

Practical Research on Compound Training in Physical Training of Teenage Tennis Players

Liao BingYuan
Fujian Normal University
Fuzhou,350007,Fujian,China

Abstract: Tennis requires a high level of physical fitness. Once physical fitness fails to keep up, its reaction ability and movement speed will decline, and ultimately affect professional development. Therefore, when arranging tennis ball fitness training, we should improve our understanding of the concept of physical fitness training, grasp every sensitive period of teenagers' physical quality development, develop their ability in an all-round way, and also understand the psychological characteristics of athletes. Then combined with the characteristics of modern tennis and the constituent elements of the special physical fitness of young tennis players, that is, moving speed, fast strength, coordination, sensitivity, aerobic endurance and anaerobic endurance, this paper preliminarily discusses the special physical fitness training methods of young tennis players, with a view to providing some help for the physical fitness training of young tennis players.

Keywords: Practical Research; Compound Training; Physical Training; Teenage Tennis Players

1. INTRODUCTION

The safety of physical training for young athletes is the prerequisite and necessary basis for physical training. In daily training, the injuries of young tennis players are mostly caused by limited joint flexibility. Therefore, before physical training, athletes need to roll on the foam axis to activate the muscles participating in the force generation, and roll again after the training to fully relax the muscles and prevent muscle fatigue leading to injury. It is an important guarantee to reduce sports injury.

Tennis, as a sport with high competitive ability such as physical ability, technical and tactical ability and psychological ability, physical ability plays an absolutely important role. A tennis match lasts a long time. If an athlete lacks good physical ability, his psychological ability, technical and tactical ability, and will quality will be limited, and he will not be able to achieve excellent results. To explore a new type of physical training mode, we can rely on the "two types and three stages" competitive sports competition mode for training. "Two types": aiming to establish a reserve physical training mode and a mode of regulating athletes' physical training before competition. The former mainly refers to a kind of exercise mode of medium intensity, increasing the number of physical training and comprehensive training for a long time.

Now the research on the biomechanics of tennis players' ankle joints has developed to a multi-dimensional research perspective. In this paper, the biomechanical characteristics of the ankle joint under the combined motion mode are comprehensively studied from the dynamic point of view by using the camera system, the three-dimensional dynamometer and the surface electromyography synchronization test method. Safety is equally important during training. For example, when carrying out physical training, it is necessary to observe whether the players' movements are standardized from three aspects: breathing, body posture, and movement mode. First, in the aspect of breathing, it is better to inhale the air into the stomach and expand it to the side ribs as far as possible, which helps the body maintain balance; Second, in

terms of body posture preparation, the feet are open, slightly wider than the shoulders, the center of gravity is on the ball of the big toe, and the knee cap is slightly buckled. Tennis is a sport with fine movements, complex and changeable techniques and tactics, and fierce competition, which requires high physical and mental abilities.

2. THE PROPOSED METHODOLOGY

2.1 Guiding concept of physical fitness training for young tennis players

After entering the global information era in the 21st century, with the popularization of advanced technical and tactical essentials, tennis has developed towards the direction of physical fitness and speed. Therefore, physical fitness has become the most important component of tennis competitive ability. The latter is to properly strengthen the amount of training and reduce the number of training before the competition, so that the athletes can adapt to the environment before each competition in advance. The "three stages" refer to the training preparation stage, the training process stage and the training end stage. Different psychological, physical and technical training can be carried out according to different training objectives. Schematic diagram of the moment of the right ankle joint changes with the movement phase during the running of the sudden stop and forward start, which are the sudden stop stage, the buffer stage and the pedal and extension stage. The emergence of the lift-off stage is because the left ankle joint is supported by one foot after the right ankle joint leaves the ground, so the time when the last ankle joint leaves the ground is taken as the cut-off point when the data is intercepted, and the moment after lift-off will appear in the moment diagram of the right ankle joint.

The rapid movement of tennis pace requires a high degree of flexibility in the hips, knees and ankles. The limited movement of any joint will affect the output of the entire leg strength. When doing foot-movement training, we should follow the principle of gradual progress, first practice straight and fast running, then practice lateral movement, and finally practice multidirectional movement. In the training process,

the coach should pay more attention to the stretching movements of the team members' hips, knees and ankles, and focus on the team members who should fall below the hip joint when lying on the ground at the big toe ball of the front foot. According to the analysis in Table 2, the proportion of the movement speed is the highest, with an average score of 4.950 and a weight of 0.268. The descending order of the rear is fast strength, coordination and sensitivity, and with (without) oxygen endurance.

Results obtained in the lateral movement, acceleration and reaction time tests is shown below.

2.2 The content of compound training for young tennis players

In a word, tennis players are the best time to develop the above physical elements in their adolescence, so they should pay enough attention to physical training at ordinary times and carry out targeted training. In the design of individual physical training, the wave method is used to design the physical training plan for each athlete. That is to increase the load of physical training and reduce the load intensity of physical training.

If the intensity of athletes' physical load is directly increased, then the load of athletes' physical training can be reduced. Facts have proved that athletes with strong agile response can bring sufficient time for individuals to make pre-judgment, can win more sufficient time to hit, can better grasp the initiative to hit, and lay a good foundation for winning the game.

Agile response requires long-term training to form a competitive skill. In tennis, the first step after the baseline changes direction is to cross step, and then quickly cross step or restore step back to the proper position to hit the next ball, so as to keep in the middle of the backcourt, so as to move left and right, and not to give the other side too much hit point blank. Comprehensive physical ability refers to the comprehensive application ability of athletes in physical function, physical ability, technology and psychology. When carrying out physical fitness training, not only tennis ball fitness special training, but also comprehensive physical fitness training should be carried out.

3. CONCLUSIONS

In the process of physical fitness training for young tennis players, coaches should constantly improve their understanding of the concept of physical fitness training, apply the concept of physical fitness training throughout the whole process of physical fitness training, grasp every sensitive period of the development of young tennis players' physical fitness, and develop their abilities in an all-round way. At the same time, they should also understand the psychological characteristics of young tennis players, the sensitive period of the development of various sports qualities of young tennis players and the elements of special physical fitness. This paper puts forward the special training methods of movement speed, fast strength, coordination and

sensitivity, and aerobic endurance that can stimulate the training interest of the young tennis players, hoping to achieve the goal of improving the special physical fitness of young tennis players.

4. REFERENCES

- [1] Moran, Jason, et al. "A meta-analysis of plyometric training in female youth: its efficacy and shortcomings in the literature." *The Journal of Strength & Conditioning Research* 33.7 (2019): 1996-2008.
- [2] Bauer, Pascal, et al. "Combining higher-load and lower-load resistance training exercises: a systematic review and meta-analysis of findings from complex training studies." *Journal of science and medicine in sport* 22.7 (2019): 838-851.
- [3] Crang, Zachary L., et al. "Relationship between preseason training load, match performance, and match activities in professional rugby league." *Journal of Strength and Conditioning Research* 36.9 (2022): 2581-2588.
- [4] Gonzalo-Skok, Oliver, et al. "Influence of force-vector and force application plyometric training in young elite basketball players." *European journal of sport science* 19.3 (2019): 305-314.
- [5] Volodchenko, Oleksandr Anatolievich, et al. "The usefulness of performing biochemical tests in the saliva of kickboxing athletes in the dynamic of training." *BioMed Research International* 2019 (2019).
- [6] Tramer, Florian, and Dan Boneh. "Adversarial training and robustness for multiple perturbations." *Advances in Neural Information Processing Systems* 32 (2019).
- [7] Akbaş, Anna, et al. "Application of virtual reality in competitive athletes—A review." *Journal of human kinetics* 69.1 (2019): 5-16.
- [8] Somarakis, Iason, et al. "Model-driven cyber range training: A cyber security assurance perspective." *International Workshop on Information and Operational Technology Security Systems, International Workshop on Model-Driven Simulation and Training Environments for Cybersecurity, International Workshop on Security for Financial Critical Infrastructures and Services*. Springer, Cham, 2020.
- [9] Yuan, Ruihao, et al. "Accelerated search for BaTiO₃-based ceramics with large energy storage at low fields using machine learning and experimental design." *Advanced Science* 6.21 (2019): 1901395.
- [10] Blocquiaux, Sara, et al. "The effect of resistance training, detraining and retraining on muscle strength and power, myofibre size, satellite cells and myonuclei in older men." *Experimental gerontology* 133 (2020): 110860.