

The Effectiveness of Functional Training of Female Students with Low Physical Fitness Test Score

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Abstract: In view of the development of society and lifestyle, contemporary college students are faced with many problems in physical health, especially the decline of physical fitness level of college students, which urgently need effective intervention. This study used a quasi-experimental approach to explore functional training as a way to improve the physical fitness of female college students who scored low or failed in the physical fitness test. The aim is to explore the effectiveness of functional training for female students with low fitness test scores. The results showed that functional training significantly improved the physical level of female students, especially on 50 m, curling, 1-minute sit-up and stand, long jump. In addition, at 800 meters, the functional training effect is inferior to the traditional training effect. This shows that functional training has obvious effect on the speed, strength and flexibility of female universities with low scores, but not on endurance programs. The results emphasize the functional training as a low physical students overall health level is an effective method.

Keywords: Female college students; functional training; physical fitness test.

1. Introduction

With the development of social economy and changes in lifestyle, students have some problems with their health. Therefore, the state promulgated the health test standard of students' physical fitness test. According to the standard test, it is found that especially the physical fitness test of college girls faces serious problems. The traditional training method of physical education has limited effect on improving the physical quality of girls with low physical fitness test level, and functional training has been applied in the training and recovery of athletes. This paper explores a new course to solve this problem and through functional training theory and methods.

2. Literature Review

Physical functional training originated in the field of medical rehabilitation in the United States, developed in the field of health recovery, and grew in competitive sports. (Liao, et al., 2023; Liu, 2023). However, due to the late start of physical training in the country, although it is relatively popular in the field of competitive sports and professional sports colleges, it has not been widely used in the teaching of public sports courses in colleges and universities. This study aims to investigate functional training and its effect on motor function training for female college students who obtained a low to failing mark in the physical fitness test, which would help improve their physical fitness and build confidence in physical exercise; evaluate the effectiveness of motor function training methods and methods, trying to find an effective training method to improve the physical fitness and health level of female college students.

Functional training has also been developed in China, and domestic scholars have researched the theory of functional training. Zhang Yingbo (2018) believes that body functional training is a method that can improve the body's athletic ability, and its training is through constantly strengthening the function of the core column and the efficacy of the power

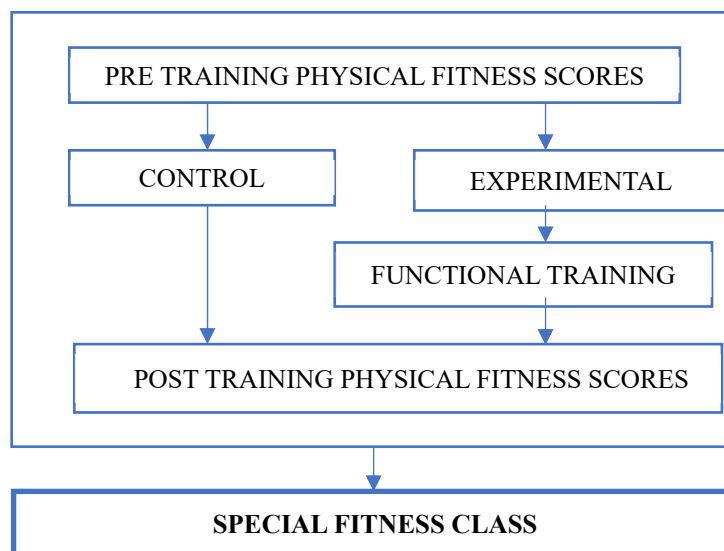
chain and can make the training between the nervous and muscular systems more efficient. Zhang (2019) believes that functional body training is a new method that enables athletes to develop muscle balance through holistic body exercises, and enables more coordinated cooperation between nerves and muscles, and continually strengthens the ability to control the body. Meanwhile, Sheng&Yan (2017) pointed out that functional training refers to a kind of training method that aims to improve the efficiency of sport-specific movements and adopts a training method that is consistent with the specific needs of the human body. It emphasizes the wholeness of movement and the role of the core, the importance of multi-planar forms of movement, and the ability of proprioception and neural control in training. Further, training experts Yin Jun and Yuan Shou Long (2017) believe that the diagnosis of the impairment of motor function, according to the results of the targeted correction, through its correction, can eliminate the existence of athletes' movement disorders and their compensatory movements, to lay the foundation for the further implementation of the functional training program, and better improve the athletes' special ability. Domestic functional training emphasizes its own neural coordination, muscle core strength, and movement overall exercises.

Functional training tools and methods can be used to improve motor skills. Suspension training methods can improve intramuscular coordination and inter muscular coordination, improve the balance and stability of athletes, and have a very good effect on improving the explosive power of the lower limbs of divers. It can improve the ability of core muscle group coordination and improve the control ability of aerial body posture of excellent divers, especially since it has a significant effect on the improvement of special technical movements and sports skills. Yang Suitable, Li Jianshen et al. used the use of functional physical training to improve intramuscular coordination and inter muscular coordination, and to improve the balance and stability of athletes, Yang Suitable, Li Jianshen et al. Yan Qi and Wang Xiaosong, have done relevant experimental studies.

However, there are relatively few studies on improving sports functions of female college students. College women and functional training. Today's female college students often replace physical exercise with recreational activities and lack substantial physical exercise, resulting in poor improvement of cardiovascular system and cardiopulmonary function. Less skeletal muscle exercise and slower bone growth affect the growth of height, but not circumference. However, there has been some growth, and the weight is higher than the normal value, indicating a certain degree of obesity (Pang, 2017). The physical fitness testing system is one of the basic systems of

a country, The Origin and Development of China's Physical Fitness Testing System On October 25, 1958, The standard was revised in 1982, 1988, and 1990 respectively, and applied to the national students' physical fitness test in 1991, 1995, and 2000 respectively, making it the longest evaluation standard for students' physical fitness test in China. The latest version of the "Students' Physical Fitness Standard" of 2014 is the standard enforced by all levels of education departments.

2.1. Research Framework



2.2. Statement of the Problem

The purpose of this study is to determine the effectiveness of functional training on female students with low physical fitness test score.

Specifically, this will seek the answers to the following questions:

1. What is the pre- physical fitness score of the control and experimental groups before the training in terms of

- 1.1 Sit and Reach
- 1.2 Standing Long Jump
- 1.3 50-m Run
- 1.4 800 m Run
- 1.5 Curl-up

2. Is there a significant difference in the pre – physical fitness score of the control and experimental group before intervention was applied ?

3. What is the post- physical fitness test scores of the control group and the experimental group after the intervention was applied in terms of the ff:

- 3.1 Sit and Reach
- 3.2 Standing Long Jump
- 3.3 50-m Run
- 3.4 800 m Run
- 3.5 Curl-up

4. Is there a significant difference between the post - physical fitness test scores of the control and experimental group after the interventions were applied?

5. Is there a significant difference in the Pre test scores and the post test scores of the experimental group?

6. Based from the results of the study, what special fitness class may be proposed to improve the physical fitness status of the students?

2.3. Research Hypothesis

Ho1 There is no significant difference in the pre – physical fitness score of the control and experimental group before intervention was applied.

Ho2 There is no significant difference between the post - physical fitness test scores of the control and experimental group after the interventions were applied.

Ho3 There is no significant difference in the pre test scores and the post test scores of the experimental group.

2.4. Scope and Delimitations

The focus of this study is the effectiveness of functional training on the group of college students who failed the physical fitness test. The experimental subject of this study are female college students who obtained a low score on their physical fitness test in the current year at Hubei Enshi college.

Items of college students' physical fitness test involved in this study are the National Physical Fitness Test Standard (2014 edition) used at this stage, and the items and scoring references are also from the standard.

The functional training used in this study was the means covered under the functional training system, the means were derived from the Physical Training Activity compiled by the National Sports Training Center of the Training Bureau of the General Administration of Sport of China, and in conjunction with the actual conditions of the participants and the school, experts in the field of exercise physiology selected appropriate functional training means and composed a functional training program for use in this experiment.

3. METHODOLOGY

3.1. Setting

School physical fitness test does not meet the standard rate of high, especially for girls. The school opened this study in 2022, using functional training methods to develop new functional courses for college girls who failed the physical fitness test, and combining with the comparison of traditional courses to conduct research on the effectiveness of functional training.

3.2. Study Design and Sampling

This study will use a quasi-experimental study design, using a quantitative approach for descriptive comparative analysis. Through the 2022 National physical fitness test database, it was found that the list of female students from Enshi College and 40 students from this database (failing the physical fitness test) were randomly recruited as the experimental subjects to inform the purpose of the experiment, the duration of the experiment, the process of the experiment, seeking their consent and sign the informed consent. All subjects used forward sitting, standing long jump, 50-meter run, 800-meter running and sit-ups, and the above test items used the 2014 revised national fitness test standards. Forty individuals were randomly divided into two groups, and 20 individuals were included in the experimental and control groups. The control group adopted the traditional physical education course model and trained for 6 weeks, conducting the physical education course from October 15, 2023 to December 2023.

3.3. Outcome Measures

The test adopts the 2012 edition of the National Physical

Health Standard, Pretest data from both groups before the test, including sitting forward flexion, standing long jump, 50 m run, 800 m run, and sit-ups; after the experimental intervention, the post test data also included the same test data of 2 groups.

The data collected will be organized, analyzed, and interpreted using appropriate statistical tools.

4. Results

4.1. Characteristics of Study Participants

Control and experimental groups, 20 people in each group, gender-female. The experimental test project I participated in is the National Physical Health Test Standard, 2012 edition. The training content of the control group is the traditional training method of track and field. The experimental group adopted functional training methods, selected from the Functional Training Guide compiled by the Physical Training Center of the General Administration of Sport of China.

4.2. Pretest data T test

Comparative analysis of the pre-test data of each item in the control group and the experimental group conforms to the normal distribution. The independent sample T test can be used to statistically determine whether there is a significant difference. It can be seen from Table 1 that the average score of the control group in the 50-meter, the long jump test, the Pre-seat and-reach test, the 800-meter test, Curl-up test, The P values of the above items in each group are greater than 0.05, and there is no statistically significant difference, which means that there is no significant difference in the initial scores of the control group and the experimental group samples.

Table 1. Significant Difference between the Control and Experimental Groups Pre-Test

Item	Group	Mean	SD	T	P	Inter.	Dec.
Pre-50m	CG	12.145	1.546	0.782	0.439	not significant	accept the null
	EG	11.835	.868				
Long-jump	CG	141.150	13.490	-1.520	0.141	not significant	accept the null
	EG	147.450	13.03				
Pre-seat and-reach	CG	17.250	5.999	-0.175	0.862	not significant	accept the null
	EG	18.550	6.065				
800m	CG	326.650	37.549	1.074	0.289	not significant	accept the null
	EG	313.750	38.395				
Pre-curlup	CG	31.100	4.471	-1.203	0.236	not significant	accept the null
	EG	32.600	3.331				

a = 0.05, CG = control group, EG = experimental group.

Table 2. Significant Difference between the Control and Experimental Groups Post-Test

Item	Group	Mean	SD	T	P(Sig)	Inter.	Dec.
50m	CG	11.808	1.45	2.925	0.006**	significant	reject the null
	EG	10.51	1.52				
longjump	CG	146.55	13.01	-3.509	0.001**	significant	reject the null
	EG	162.85	16.19				
Seat-and-reach	CG	15.45	3.20	-4.124	0.000**	significant	reject the null
	EG	20.20	4.03				
800m	CG	306.15	29.86	-0.917	0.365	not significant	accept the null
	EG	314.40	26.96				
Curl-up	CG	33.550	4.82	-3.025	0.004**	significant	reject the null
	EG	40.25	8.66				

* p<0.05 ** p<0.01, CG=control group, EG=experimental group

4.3. Post test data t test

After the experimental intervention, the control group and the experimental group were retested on various physical test items and the data on the post-test items were tested for normal distribution. On the premise that all data conform to the normal distribution, an independent sample T test was performed. The P values of the data of the control group and the experimental group in the post-test 50-meter test, long jump test, Seat-and-reach test, and curl-up test is less than 0.05, which means that after the control group and the experimental group experienced different experimental program interventions, the results of this test is statistically significant. The P-value of the Post800-meter event is 0.365, and the p-value is greater than 0.05. There is no significant

difference, All the other items showed significant differences.

4.4. Differences between pre- and post-test of experimental group

It can be seen from Table 3 that there are a total of 5 sets of paired data, 4 of which will show significant differences ($P < 0.05$), and 1 set of data will have no significant difference. 50m, Long jump, Eat-and-reach Curl-up, these items were significant from the experimental group through functional training, pre-test and posterior data. 800m, $P > 0.05$. This shows that the functional training of this test has no was clearly effect on improving the endurance quality of female college students who failed the physical test.

Table 3. Significant Difference between the Pre and Post Tests of the Experimental Group

Item	Group	Mean	SD	T	P(Sig)	Inter.	Dec.
50m	Pre	11.83	0.87	5.662	0.000**	significant	reject
	Post	10.51	1.52				the null
Long jump	Pre	147.45	13.03	-6.681	0.000**	significant	reject
	Post	162.85	16.19				the null
Seat-and-reach	Pre	17.10	4.75	-2.137	0.046*	significant	reject
	Post	20.20	4.03				the null
800m	Pre	313.75	38.40	-0.061	0.952	not significant	accept the
	Post	314.40	26.96				null
Curl-up	Pre	32.60	3.33	-3.870	0.001**	significant	reject
	Post	40.25	8.66				the null

* $P < 0.05$ ** $P < 0.01$

Differences before and after the test in the control group

Table 4. Significant Difference between the Pre and Post Tests of the control Group

Item	Group	Mean	SD	T	P(Sig)	Inter.
50m	Pre	12.14	1.55	1.726	0.101	not
	Post	11.89	1.45			significant
Long jump	Pre	141.15	13.49	2.045	0.055	not
	Post	146.55	13.01			significant
Seat-and-reach	Pre	16.80	6.02	1.345	0.194	not
	Post	15.45	3.20			significant
800m	Pre	326.65	37.55	3.605	0.002**	significant
	Post	306.15	29.86			
Curl-up	Pre	31.10	4.47	1.505	0.149	not
	Post	33.55	4.82			significant

* $P < 0.05$ ** $P < 0.01$

It can be seen from Table 4 that there are a total of 5 sets of paired data, 4 of which will show no significant difference ($p > 0.05$), and one set of data will have a significant difference. 50m, long jump, Seat-and-reach, Curl-up After conventional training in the control group, the p-values of the pre and post test data are all greater than 0.05; indicating that traditional training has no significant effect on female college students who failed the physical fitness test. However, on the 800m item, the control group was traditionally trained, and the before and after the test data showed $p < 0.01$. Therefore, 800 m has obvious effect on the girls who failed the physical fitness test based on traditional training methods.

5. Discussion and Conclusions

5.1. Main Findings and Study Implications

Under the control of the experimental process, the control

group underwent traditional physical education content training and the experimental group underwent functional training. The posterior data showed that the two groups had significant differences in 4 items: 50m, Long jump, Seat-and-reach, and curl-up, but There is no significant difference at 800m. The null hypothesis is: There is no significant difference between the post-physical fitness test scores of the control and experimental group after the interventions were applied. 50m, Long jump, Seat-and-reach, and curl-up items reject the null hypothesis, and 800m items agree with the null hypothesis.

For the control group, there is no significant difference between the pretest and posterior data in the 50m, Long jump, Seat-and-reach, and curl-up items under the traditional physical education class training method, but there is a highly significant difference in the 800m.

For the experimental group, in the functional training mode,

there are significant differences between the pretest and posterior data in the 50m, Long jump, Seat-and-reach, and curl-up items, but there was no significant difference in the 800m.

The original null hypothesis is: There is no significant difference in the pre test scores and the post test scores of the experimental group. But, The null hypothesis is rejected on the 50m, Long jump, Seat-and-reach, and curl-up, and the null hypothesis is agreed on the 800m.

Due to the low exercise level of the subjects in this study, the small sample size, and the short experimental time, there are some areas in the experiment that are not comprehensive and in-depth enough. We hope that subsequent researchers can study this issue in depth from multiple angles.

5.2. Conclusions

Since this article adopts a quasi-experimental research method, although it is less rigorous than the comparative experiment, it can also directly and clearly discover that functional training can affect the speed, explosiveness, flexibility and core quality of the lower limbs of female college students with low scores in the physical fitness test. The effect is obvious on strength, Core quality, speed, and explosive force of the lower limbs, but not obvious on endurance quality.

When offering physical education classes for these students, consider applying functional training methods in the development of rapid strength and coordination and core strength; in terms of developing endurance quality, combine traditional training methods.

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