Research and Application of Functional Training in College Volleyball Technique Teaching

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Abstract. Physical functional training has a unique training concept as a new type of training method. It breaks the single training mode in traditional physical training. Instead of training a certain muscle and a joint separately, it regards the whole-body muscle and joint as a complete system, and regards the movement of the whole body as a movement chain. A training method that pays more attention to the human body motion pattern and the basic posture of body motion. Through the method of functional training, the volleyball athletes' sensibility is enhanced, the special performance ability is improved, the special sports efficiency is maximized, and new training ideas are provided for the athletes' competition performance improvement. This study studies the body function training methods in the technical teaching of the volleyball project, and introduces the functional action training system into the volleyball smash technique to improve the volleyball teaching level.

Keywords: Functional training; Volleyball technical teaching; Muscle training; Special sports.

1. Introduction

In recent years, volleyball has developed rapidly, and the public's acceptance of the sport has generally increased. With the implementation of a series of newly revised rules by the FIVB, the requirements for athletes' five athletic ability-based athletic ability are gradually strengthened. Based on the development trend of volleyball, volleyball players need to better strengthen their physical function training. The best way to strengthen physical function training is physical training. Therefore, how to better improve sports performance and physical quality has become a problem that needs to be solved in current volleyball training letters.

Functional training first appeared in the field of rehabilitation physiotherapy abroad. Later, after many experts and scholars studied it, it was introduced into the sports training of competitive sports. It is a modern and advanced sports training concept. Functional training is a new method and new mode that promotes the current physical training based on breaking the traditional sports training concept. Functional training belongs to the physical training category [1]. At present, the training methods in the volleyball teaching process are relatively simple, and the content is too simple. Most of them adopt the traditional teaching mode, and the teaching effect is not satisfactory. The physique of the volleyball players in the school is poor, their physical strength is weak, it is difficult to stand out in the fierce competition, and the purpose of physical fitness and lifelong physical education cannot be achieved. Therefore, good physical fitness and physical fitness are the guarantee of volleyball technology. A prerequisite for play. In this study, the body function training method in the technical teaching link of the volleyball project is studied, and the functional action training system is introduced into the volleyball smash technique teaching. The method of functional training is to effectively improve the student's smashing technique. The teaching quality of volleyball courses and the research and application of functional training.

2. Research Objects and Methods

2.1 Object

Two classes were randomly selected from the 2017 Volleyball Option Class of China West Normal University, which were used as experimental and control classes. The students in the experimental class and the control class were all in the medical school, business school, management school, and architecture engineering college. The number of students in each class is 15 people [2-3].

2.2 Method

The experimental class and the control class were simultaneously held for 16 weeks, 2 hours per week, and a total of 32 hours of experimental teaching, teaching time from September to December 2018. The experimental class adopts the teaching method of functional physical training, and the normal class uses the ordinary physical training method. The teaching content and teaching progress are the same. The test method is a two-step running smash. Through the teaching experiment, the experimental data of the experimental class and the control class are statistically analyzed to verify whether the functional physical training method can improve the teaching effect of the volleyball class. In addition to the teaching content, teaching progress, etc. are the same. The specific teaching evaluation approach is shown in the figure below.

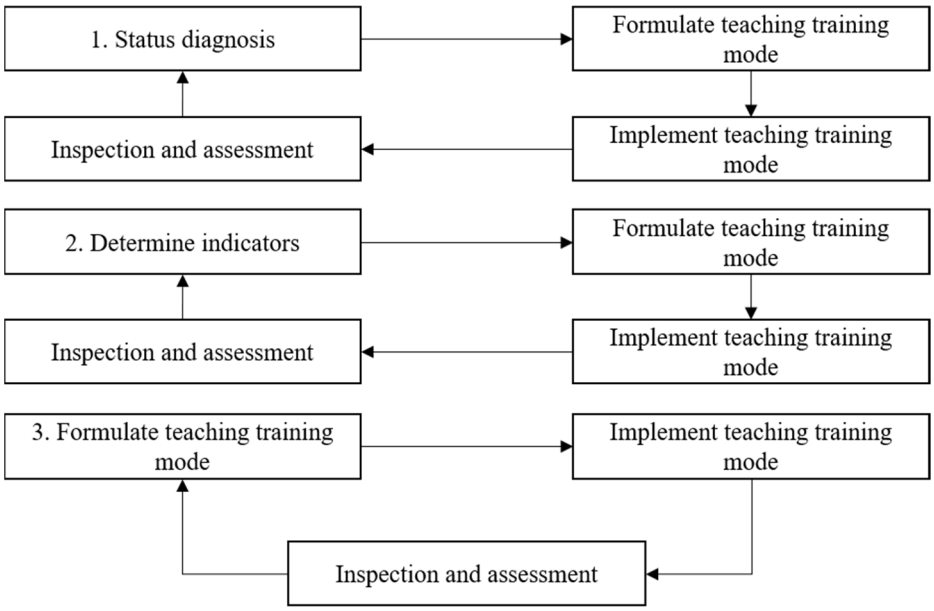

Fig. 1 Teaching feedback map

2.2.1 Statistical Tools

According to the statistical knowledge, the data obtained by the EXCLE and SPSS20 software are statistically processed and analyzed (the analysis method is the independent sample T test), and all the test data statistics are independently completed by myself, in order to ensure the statistical data of the indicators. Validity, authenticity and accuracy [4].

2.2.2 Indicator Determination

Through consultation with volleyball experts and analysis of relevant literature contents such as "Analysis of Chinese Youth Volleyball Training Syllabus" and "National Men's Volleyball League Athletes' Physical Fitness Test Projects", the indicators of special physical fitness tests are finally determined, as shown in Table 1. The functional action screening for the basic sports ability test and evaluation of all types of people is selected as the basic exercise ability test index.

Tab.1 Volleyball physical quality test indicators list

Test type	Test index	Testing purposes
form	Height, weight	Understand the physical development of students
Sensitive	V word movement	Evaluate students' agility
coordination	30s double jump rope	Evaluate students' ability to coordinate
Speed of action	Badminton throwing away	Evaluate the explosive power of students
Moving speed	30m run	Evaluate students' speed ability
power	Run-up touch	Evaluate students' ability to bounce
	Standing long jump	Evaluate students' lower limb explosiveness
	60s from the back of the head	Evaluate students' abdominal ability
	30s prone	Evaluate students' back ability
endurance	9mX10 movements	Evaluate students' endurance ability

3. Functional Physical Plan Implementation

The functional exercise program is opened for the experimental class [5]. The whole training cycle is divided into four phases: (1) the muscular and adaptive phase; (2) the strength phase; (3) the explosive phase; and (4) the explosive endurance phase.

3.1 Muscle Strengthening and Adaptation Stage

Tab. 2 Training program for muscle strengthening and adaptation

	Project	Training time		Project	Training time
First group	One-legged contralateral arm	2×10 on each side	Second Group	Medicine ball ABC squat	2×10
	Single leg squat	2×7 on each side		T-type push ups	
	Self-heavy legs	2×15 on each side		Elastic band boating	
	Self-heavy kick	2×10 on each side		Stepping forward with dumbbells	2×10
	Self-weight push-up	2×10		Elastic band staggered standing alternately forward	
	Cable-stayed	2×10		Cable-stayed	
	Rotating around the axis	2×15 on each side		Elastic band low to high chopping action	2×10
	Shaftless rotation	2×15 on each side		Swiss ball rolling	
				X type lifting	

In the first set of training, the action is training, and the training is action. Mainly used to assess and train the four pillars of human movement, this training provides a continuous assessment, which in turn ensures continuous exercise and achieves the goal of improving athletic performance. The second group of exercises is a trio practice [6]. Complete each set of exercises in order and then start over again. Complete as much as possible in accordance with the specified number of training sessions. Take a good rest between each exercise to maintain a good state and quality of action. The ultimate goal is to take only 30-60 seconds of rest after each practice. Use enough load to complete the specified number of iterations while maintaining a good state. The first two sets of training If the student's physical level is good, you can start practicing from any week and repeat as many times as possible during the week, which is necessary to lay a solid foundation for training.

3.2 Strength Stage

Strength is the most important part of traditional strength training. But from a high-intensity point of view, functional strength training is not the same as traditional strength training methods. Instead, functional strength training focuses on repetitive functional movements. Compared to the adaptive phase, the main training variable in the strength phase is strength. High-intensity, low-intensity training runs through the entire strength phase. The high amount of exercise in the adaptation and muscle-promoting phases stimulates the muscle fibers and metabolic system, while the strength phase stimulates the central nervous system. The strength training program includes dumbbell lifting, dumbbell crossover, elastic belt swimming, dumbbell side lunge, elastic band staggered standing side-to-side forward, diagonal pull (boating), elastic band staggered standing side-handed compound rowing, T-type push-ups, elastic band high to low cutting action.

3.3 Explosive Stage

Explosive training can be exciting, and the time invested will pay off quickly. The first interpretation of explosive power is: explosive power = strength x speed; the second interpretation is explosive power = training volume / time. If the student has a good training foundation, the strength phase can even be skipped, and the student can directly perform the explosive phase, because strength

training has been included in the composite method. The first group is the explosive duo training. If the physical level is good, you can practice from any week and repeat as many times as possible during the week, which is necessary to lay a solid foundation for training. The second group of training is to select the joint activity improvement method and muscle relaxation and stretching for the training effect and self-feeling. The training program includes elastic belt hard pull vertical jump, kettle bell single arm swing, wave ratio exercise (upright support), dumbbell side lunge, elastic belt low to high cutting action, medicine ball reflexive throwing [7].

3.4 Explosive Endurance Stage

Explosive endurance training can help students produce lasting explosiveness, which is very important for the outcome of the game. Challenge the metabolic cycle and pre-fatigue stage to keep the students' nerve and metabolic system high. To train endurance, cancel a 1-minute break between strength training and subsequent explosive exercises. This explosive training is accompanied by incomplete recovery, making strength exercises not only exciting and exciting, but also pre-fatigue. Subsequent explosive exercises provide explosive endurance training. The training program includes the action in the third stage, plus the short-distance rotation of the tension device (10 o'clock to 2 o'clock), the rotation of the medicine ball, vertical position and other actions.

4. Training Results

4.1 Physical Quality Indicators

After the experiment, first of all the physical quality indicators of the experimental class before and after the experiment, there were two significant achievements, which were the one-step run-up and the long jump, and the range of the increase was significantly different. Secondly, in the physical fitness test before and after the experiment, the three test results were all improved, but the increase was not significantly different. It can be seen that the training method used in this experiment has a significant effect on the students' jumping power and explosive power. The specific data is shown in Table 3.

Tab. 3 Statistic test of physical quality difference between experimental class and control class before and after experiment (n=15)

Group	Project	Before the experiment	After the test	t	p
Experimental class	One step to help run vertical jump high (m)	2.27±0.15	2.59±0.18	0.901	<0.05
	50 meters running (s)	7.36±1.29	7.04±1.93	1.438	>0.05
	Standing long jump (cm)	233±21	251±37	0.659	<0.05
Control class	One step to help run vertical jump high (m)	2.20±0.23	2.31±0.25	1.285	>0.05
	50 meters running (s)	7.91±1.78	7.34±1.54	1.112	>0.05
	Standing long jump (cm)	228±26	230±25	-1.309	>0.05

4.2 Statistics on the Results of Volleyball Special Examinations

After the experiment, first of all the experimental volleyball special technical indicators of the experimental class students, all three achievements have been made, especially in the frontal serve, the scores have the greatest increase, which is significantly different from the previous ones. On the other hand, in the volleyball special technical indicators after the experiment, the three test results were also improved, but in comparison, no significant improvement was made. Therefore, it can be seen that the training method used in this experiment has a significant effect on the improvement of the hand-to-hand technique in the student volleyball technique. The specific data is shown in Table 4.

Tab. 4 Difference test statistics of volleyball special scores before and after the experimental and control classes (n=15)

Project		Experimental class	Control class	t	p
Before training	One minute from the ball (times)	63±12	78±17	1.792	>0.05
	One step running smash (times)	5±2	7±2	0.644	<0.05
	One-minute self-passing ball (times)	31±20	36±15	1.673	>0.05
After the experiment	One minute from the ball (times)	69±29	72±11	1.922	>0.05
	One step running smash (times)	4±4	5±2	1.645	>0.05
	One-minute self-passing ball (times)	27±19	35±10	1.832	>0.05

5. Conclusion

The functional training can effectively improve students' sensitivity, jumping ability, lower limb explosive power, abdominal strength, back strength and coordination ability. The physical function training method breaks the traditional sports training concept and puts forward new power and new mode for the innovation of the current physical training method. The introduction of functional training concept is still short in China, and its training method has begun extensive application research in various sports projects. However, the experimental research results of functional training into physical education classrooms are rarely reported, the author is shallow by himself. Seeing the truth, trying to make some discussion on the practicality and popularization of the functional training method, although the preliminary work is complicated, the experimental process is difficult to grasp, and the mathematical analysis is difficult and complicated, but the result is still optimistic, by introducing the physical function training method into the volleyball class. The volleyball smash technique has been significantly improved. However, there are some shortcomings in the actual functional training in the volleyball teaching and training process, which needs to be paid attention to in the future teaching process.

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