Physical Strength Training Methods in Badminton Teaching and Training

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Abstract: Badminton, as a popular sport, requires athletes to have high physical quality and skills. Among them, physical strength is a crucial link in badminton. Strong physical strength can help athletes better cope with various situations in the competition and improve their competitive level and performance. Therefore, this paper aims to explore the methods of physical strength training in badminton teaching and training. First of all, this paper analyzes the characteristics of badminton and the significance of physical strength training, and emphasizes its importance in improving athletes' competitive level and performance. Then, the common physical strength training methods such as strength training, core training, upper limb training and lower limb training are introduced in detail. Finally, it is pointed out that through the implementation of reasonable training plan and correct training methods, students' physical strength level and badminton skills can be effectively improved, and suggestions for improvement are given. It is hoped that this study can provide useful reference for improving the competitive level and physical quality of badminton players.

1. Introduction

In badminton, physical strength plays an important role [1]. It not only directly affects the hitting effect and moving speed of athletes, but also determines the endurance and adaptability of athletes in the competition [2]. Therefore, in badminton teaching and training, the exercise of physical strength is of great significance. However, there are some problems in the physical strength training in many badminton teaching and training [3]. On the one hand, some coaches pay too much attention to skill training and ignore the importance of strength training, which makes it difficult for athletes to give full play to their own strength in the competition; On the other hand, some coaches don't know enough about the methods and strategies of strength training, so they can't guide athletes to strength training scientifically and effectively [4]. Therefore, this paper aims to explore the methods of physical strength training in badminton teaching and training, in order to provide useful reference and suggestions for coaches.

In order to better understand the research status of physical strength training in badminton teaching and training, this paper sorts out and analyzes the relevant literature. These documents mainly involve the research in sports physiology, sports biomechanics, sports training and other fields. In sports physiology, researchers mainly pay attention to the physiological mechanism of muscle strength, the adaptability of strength training and individual differences. In sports biomechanics, researchers mainly pay attention to the relationship between hitting skills and physical strength, strength training techniques and strategies, etc. In sports training, researchers mainly pay attention to the planning, implementation and evaluation of strength training [5]. These studies provide beneficial enlightenment for us to explore the methods of physical strength training in badminton teaching and training [6]. In this paper, the methods of physical strength training in badminton teaching and training will be discussed. By deeply understanding the methods of physical strength training in badminton teaching and training, we can provide more effective training programs for athletes.

2. The importance of physical strength in badminton

2.1. The influence of physical strength on badminton players

By analyzing the importance of physical strength in badminton competition, we can see that

targeted physical strength exercise is very important to improve the level of badminton teaching and training. First of all, physical strength directly affects the speed and accuracy of badminton players [7]. In badminton competition, fast and powerful hitting is the key to gain an advantage. Athletes need to have high explosive power and speed to achieve effective attack and defense. The size of physical strength directly determines the speed and strength of the player when hitting the ball, thus affecting the accuracy of hitting the ball. Strong physical strength can help athletes take the initiative in the competition, break the opponent's rhythm, and even score directly. Secondly, physical strength has an important influence on the movement speed and flexibility of badminton players. In badminton, players need to quickly move to the best hitting position according to their opponents' hitting methods and positions. This requires athletes to have a high degree of movement speed and flexibility. Strong physical strength can improve athletes' movement speed and reaction time, and make them have better mobility and flexibility in the competition [8]. At the critical moment, this may become a key factor in determining the direction of the game. In addition, physical strength can also improve the physical quality and physical level of badminton players. Targeted physical strength exercise can help athletes improve muscle strength, endurance and speed, and enhance the coordination and stability of the body. These qualities are also crucial for badminton players. Through targeted exercise, athletes can better cope with high-intensity confrontation and long-term competition in the competition, and improve the endurance and competitiveness of the competition. Badminton limb strength training is shown in Figure 1.

Figure 1 Badminton physical strength training

However, it is worth noting that the physical strength training methods in badminton teaching and training need to be arranged and adjusted reasonably according to the individual differences and actual needs of athletes. Different athletes may have different physical conditions and skill characteristics, so it is necessary to make a personalized exercise plan. In addition, with the growth of athletes and the improvement of skills, the exercise methods need to be constantly optimized and updated according to the actual situation.

2.2. The necessity of physical strength exercise

First of all, physical strength training can improve the competitive level and performance of badminton players. Through targeted physical strength exercise, athletes can better cope with high-intensity confrontation and long-term competition in the competition. In the fierce competition, athletes with strong physical strength are more likely to take the initiative, break the opponent's rhythm and even score directly [9]. Therefore, targeted physical strength training can improve the winning rate and competitiveness of athletes. Secondly, physical strength training can reduce the risk of injury of badminton players. In badminton competition, athletes need to start quickly, stop quickly and change direction frequently. If the physical strength is insufficient, it will easily lead to sports injuries such as muscle strain and joint sprain. Targeted physical strength exercise can improve athletes' physical quality and physical level, enhance muscle strength, endurance and speed,

and improve the coordination and stability of the body. Thereby reducing the risk of injury and ensuring the health of athletes. In addition, physical strength training can also cultivate badminton players' will quality and psychological quality. In the process of training, targeted physical strength training can help athletes develop perseverance and courage. These qualities are also crucial for badminton players, which can keep them calm and cope with all kinds of challenges and pressures [10]. At the same time, strong physical strength can also enhance athletes' self-confidence and psychological advantage, making them more calm and confident in the competition.

To sum up, physical strength training is necessary for badminton teaching and training. Through targeted physical strength exercise, athletes' competitive level and performance can be improved, the risk of injury can be reduced, and athletes' will quality and psychological quality can be cultivated. Therefore, in badminton teaching and training, we should pay attention to the importance of physical strength training, make a reasonable exercise plan for athletes and provide professional guidance and support.

3. Badminton teaching and training methods of physical strength training

3.1. Analysis of the existing physical strength exercise methods

In the current badminton teaching and training, the common physical strength training methods mainly include the following:

(1) Equipment training: Equipment training is a method to improve physical strength by using various fitness equipment [11]. Badminton players can enhance their muscle strength and endurance by practicing with dumbbells, barbells, strength training machines and other equipment. However, there are some limitations in instrument training. On the one hand, equipment training is often aimed at specific muscle groups, and it is difficult to improve the overall strength. On the other hand, the way of equipment training is relatively simple, which easily makes athletes feel boring and affects their enthusiasm and effect of exercise.

(2) Physical training: Physical training is a method to improve athletes' physical quality and physical level through a series of aerobic and anaerobic exercises. In badminton teaching and training, common physical training includes running, swimming, skipping rope and push-ups. These trainings can enhance the athletes' cardiopulmonary function, endurance and sensitivity, which is helpful to improve the competitive level of badminton. However, physical training also has limitations. On the one hand, physical training often requires a long time and greater intensity of exercise, which requires athletes' endurance and perseverance. On the other hand, the effect of physical training may not be directly translated into the improvement of badminton competitive level.

(3) Core strength training: Core strength training is a method to improve the stability and balance of athletes by strengthening core muscle groups. In badminton, quick start, sudden stop and direction change all need the coordination of core muscles. Core strength training can help athletes improve the accuracy and efficiency of their movements and reduce the energy loss during exercise. The effect of core strength training is remarkable, and it is widely used in badminton teaching and training. However, core strength training also has some limitations. On the one hand, core strength training needs professional guidance and technical support, otherwise it will easily lead to improper training or injury. On the other hand, core strength training needs to be combined with other strength training methods in order to comprehensively improve the level of physical strength.

To sum up, although the existing physical strength training methods can help badminton players improve their competitive level and physical fitness to a certain extent, there are still limitations. In order to better meet the needs of badminton players, it is necessary to further explore more scientific and effective physical strength training methods.

3.2. Suggestions for improvement

In order to better meet the needs of badminton players, this paper improves the existing methods and puts forward the following suggestions: First, according to the individual differences of

different athletes, it gives targeted strength training guidance. Each athlete's physical condition and skill characteristics are different, so individual differences should be fully considered when making strength exercise plans. For example, some athletes may belong to strength-oriented players and need to strengthen their muscle strength through equipment training; Some athletes may be speed-oriented, and need to improve their competitive level through fast moving and sensitivity training; Some athletes may be endurance-oriented, and need to improve their cardiopulmonary function and endurance through long-term aerobic exercise. The key skills of badminton training are shown in Figure 2.

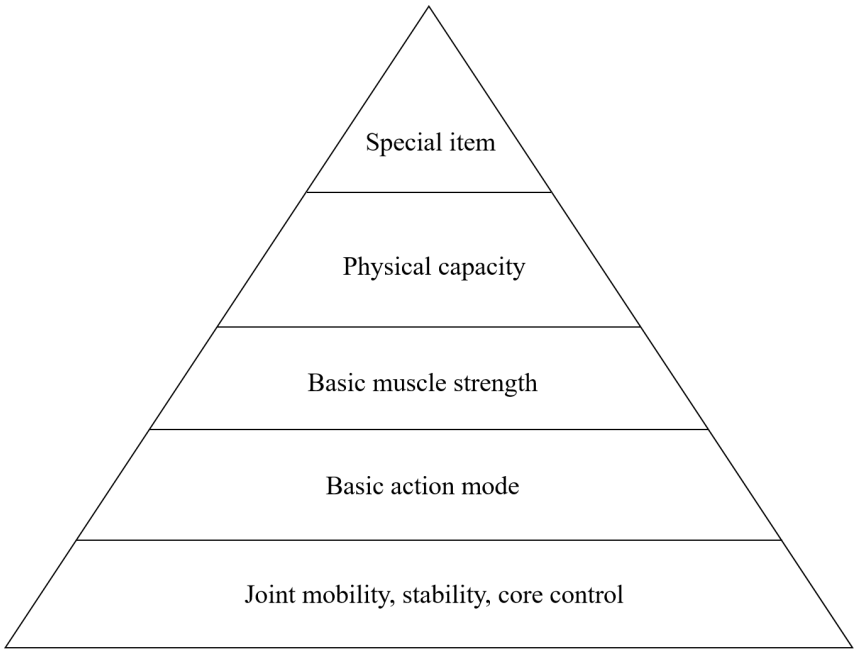

Figure 2 The key skills of badminton training

Secondly, various strength training methods can be used to increase the interest and effect of training. For example: (1) Strength training in game form: Combining strength training with game form can enable athletes to complete training tasks in a relaxed and pleasant atmosphere. For example, sprint training can be carried out in the form of relay race, or sensitivity and reaction speed training can be carried out in the form of dodgeball. These game forms of strength training can make athletes unconsciously improve their physical fitness and physical fitness level in the game. (2) Challenge strength training: By setting challenging tasks with certain difficulty, athletes can improve their strength level in the process of constantly breaking through themselves. For example, set up a series of challenging tasks such as obstacle running, climbing and pulling, so that athletes can improve their muscle strength, endurance and sensitivity in the process of completing the tasks. (3) Comprehensive strength training: By combining various training methods, athletes can get more comprehensive exercise. For example, add flexibility, balance and sensitivity training to strength training, or add speed and strength training to physical training. These comprehensive strength training can help athletes better cope with various situations in the competition. (4) Interesting strength training: By increasing the interest of training, athletes can be more active in strength training. For example, using music to cooperate with training, changing training environment and using novel training equipment can make athletes carry out strength training in a relaxed and happy atmosphere.

Finally, strengthen the strength evaluation and feedback mechanism, and adopt scientific methods to evaluate and feedback the athletes' physical strength. The following are some measures that can be taken: (1) Formulate evaluation criteria: In terms of strength evaluation, scientific, objective and operational evaluation criteria need to be formulated. These standards can include muscle strength test, explosive force test and endurance test. Through the evaluation of these standards, we can fully understand the strength level, advantages and disadvantages of athletes. (2) Functional evaluation: Functional evaluation is a comprehensive evaluation method, which can

fully understand the athletes' physical fitness level, sports skills and physical adaptability. This evaluation method can help coaches better understand the comprehensive ability and potential of athletes and provide a basis for making more targeted training plans. (3) Regular assessment: In badminton teaching and training, it is necessary to conduct regular strength assessment to keep abreast of the changes and progress of athletes' strength. The evaluation results can be used as the basis for adjusting the training plan to make the training more in line with the actual needs of athletes. (4) Establish a feedback mechanism: By establishing a feedback mechanism, athletes can know their strength evaluation results, advantages and disadvantages in time, so as to better adjust their training plans and efforts. The feedback mechanism can include interviews, written reports, data analysis and charts. (5) Make a personalized training plan: Make a personalized training plan for athletes according to their strength evaluation results, advantages and disadvantages. These training plans should include targeted strength training methods and measures in order to better improve the athletes' physical strength level. (6) Strengthen guidance and supervision: In the process of strength training, it is necessary to strengthen the guidance and supervision of coaches to athletes to ensure the scientific and effective training. Coaches can give timely feedback and guidance to athletes through observation, inquiry and demonstration.

4. Conclusions

This paper discusses the methods of physical strength training in badminton teaching and training from two angles of theory and practice. Through research, it is concluded that the importance of physical strength training in badminton teaching and training is shown in the following aspects: (1) improving the hitting effect and moving speed of athletes; Enhance the endurance and adaptability of athletes; Reduce the risk of injury to athletes; Cultivate athletes' will quality and psychological quality. At the same time, through in-depth analysis of the advantages and disadvantages of existing methods, this paper puts forward targeted improvement suggestions. For example: according to the individual differences of different athletes, give targeted strength training guidance; Diversified strength training methods can be adopted to increase the interest and effect of training; Strengthen the strength evaluation and feedback mechanism, and adopt scientific methods to evaluate and feedback the physical strength of athletes. These suggestions are aimed at improving athletes' physical fitness and competitive performance, while reducing the risk of injury. Future research directions can include further verifying and perfecting these suggestions, and exploring more effective strength assessment and feedback mechanisms. At the same time, we can deeply explore the physical strength training schemes of athletes of different ages, sexes and levels, and further study the strength training methods and the internal mechanism of improving badminton skills. In short, in order to better promote the all-round development of badminton players, we should pay more attention to the important position of physical strength training in badminton teaching and training.

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