

# Research on Innovation of Theory and Practice in Tennis Team Physical Training

Yu Wang

School of Physical Education, Nanchang Institute of Technology, 330044, China

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**Abstract.** Tennis has become a highly competitive sport. Professional tennis players are facing great pressures. Tennis is an elegant sport with more and more intense competition. Athletes need to have the ability of fast movement, strong adaptability and excellent strength quality. Tennis teams need to take an active part in all kinds of competitions in order to achieve better results. They need to launch reasonable and periodic physical arrangement throughout the year to eliminate the situation of physical inadequacy from the root. Based on his own experience, the author shares his theoretical and practical innovative research on tennis team physical training with his colleagues for exchange.

## Introduction

When it comes to tennis, the typical representatives in the hearts of Chinese residents include Li Na and Zheng Jie. This sport has super-high skills. The mode of net-separated confrontation makes the competition fierce. In addition, the situation on the court is varied, which attracts the attention and love of many spectators. With the continuous improvement of the quality of domestic residents' life, tennis as a sport has gradually entered the lives of more people, which provides a realistic condition for the better development of tennis career in China. After famous tennis players, such as Li Na and Zheng Jie, leave the team, their husbands are responsible for their technical training in the early stage, and full-time coaches are hired in physical fitness. It can be seen that tennis players' physical training is important. Not only female tennis players, but also male tennis players have stronger competition intensity, so they need higher physical fitness. Athletes need to complete high-level batting in high-intensity running stage, and have the ability to defend at any time. The world's famous tennis players, such as Federer and Wallinka, are over 30 years old, but they still rank in the top ten in the world. Besides excellent tactical skills, the maintenance of physical training is also a basic and decisive factor, so physical training is very important for tennis players.

## 1. Research on Tennis Physical Training, Strength Training, and Body Metabolism

At present, domestic experts and scholars have a rich research on the physical training of tennis. The main points include the following four points: (1) For tennis players, it is important and necessary to establish a more scientific physical training system to effectively improve the athletes' physical training level; (2) Tennis physical training includes general physical training and special physical training to more fully meet the actual needs of the current arena; (3) Physical training needs to combine the needs of the tennis game to arrange the physical training more systematic and periodic, and pay attention to physical training methods and means; (4) Physical training should have a certain individualized design, and athletes can be trained according to different levels of athletes.

Domestic experts and scholars have relatively comprehensive research on the strength training of tennis programs, including the following points: (1) Pair of strength training programs must be targeted designed according to the actual needs of the project; (2) Key point in strength training is being rapid strength training; (3) The improvement of strength training can enhance the other use of the body and has an important impact on the whole body. It is worth noting that in the tennis match of "best of three", the general race time is 1.5 to 3 hours, and the athlete needs to complete the fast-moving shot in a short time. From the metabolism of the body, the phosphate function

completes the energy metabolism.

## **2. The Physical Training in the General Preparation Stage**

In the general preparation stage, the focus is on prevention of injury and basic strength training. The content of aerobic training, speed and agility training is mainly used, and five days of training are arranged every week. According to the actual situation of the body, a rest on Wednesday and Sunday can be arranged. Preventive injury training is training for shoulder stability, thoracic flexibility training, core strength training, hip flexibility training, and muscle trigger point elimination training. Relatively speaking, the intensity of injury prevention training is low. The key of preventive injury training is to solve the flexibility and stability that occurred in the early test phase to help the body to reduce pain, eliminate the trigger points of muscles and fascia, and reduce the risk of injury to athletes. Preventive injury training is doing once a week. On Tuesday, general speed and training and sensitivity training are conducted. The initial relative intensity is low, and the main training was to improve straight line running, cross-step, side-slip, start-up and stop-and-stop techniques. Later, the distance is gradually increased. Accelerated running, resistance umbrella accelerated running, stretch-belt traction running and other training are conducted for 40-60 hours. minutes of training, you need to rest fully, and your heart rate is below 120 times before completing the next training. On Friday, general aerobic training is arranged. In the initial stage, 5km endurance running and 1h endurance running is mainly used. After that, the rhythm is gradually controlled. The 4km speed running and 4km superman running training are completed, and the heart rate is controlled at about 160 times.

The training on Monday, Thursday and Saturday are focused on basic strength training and regeneration recovery training. Foundation strength training focuses on the body's large muscle group hypertrophy training to increase muscle volume and improve composition. The duration of the course should be controlled in 1-1.5 hours. After jogging, dynamic stretching and nerve activation, basic strength training is conducted by lying-push, squatting and hard pulling. Finally, sitting position and shoulder-lift training are carried out. The number of groups are 4 times, training 15 times and 90 seconds interval. The strength level of athletes is gradually improved, and the difficulty and load of training actions are gradually increased to ensure that the body is in a proper state of stimulation. The initial strength can be 15 RM, and the later the strength can be stabilized at 10 RM to ensure that the next stage can have a physical basis.

## **3. Physical Training in Special Preparatory Stage**

Special training focuses on athletes' explosive power, functional transformation, special speed and sensitivity. This stage is to start training under the general preparation stage. When the number of training days is constant, the training intensity is increased, and the rest is still on Wednesday and Sunday. Functional strength training is conducted on Monday and Thursday. According to the force order in tennis events, coordinated strength of fingers, wrists, elbows, arms, shoulders and the whole body is trained. The training emphasizes the quality of movement and highlights the efficiency of movement. The training time is 40 to 60 minutes, and the intensity is controlled.

After the warm-up exercise such as jogging, dynamic stretching and nerve activation, 25kg barbell swing training, 3kg kneeling posture Swiss ball over the top, 30RM barbell step-up training and 8kg turkey standing training are carried out, followed by Relaxation and active stretching of the foam axial fascia. Venue specific speed training and sensitivity training are held on Tuesday and Friday. According to the mobile route of the simulated competition site, the athletes are designed in terms of content, such as bottom-line reentry running, net-surfing training, bottom-line cross-step sideslip training, oblique quadrangular barrel running training, Z-shaped forward and backward barrel running, bottom-line reentry running and batting training. The time is controlled in 4 to 15 seconds, after training 20 seconds rest is implemented, and the course is performed in about 40 minutes. Training should be simulated as much as possible according to the current frequency of the game, so that the general speed, sensitivity and strength training

accumulated by the athletes in the early stage can be better transformed into special applications to improve the quality of training.

#### 4. Physical Training Arrangements before the Game

Before the official tennis competition, athletes will participate in many simulation competitions. The simulation competitions can show the problems in athletes' physical training. Therefore, in the physical training arrangements before the game, the key points are to maintain strength and explosive power, and improve special speed and sensitivity. According to the actual situation of the athletes, the warm-up action is unchanged. In the functional strength training, 10kg single leg deadlift, 5kg prone Swiss ball single arm dumbbell swivel, 20kg barbell bow step swivel and elastic band impedance positive and negative hand strike ball training is carried out. The number of repetitions of this training is relatively reduced, and the interval time is relatively longer. This is mainly to avoid excessive stimulation of the athlete's body by the training action, highlight the quality of the athlete's completion of the movement, maintain the strength level before the game, and long intervals ensure that the body is in the state of "hot".

The game is in the week of training, and the time is adjusted to rest on Wednesday, Friday and Sunday. Prevent injury training, regeneration recovery training, and core strength training on Monday. This training is mainly to further strengthen the core strength, so that the energy transmission of the upper and lower limbs is smoother. The training of core strength and the training of injury prevention can effectively reduce the probability of athletes' injury, and the time is controlled from 1 to 1.5 hours. On Thursday, functional strength training is carried out. Functional training is highlighted in the characteristics of tennis, and speed training is highlighted. On Saturday, strength training and regenerative recovery training are carried out to maintain the athlete's maximum strength and help them to eliminate the accumulation of fatigue, and the time is also controlled in 1~1.5 hours. Core strength training and injury prevention training increase the core activation project during warm-up, such as, self-weight complete suspension side support swivel abdomen movement, elastic belt test support boating knee lift action, 5kg load weight Swiss ball back arm straight movement, suspension complete Stretching, mini shoulder-spinning and hard-rolling and wall angel training.

#### 5. Conclusion

The physical training of tennis team is theoretically analyzed. Functional movement screening and data comparison before and after training should be carried out. According to the results of the first screening, proper training should be arranged. Competition-oriented training should be conducted in different stages of preparation and competition. Collective training can enhance team cohesion and individual overall quality. Targeted training is to improve personal ability according to the weak link training, which provides a realistic basis for athletes to better play.

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