themselves to sports as a lifelong activity. Meanwhile, successive national physical fitness monitoring reports show that the physical fitness level of undergraduate college students in China has continued to decline over the years^[4,6]. This shows that under the concept of health for all advocated by the government in the new era, the issue of youth physical health has become the focus of social concern, and alleviating the continuous decline of youth physical health has become an urgent problem for sports and education^[3]. It can be seen that in order to improve the physical fitness of college students, we should give full play to the function of physical education, improve physical fitness, strengthen sports training, guide students to develop good sports habits, and promote the formation of lifelong sports awareness^[7].

As a result, the researchers found that the problem is that the physical fitness of college students is not obvious under the traditional physical training teaching strategy. College physical education programme, as an important way to enhance students' physical fitness, shoulders an important mission, and physical education programme, as a course with high participation in colleges and universities, also faces this problem. Some scholars and existing studies have found that the traditional teaching mode of physical training is prone to situations that lead

to students' low interest in learning and a decline in learning effect^{[2][4][5][6]}. In this regard, In the face of the trend of continuous decline in college students' physical fitness, functional training is expected to become an important means to stimulate college students' motivation to exercise and improve their physical fitness.

3. Literature Review

Zhu Yan (2021) took 38 female subjects who met the requirements for the aerobics elective course in the class of 2019 at Zhengzhou University and divided them equally into an experimental group and a control group. A six-week training was conducted, and in the first two weeks, the students were pre-tested with basic form, physical fitness test (test items 50 m, one-minute sit-up, standing long jump, 800 m, seated forward bending, and T-word test) and FMS, and the corresponding theoretical knowledge was introduced. The remaining ten weeks were divided into three phases: the basic motor ability phase, the general motor ability phase and the specialised motor ability phase, and the intensity of exercise was determined based on the measurement of heart rate. The results showed that after 6 weeks of functional training, the students in the experimental group showed significant improvement in strength, flexibility and agility, but not in speed and endurance. There was a positive effect on the functional movement screening scores of female college students, especially in the trunk stability push-ups and rotational stability test indexes^[3].

Bai Yang (2017) took 90 male college students of the class of 2016 in the School of Shimu Architectural Engineering of Changzhou Institute of Technology as the research subjects and randomly divided them equally into the control group and the experimental group, and in the 90-min physical education class of 2 times/week, the sandwich experimental group received the functional physical training of 45 min for a total of 6 weeks: before and after the experimental period, the control group and the experimental group carried out the lung capacity, the seated body bending forward, the standing long jump, the 50 m run, Pull-ups and 1000 blood tests were performed in the control and experimental groups before and after the experiment. The results show that after 6 weeks of training, the experimental group's body weight and BMI decreased significantly, and the five indicators of lung capacity, 50m running, standing long jump, 1000m running and pull-ups improved significantly, with statistically significant differences (P value <0.01), while the difference in sitting forward body bending was not statistically significant (P>0.05). Functional training can improve the physical fitness level of college students^[4].

Mu Yannan (2022) took 178 college students not majoring in physical education in Tianjin Ren'ai College as the experimental subjects, and functional training to promote the physical fitness level of college students as the research object. The experiment was conducted for 16 weeks, 1 time/week, and the physical fitness was based on the Physical Fitness Standard for College Students set by the Chinese Education Bureau, which selected pull-ups, 50-metre run, seated forward bending, 1, 000-metre run and 800-metre run as the indexes. The experiment was deliberately divided into four stages: preparation stage, basic activation stage, intensive practice stage and current practice. After 16 weeks of experimental research, it was found that the physical fitness indicators of the two groups had different degrees of improvement, but the improvement effect of the experimental group with the intervention of functional training was more obvious and more significant^{[5][6]}.

4. Literature Review Analysis

Functional training relative to traditional training has its own advanced and scientific, this modern training theory is the development of traditional training, but functional training is not able to completely replace traditional training. Li Danyang, Hu Faxin & Hu Xin et al. (2011) believe that: functional training can effectively improve human athletic ability, strengthen the prevention of sports injuries, and have a positive effect on the transformation of general physical fitness into specialised qualities, but it cannot negate the value of traditional training. Resistance training in traditional physical training is an important means of obtaining general strength qualities, which is the foundation of modern physical training and the cornerstone of scientific training. Traditional training and functional training should support and integrate each other^[7].

Studies have shown that functional physical training has a significant effect in improving the physical fitness of college students, and this paper is also based on this theory to verify the reliability of the theory, in order to improve the physical fitness of college students.

5. Method

In order to further understand this study and to find out the effect of functional fitness training on students' physical fitness, two classes of students in Maoming Health Vocational College of Guangdong Province were randomly selected as the experimental subjects, each of which consisted of 50 students (all of them were in the first year of university). One class was as an experimental class (EG) and the other class was a control class (CG) for the experiment.

6. Research Design

In this study, a quasi-experimental design was used, and the experimental pre-test found no significant difference between the experimental group (EG) and the control group (CG), which were homogeneous. After 8 weeks of experimentation, then the experimental post-test

data were collected. The effect of functional fitness training on students' physical fitness was examined and the post-experimental data were analysed using SPSS 21.0.

7. Result Analysis

Table 1 shows the data collection of the experimental posttest, data comparison of physical fitness indicators of EG and CG. In the comparison of the six indicators of physical fitness in the experimental posttest, a total of four indicators, namely, pull-ups, T-shape shuttle running, one-minute rope skipping and seated forward bending, had a positive and significant effect (P-value less than 0.05). It indicates that functional physical training is more capable of improving the physical fitness of college students.

Table 1 Comparison of the results of physical fitness indicators between post-test EG and CG university students

	EG(n=30)	CG(n=30)			
Test Item	M	M	df	t	Sig. (2-tailed)
Pull-ups(pcs)	5.07	7.33	58	-0.249	0.001
50 metres(sec)	7.37	7.28	58	2.148	0.076
T shuttle run(sec)	13.97	10.41	58	2.519	0.001
One minute rope skipping(times)	127.77	132.43	58	-2.052	0.048
Sitting forward bend(CM)	11.37	17.02	58	-5.65	0.000
1000 metres(min)	3.98	3.79	58	1.623	0.115

8. Discussion

This study systematically evaluated the effects of functional training on the physical fitness of freshmen students in Maoming Health Career College, Guangdong, China. The main findings show that functional training can improve students' performance in pull-ups, T-shape shuttle running, one-minute rope skipping and seated forward bending. LI (2023) conducted a 6-week, twice-weekly functional training experiment with 60 students from the class of 2022 at Harbin Engineering University in his master's thesis. The comparison before and after the experiment found that functional training improved the performance of 50 metres, standing long jump and seated forward bending more significantly than traditional training. The comparison before and after the experiment found that the functional training was more significant than the traditional training in improving the performance of 50 metres, standing long jump and seated forward bending, which indicated that the functional training could effectively improve the students' speed, flexibility and strength qualities. This is consistent with the present results.

It was analysed that the main reason was that in the functional fitness training was based on physical quality and health, students were divided into groups of weak strength, lack of endurance, etc., and then professional instructors carried out targeted functional fitness training for the members of each group to practically help college students to improve their physical fitness^[1-6].

9. Conclusions and Recommendations

Although the concept of functional physical training has been recognised by more and more people and has been widely used in physical education teaching, how to better integrate it into university physical education teaching in China and have a positive impact on the physical quality of Chinese college students still requires relevant parties to work together to strengthen the theoretical research and practical work.

Data Availability Declaration

The original contributions encompassed within this study are comprehensively documented in the article and accompanying supplementary materials. Should additional inquiries or data-related requests arise, kindly direct them to the attention of the corresponding author.

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References

- [1] Cherepov, E. A., & Shaikhetdinov, R. G. (2016). Effectiveness of functional training during physical conditioning of students practicing martial arts. *Journal of Physical Education and Sport*, 16(2), 510.
- [2] Xiao, W., Soh, K. G., Wazir, M. R. W. N., Talib, O., Bai, X., Bu, T., ... & Gardasevic, J. (2021). Effect of functional training on physical fitness among athletes: a systematic review. *Frontiers in physiology*, 12, 738878.

- [3] Siff, M. C. (2002). Functional training revisited. *Strength & Conditioning Journal*, 24(5), 42-46.
- [4] Tu, Jianwu. (2021). "Management, relaxation and release" three steps to cultivate and improve the athletic ability of high school students. *Contemporary Sports Science and Technology*, 11(12), 79-81.
- [5] Li, Qiang. (2021). An analysis of the evolution of China's youth sports policy in the 40 years of reform and opening-up. *Journal of Chengdu Institute of Physical Education*, 47(1), 56-62.
- [6] Wen, Xiong, Zhang, Lingyan, & Wang, Yonglian. (2020). *University Physical Education and Health Curriculum*. Chongqing University Electronic Audio and Video Press Co.
- [7] Yunteng. (2024). Research on the classroom teaching mode of primary and secondary school physical education competitions based on the core qualities of the discipline. *Teaching method innovation and practice - Research and academic investigation*, 3(3), 126-128.

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