Research on Physical Training of Badminton Players

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Abstract: Physical fitness is an important basis for improving the level of special technology, and also an effective means to prevent sports injuries. With the continuous improvement of the level of modern badminton sports, the requirements for athletes’ physical fitness are also getting higher and higher. Badminton sports physical fitness has the characteristics of non-periodicity, rapid explosive strength and rapid change. Intensive physical training includes special training of strength, special training of speed and special training of endurance. In view of the characteristics of badminton physical fitness, the comprehensive use of intensive physical training methods, with reference to previous research results, this paper puts forward the strategy of badminton athletes physical fitness training: Adhere to the scientific principles of physical training; Physical training should be premised on not harming the body; Constantly improve the basic skills of badminton; Strengthen sensitive and flexible quality training; Attach great importance to physical functional training.

1. Introduction

Physical ability is the basic physical ability of the human body, which is an important component of athletes’ athletic ability, through the sports quality of strength, speed, endurance, coordination, flexibility and sensitivity. Athletes’ comprehensive special competitive ability, by physical ability, skills, tactical ability, psychological ability and knowledge ability and other factors, there is a close intrinsic relationship between the various factors. In the overall composition of athletes’ athletic ability, physical ability has distinct basic characteristics, which is an indispensable basic condition for the formation and development of various other sub-abilities. Whether it is to complete the action skills, or to achieve tactical cooperation, we need to have muscle strength, speed and other quality of the guarantee, athletes of a variety of quality of development of their psychological state in the game has an important impact, athletes have the sports knowledge, must also rely on the performance and play of their sports quality can be successfully used.

With the continuous improvement of the level of modern badminton sports, the rules of competition are constantly improved, especially after the implementation of the new rules, improve the athletes in the course of the game on the active attack awareness, at the same time, the requirements of athletes’ physical fitness are getting higher and higher. In the course of the game, only the proactive attack can take the lead in the round of the game, and then through the oppressive situation to make the opponent defensive error score, or take the initiative to kill the ball to score. On the other hand, continuous offensive ability on the field requires the athlete’s strong physical ability as support, fast midfield movement and continuous backfield jump, as well as multi-shot rounds need good lower limb rapid movement ability and body anaerobic tolerance to complete. Therefore, the influence of physical factors in the performance of the competition is more prominent. So according to the special characteristics of badminton project, how to use special physical training means to improve the special physical quality closely related to the level of badminton competition is an important issue of common concern to coaches and athletes, which needs to be studied in depth.

2. Characteristics of Physical Fitness in Badminton

Badminton physical fitness has the following characteristics:
(1) Non-periodic. Badminton movement, although the batting of a certain batsman method and mobile footwork, has a certain law, but, because of the direction of the ball to the left and right, the ball angle and arc has high and low, the ball distance has long and short, the ball strength has small and large and other uncertainties, so that the drop point of the ball is fickle. Therefore, there is no fixed law of technical action in motion, all techniques and tactics are done in the “dynamic” situation, the same situation can be used different solutions. This requires the athlete on the field has a full range of attack ability, from the judgment of the direction of the ball, to the start and move of the short time of batting, to use fast, variable speed and change to fully stretch the body, in order to hit a beautiful and powerful ball. This non-cyclical skill characteristic determines that the quality of sports is based on strong speed strength and speed endurance.

(2) Rapid burst power. When a badminton player swings the ball, the upper extremities drive the upper arm muscles and the forearm muscles through the shoulder joints, and finally the bursts from the wrists and fingers, according to the badminton player’s body shape and technical movements on the court to observe, is the burst force through the badminton racket to hit the ball out. Footstep movement is the lower limb through the thighs, calves and feet and other muscles, under the force of the rapid production of explosive force for position change, the human body in a relatively short period of time to reach the designated position, and coordinate the upper limb and torso to complete the batting. This kind of sports characteristics determine that badminton players should have a strong strength quality, the strength of this quality and dynamic speed force combined to produce explosive power. Explosive force requires a powerful and fast force in a short period of time, combined with badminton technical action to complete the batting. Because of the non-time limit of the competition, the speed force of this explosive force is required to have a certain durability, on the basis of speed strength, the development of the resistance of badminton players.

(3) Change rapidly. Badminton flies very fast in space, requiring athletes to have extremely high agility, as well as extremely fast reaction speed, in order to achieve good results. Badminton players in the movement, from one state of motion to another of the speed of action, whether the ball can make a quick and accurate response, directly affect the control and anti-control of both sides of the initiative. Therefore, the implementation of a certain kind of badminton technical action, are inseparable from the rapid response of athletes, accurate judgment, instant start, fast pace movement, fast swing ingress, as well as the fast return after the ball. Athletes not only in the fast-changing pitch to quickly judge the direction, strength and speed of the ball, but also according to the ball to make the right return action, the ball back to the most threatening drop point, which requires badminton players quick and sensitive quality and responsiveness.

3. Importance of Physical Fitness in Badminton

Physical fitness is an important basis for improving the level of special technology, physical fitness is improved, the level of technology is improved very quickly. In physical training, pay attention to the badminton ball special technology related to the small muscle group exercise, fine to the ability to involve the movement force of each muscle, including in the continuous tension between the physical recovery and supplement. It can be seen that good physical reserve is the basis for improving the level of special technology. Good physical fitness can prevent the occurrence of sports injury, flexibility, coordination and strength quality and other development imbalance, it is easy to injury. Muscle strain is very common in sports and should be given enough attention. The active and intense contraction or passive over-elongation of the muscles exceeds the capacity of the muscles themselves, resulting in minor muscle damage, partial tearing or complete fracture of the muscles, known as muscle strain. Due to inadequate preparation activity, the physiological function of a certain part of the muscle has not yet reached the state required to adapt to exercise, insufficient training level, muscle elasticity and strength is poor, fatigue or excessive load, so that muscle function decline, weakened strength, coordination, wrong technical action or exercise when not concentrated, too strong or rough, too low temperature or humidity, poor quality of the field or equipment, can cause muscle strain. Numerous experiences have shown that proper stretching can reduce muscle strain, muscle key sprains, or other damage caused by muscle fatigue.
4. Methods of Strengthening Physical Training

In view of the characteristics of badminton, the following methods can be used to strengthen physical training:

(1) Strength special training. Badminton is characterized by the coordination of the upper and lower limbs, which forces the burst on the racket and hits the ball into the opposing area. Badminton sports, a large number of muscles in most of the time in a state of intense exercise, so badminton sports on the upper and lower limbs, shoulders, torso muscles have a high strength requirements. Physical training should increase the strength of upper and lower limbs and torso muscles. Physical training should increase the strength of upper and lower limbs and torso muscles. The training methods are as follows: First, through the long throw badminton, throwing lead ball, swinging movement, turning arms and other sports, strengthen the strength of the upper limb training; Second, through flexing, lying down, standing up from side to side, sit-up, weight-bearing body, passing the ball and other methods, to complete the torso special strength exercise; Third, through the weight-bearing deep squat, weight-bearing half squat, weight-bearing half squat jump, weight-bearing step, in situ jump, jump rope, jump step and other sports, carry out special strength exercises of the lower limbs.

(2) Speed special training. Badminton movement speed includes reaction speed, motion speed and displacement speed. First, the reaction speed intensive training. Reaction speed refers to the rapid response of athletes to transient signals in badminton. Only with rapid response speed can unique technologies be developed. Reaction speed intensive training, generally using fast start, rapid change of direction, emergency stop, as well as the other side’s position, movement and hints, such as rapid judgment, can promote the brain flexible response training methods. Second, the action speed intensive training, the implementation of a certain action quickly completed called action speed. Badminton mainly refers to the overall speed of movement of the upper limbs. Badminton projects need to move at a fast time, the speed of movement training usually uses high-lift running, fast and slow combination of small running in situ, fast up-and-down, high-frequency jumping steps, fast cross obstacles, single feet and feet alternate rope jumping and other methods. Third, the displacement speed intensive training. On the field, in order to hit the ball to move the position quickly. The athlete’s position moves slowly and quickly, and badminton requires the athlete to have the ability to move quickly over and over again. Displacement speed training usually uses fast running, back-to-back running, four-corner running, back-and-forth running, relay running and crossing obstacles.

(3) Endurance special training. Badminton sports process, is also a short period of time between high-intensity exercise and instant an interval, aerobic exercise and aerobic exercise alternate process, physical energy consumption and recovery imbalance, usually not fully recovered. This requires athletes to have enough stamina to maintain their ability to start quickly in the absence of physical strength. Endurance training includes aerobic training and anaerobic training. First, aerobic endurance intensive training. Increasing the maximum oxygen consumption of athletes is the main purpose of aerobic training. Maximum oxygen consumption directly reflects the athlete’s ability to draw, transmit and utilize oxygen. The training method adopts several sets of fast-medium-speed rhythm practice, cross-country running or constant running interval, which requires that the physiological stress during training is similar to the physiological stress during the competition. Second, aerobic endurance intensive training. Strengthening endurance training in anaerobic conditions can improve the ability of athletes’ muscles to provide anaerobic acid solution, acid resistance to brain cells and blood buffering ability. The training methods used in general include timed running, medium-distance variable speed running and multi-ball training.

5. Strategies on Physical Training of Badminton Players

In view of the characteristics of badminton physical fitness, the comprehensive use of intensive physical training methods, with reference to previous research results, this paper puts forward the following strategies for the physical training of badminton players:
(1) Adhere to the scientific principle of physical training. In the age of sports, any sports training should follow the scientific principle. Physical training can not be blind training, to follow the laws of the human body, unscientific training easy to increase the risk of injury. With the progress of science and technology, sports training more and more rely on advanced technology support, science and technology can better and more accurately reflect the level of training, analysis of training problems, to help athletes to improve the level of competition. In badminton, high-tech video analysis software can reveal the strength of a player’s body muscles, as well as the body trajectory of the ball, can help the player improve the level of training. Adhere to the principle of science, based on the development of scientific training plan. There are many physical training projects, but the impact on the human body is different, through exercise to improve physical fitness, must be based on investigation and research, to develop a realistic, scientific training plan.

(2) Physical training should be premised on not damaging the body. There are many excellent professional athletes who have produced excellent results in their careers and even broken many of the records of the program. However, due to the daily training on the intensity and intensity of the grasp, resulting in some parts of the body injury, not only affect the career of competitive sports, but also have a serious impact on daily life. What’s more, overtraining can even endanger athletes’ lives. Therefore, encourage athletes through a certain intensity of physical training, improve physical fitness, but also hope that athletes carry forward the spirit of hard work and dedication, with tenacious will to overcome the pain in training. However, physical training is to enhance physical fitness, must not be in order to achieve excessive training, the phenomenon of physical damage.

(3) Continuously improve the basic skills of badminton. Athletes on the grasp of badminton technical action, the effect of training is very large, physical training, only repeated practice of standardized technical action, can achieve the ideal training effect, so, in the course of physical training, should be introduced on the basic skills of badminton training. For example, killing ball is the most difficult technical action of badminton, but also one of the most lethal skills, in the physical training of reaction and footwork, the introduction of repeated ball-killing action training, so that athletes feel the ball’s highest point of the approximate position, the formation of a certain muscle memory; Only by forming the memory of the relevant movement can we continuously enhance the ability to react and react most correctly in the movement.

(4) Strengthen sensitive and flexible quality training. Sensitive quality is one of the most important physical qualities of badminton players, good sensitive quality needs the body’s coordination ability, the body’s joint parts coordination and smooth coordination, in order to show the flexibility of movement. Sensitive quality training, can be through the process of acceleration or deceleration exercises, improve the ability to change speed, but also through rope ladder training, improve the flexibility of the foot pace. Flexible quality refers to the range of activity or range of joints, is the embodiment of the ability of joint muscle ligament softening. In badminton, the flexible quality has a great influence on the speed and magnitude of movement, especially in some net front bow-step lifting ball action, good flexible quality is the key factor to complete the large-scale bow-step passive ball. Flexible quality exercises, generally in the post-training stretching and finishing activities, through active or passive means, the main joint muscles to stretch, through static retention to make the muscles relaxed and stretched, and gradually improve the quality of flexibility.

(5) Attach great importance to physical functional training. Functional training is designed to improve the ability of athletes to meet the needs of daily activities to work or play without the risk of injury or fatigue. Functional training has a positive impact on everyone. Safer, more effective tasks, and less effort in everyday life benefit all exercisers. Badminton players can effectively enhance the strength of the core muscle group, promote the stability, balance and flexibility of the body, improve the effectiveness of the nerve muscles, activate the small muscle groups around the deep muscles and joints through functional training in motion preparation training, core muscle training, movement skills training and regeneration training, and it is beneficial to reduce the occurrence of sports injury prevention, establish the correct muscle body sensation, optimize the movement mode, and improve the level of badminton players’ athletics.
References


