

# Research on volleyball teaching and training based on the improvement of athletes' physical quality

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**Abstract:** *Volleyball is a skill-oriented group event against the net. Volleyball competition is characterized by fast conversion between attack and defense, fierce competition, relatively low game load, but high load intensity. In volleyball teaching for athletes, physical education teachers should pay special attention to training athletes' physical quality and improve their physical quality. Only in this way can we better meet the volleyball learning needs of athletes, improve their physical fitness, provide guarantee for the development of volleyball teaching in the future, and let more athletes participate in the sport. Therefore, based on the importance of physical fitness to volleyball players, this paper explores feasible strategies to improve the physical fitness of volleyball players from the perspective of volleyball teaching and training, and strives to contribute to improving the physical fitness of volleyball players.*

**Keywords:** *Athletes; Physical quality; Volleyball teaching*

## 1. Introduction

For college volleyball teaching, we should not only cultivate the skills and abilities of volleyball training, but also pay attention to the cultivation of athletes' physical quality. This is also to meet the requirements of the Ministry of Education for the all-round development of talents. In order to master volleyball skills well, volleyball players should not only insist on scientific exercise for a long time, but also constantly improve their physical fitness, because volleyball has a unique need for athletes' physical fitness [1]. In volleyball teaching for athletes, physical education teachers should pay special attention to training athletes' physical quality and improve their physical quality [2]. In volleyball teaching for athletes, physical education teachers should pay special attention to training athletes' physical quality and improve their physical quality. Only in this way can we better meet the volleyball learning needs of athletes, improve their physical fitness, provide guarantee for the development of volleyball teaching in the future, and let more athletes participate in the sport.

## 2. Characteristics of volleyball

Volleyball is a skill-oriented group event against the net [3-4]. Volleyball competition is characterized by fast conversion between attack and defense, fierce competition, relatively low game load, but high load intensity. The implementation of the scoring system for each ball in volleyball competition greatly shortens the time of each game, but it increases the intensity and intensity of the game, and puts forward higher requirements for volleyball players' special sports ability and physical fitness. The stronger the strength of volleyball players' lower limbs, the higher the take-off height, the larger the defensive area when blocking and the larger the spiking space when spiking, which can give opponents a greater sense of oppression.

Volleyball players in the competition and training, whether it's take-off spike or save the ball, before jumping or saving the ball, the first force is the muscles in the core area, and the most important one is the transverse abdominis muscle in the core muscle group. The core strength of the competition players is related to the exertion of special skills in the competition, and it has a positive and important influence on the competition results. This shows that we must strengthen the core strength training of volleyball players, put forward corresponding training methods for competitors, and improve the special quality of special athletes [5]. Therefore, in the competitive competition of this project, the quality of core strength plays a very important role in the competition results.

### **3. Necessity of improving athletes' physical quality in volleyball teaching and training**

#### ***3.1. Improve the technical level of volleyball***

Volleyball is a physical education course with high professional and technical requirements. By improving athletes' physical fitness, teachers can help them better master learning skills and improve their enthusiasm for participating in exercise. At the same time, good physical fitness can also support them to complete some technically difficult movements and tactics, so that they can fully feel the charm of volleyball knowledge, fully combine the strategic skills and sports techniques in volleyball, and improve their volleyball learning level [6]. Special physical fitness training is accompanied by volleyball technical training. Through long-term special physical fitness training, college volleyball players can not only significantly improve their special physical fitness, but also continuously consolidate their volleyball technical foundation.

#### ***3.2. Lay the foundation for the game***

Nowadays, the level of physical fitness of great athletes is not high, and it has a positive effect to arrange certain physical training in university courses. For example, the teaching of volleyball class can exercise the physical quality of athletes. However, how to improve athletes' physical quality in college volleyball training and teaching needs to master certain ways and means [7]. Therefore, college volleyball teachers should carry out daily training for volleyball players according to their physical fitness, and realize strong physical fitness through continuous training, thus laying a foundation for improving the technical level of volleyball players.

#### ***3.3. Cultivate athletes' sense of cooperation***

In order to better improve the volleyball training level of high-level sports teams in Chinese universities, we must attach importance to physical training, change the old physical training methods and combine the actual needs of volleyball events. Starting from volleyball, a targeted physical training method is designed. The length of volleyball players' career is closely related to their physical fitness. Many scholars have proved that the better the special physical fitness, the stronger the self-protection ability of volleyball players in the process of sports. Through volleyball training, athletes' group consciousness can be effectively improved, and they can help each other and learn from each other in the training process, so as to find more scientific learning methods, improve their enthusiasm and initiative in learning, and finally achieve the teaching goal of volleyball class.

### **4. Methods of improving athletes' physical quality in college volleyball teaching**

#### ***4.1. Enhance the core strength quality of volleyball players***

Core strength training aims to strengthen the core strength of competitors, so that the technical level of competitors' special sports can be improved, and the injuries during competition training can also be reduced. Now, core strength training is also valued by more and more sports workers [8-9].

Taking 15 volleyball players in a university as the experimental subjects, before the intervention training, the athletes were tested before the experiment, that is, the volleyball special physical fitness test was carried out for the experimental subjects, and the test data were recorded. The two groups of subjects were trained in core strength for 10 weeks. After 10 weeks of intervention training, the subjects were tested the same as before the experiment, which was called post-experiment test. The test data were recorded again and compared with the data before the experiment. The comparison of athletes' special physical qualities before and after the experiment is shown in Table 1 below:

It can be seen that after the experiment, through a simple average comparison of the values before and after the test, it is concluded that the P values of flat support, back throwing solid ball, run-up touch and vertical jump of both feet are all less than 0.05, which shows that the athletes in the experimental group have obviously improved their special physical fitness after 10 weeks of core strength intervention training.

Schools and professional teams should change their concepts, keep up with the development trend of sports, and improve their understanding of physical core strength and volleyball special physical core strength training. With the continuous development and progress of volleyball and the increasing

participation of the masses, universities should also increase the hours of volleyball class and training equipment and equipment, especially the novel and advanced equipment and equipment, so as to better meet the special requirements of the project.

*Table 1: Analysis and comparison of the test results of athletes' special physical fitness indexes before and after the experiment*

project	Before the experiment	After the experiment	P value
Plate support (seconds)	108.3±30.01	201.66±49.83	0.0337
Back throw solid ball (m)	10.28±1.06	13.67±2.11	0.0469
Run-up and touch the height (meter)	2.69±0.87	4.21±0.26	0.049
50 meters turn and accelerate (seconds)	5.03±0.22	4.16±0.13	0.0601
Vertical jump of both feet (60s/ piece)	27.36±17.05	24.68±6.53	0.0403

When designing core strength training, coaches should add core strength training to their daily training according to the individual situation of the players and the training plan of the training team, which can effectively improve the individual ability of athletes and the overall level of the training team. To the maximum extent, we can introduce volleyball coaches with high level and professional quality. In addition, we can also choose to hire coaches in the form of contracts.

#### **4.2. Enhance the flexibility of volleyball players**

Flexibility it refers to the flexibility of the body, which depends on the range of activities of muscles, tendons, ligaments and even skin in all joints of the body. Flexibility plays an extremely important role in giving full play to muscle strength, mastering technical movements reasonably and preventing sports injuries. College volleyball teachers should train the physical quality of volleyball players in modules according to the demand of volleyball for athletes.

After athletes have good flexibility, their own range of activities will be expanded, so that they can better exert their muscle strength and master more volleyball skills, which can enhance their physical flexibility and improve their enthusiasm for participating in sports. For example, when training the flexibility of volleyball players' waist, it can be done by letting volleyball players go around the ring, swing their waist and stand forward in a three-dimensional way. For another example, when training the flexibility of volleyball players' legs, arms and other parts, volleyball teachers can let volleyball players train by encircling, swinging and pressing.

#### **4.3. Enhance volleyball players' special speed quality**

The speed in volleyball is divided into reaction speed, moving speed and action speed. Reaction speed refers to the reaction to various quick balls in volleyball, that is, the nerve transmission time from the time a player sees the ball to the time when he starts to catch it. Moving speed refers to the distance of body displacement in unit time. Action speed refers to the operation time to complete various technical actions.

Coaches can let college volleyball players do sideslip exercises, backward running exercises, short-distance fast running exercises, etc., so as to improve their moving speed [10]. Coaches can guide training in the following ways:

1) Coaches can divide the college volleyball players into groups, so that each group member can carry out in-situ spike and swing. During the training, coaches should let the college volleyball players pay attention to the speed and strength of swing.

2) Coaches can organize college volleyball players to be divided into groups, with two people as a group, to practice the buckle.

3) Coaches can let college volleyball players use some sports equipment (solid balls, small barbells, etc.) to carry out weight-bearing arm swing practice, and then practice empty-handed after a period of practice to improve their arm swing speed.

#### 4.4. Enhance the sensitive quality of volleyball players

The agility of thinking refers to the rapidity of thinking, which reflects the sharpness of individual intelligence. People with high thinking agility, that is, people with extraordinary intelligence, are quick-witted and quick-witted when thinking about problems; People with low intelligence are slow in thinking and slow in response; People with average intelligence have average thinking reaction speed. Of course, if you want to have high thinking agility, you must have highly developed thinking profundity, flexibility, originality and criticism. The physical sensitivity of volleyball players is influenced by the flexibility of their cerebral cortex nervous system, so college volleyball teachers need to train the reaction speed of volleyball players if they want to enhance their physical sensitivity.

College volleyball teachers should show volleyball players how to respond to some special situations, and at the same time, they should often ask volleyball players what kind of response they should make under what circumstances, so that volleyball players can improve their brain's response speed by answering quickly and repeatedly. Let team members throw volleyball from different directions at different speeds at will, and then let other volleyball players catch it quickly and throw it again. Through repeated practice, volleyball players can be trained to change direction and move. It should be noted that coaches should pay attention to the combination of training content and formal competition requirements when guiding college volleyball players to carry out special sensitive quality training. For example, coaches should show college volleyball players some special situations that may occur in formal competition, and then tell them what to do if they encounter these situations.

#### 5. Conclusions

In volleyball teaching for athletes, physical education teachers should pay special attention to training athletes' physical quality and improve their physical quality. Volleyball is a physical education course with high professional and technical requirements. Teachers can help athletes better master their learning skills and improve their enthusiasm for participating in exercise by improving their physical fitness. In the process of special physical fitness training, coaches should give scientific guidance according to the physical fitness, sports foundation and sports level of each college volleyball player, so as to improve the pertinence and effectiveness of college volleyball training and promote the high-quality development of college volleyball.

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