

Research on the Physiological Structure and Sports Performance of Youth Tennis Athletes in Hubei Province and Their Relations

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Abstract: Tennis, as a beautiful, elegant and intense sport, is loved by people with its unique charm. There is a good social environment for the development of tennis in Hubei Province, which also provides help for the cause of tennis in China. However, in the process of development, there are many problems, such as single training channels, weak mass base and so on. Through the analysis of teenagers' physiological structure and sports performance, this paper explores the relationship between them.

1. The Physiological Structure of Teenager Tennis Players

1.1 Height

Height is a more intuitive way to reflect whether a person's growth and development is sound. Sports has certain requirements for height. As a more flexible sport, tennis requires more stringent height of athletes. Tennis players are generally taller, so that they can play a normal level, and at the same time, there are some requirements for the proportion of body. Through the analysis of the height of tennis players in recent years, the male players play better in 1.83 meters, while the female players play best in about 1.70 meters.

1.2 Predicting Height

A person's future growth trends and through the detection of various indicators to determine whether teenagers conform to tennis. The indexes of cardiopulmonary function and the quality of sports can determine the future development trend of athletes. These good factors can help the future development of athletes and their performance in the competition.

1.3 Shape

Body shape is determined quantitatively according to the overall situation of the human body, the strength of the body muscles, and related indicators. For tennis, the requirements for the athletes' body shape are strict. Only with good body shape indicators can we play the best state in tennis.

2. Physiological Function of Teenagers Tennis Players

2.1 Heart rate

The test of heart rate can judge the physical condition of athletes. Testing other heart rates after the athletes have undergone intense exercise can let the coaches know the ability of athletes to withstand the amount of exercise. It is better for the coaches to have a slow heart rate in quiet time, a fast heart rate in intense exercise and a short recovery time. Pay attention to your heart rate.

2.2 Hemoglobin

Hemoglobin is the carrier of oxygen in the blood, and it is very important to maintain oxygen transport in the body. The examination of an athlete requires the detection of hemoglobin to avoid accidents caused by lack of oxygen during intense exercise.

2.3 Vision

In tennis matches, the eyes need to always be on the tennis movement, timely judgment of the tennis landing point, starting point, need to accurately determine the position of the ball.

2.4 Position sense

Athletes need to be sensitive to the positioning of the position in the process of competition. In tennis competition, they need to keep running back and forth. After such intense exercise, they need to have a higher sense of the position of the tennis and the position of the attack.

2.5 Proprioception

Athletes' own perception is also extremely important, that is to say, in the game to determine the impact of the ball, the speed of the ball, how to choose the position, with which method to return the bat and other issues, make a judgment in a short time, as well as the athletes' own tennis talent, like the sense of basketball in basketball, tennis also needs. Higher sense of proprioception, to judge the tennis movement.

3. Physical quality

3.1 Speed, strength and endurance

Tennis requires training in speed, strength and endurance. It requires constant running back and forth in the competition, as well as greater strength when swinging the racket. Tennis requires a good grasp of strength. The physical quality of athletes is very high during the whole match.

3.2 Agility

As athletes, the ability to respond to sudden situations is extremely important, we call it sensitive quality. Athletes can play their own level steadily in the competition, make timely adjustments in the face of the opponent's attack and tactical strategy, free from outside interference, concentration and competition, sports performance will also be good. Some tests are carried out on the athletes, and the flexibility of some joints is tested. The overall sensitivity of the athletes is judged by local tests.

3.3 Flexibility

In tennis competition, the flexibility of the body is also the key to win the game. When facing the irregular movement of the ball, the body is flexible. The coach can strengthen the flexibility of the athletes according to some flexibility training. The training results can also reflect the flexibility quality of the athletes themselves.

4. Psychological quality

We can often find that athletes perform well in training and play well on the spot, but in the real competition venue, because of psychological reasons, the competition is not going smoothly. In sports competition, technology is on the one hand, and psychological quality is also related to the overall performance of sports. Athletes dare to fight in the presence, sometimes they can play for too long. When a coach considers an athlete's performance, he can test their psychological quality, will quality and on-the-spot performance. Athletes are required to have good qualities, positive, personality, emotion and motivation in line with socialist core values.

4.1 Self-confidence

Self-confidence is the foundation of all technologies. Strong self-confidence can help athletes maintain a stable state in the course of competition. Confidence can adjust your competition state and make athletes play normally in the face of opponent's cunning and higher fighting skills. But too much self-confidence can also have side effects. Those who are overconfident will lose their judgment in the face of strong opponents and get into a dead end in the whole competition.

Psychological quality affects the normal competition. Excessive self-confidence will make athletes think that victory is easy to get, so they are not well prepared in the game. In a relaxed state, once the other side takes advantage of this shortcoming, it will eventually lead to the failure of the game. It is not enough just to feel confident. We need to keep a vigilance all the time to avoid opponents using their own shortboards to attack.

4.2 Controlling Attention

Athletes themselves have built up great self-confidence, so they need to control self-confidence, concentrate and concentrate in the whole competition. Tennis is a beautiful and complex sport. Athletes should not only isolate the outside environment, but also relieve the pressure brought by their opponents in time, improve their attention, control the outside voice and feeling, so as to facilitate the opponents to make timely coping strategies in the face of the opponent's attack, make timely analysis in the face of the situation on the spot, and make use of it to their own advantage. Conditions to improve the effect of normal competition.

4.3 Control Imagination

In the competition, in the face of the real situation of the game, the athletes can make timely judgments in their hearts, depict in their minds such pictures as offensive and defensive, improve their attention to the game, control their awareness, and maintain great confidence and concentration. However, controlling imagination takes a long time to practice. Imagination can help athletes improve their attention in the stadium and grasp the development trend of competition.

4.4 Controlling energy

Good physical and spiritual performance is determined by a higher material basis. The body should be supplemented with energy in a timely manner, the energy that is missing from the body should be supplemented, the internal functions of the body should be understood, and the defects of the body should be known. Adequate sleep and good nutritional supplements can help the healthy development of the body, more beneficial to tennis matches. After timely supplementation of body energy, we should always keep a positive mental state, establish a strong sense, maintain sufficient self-confidence and self-esteem. Experience the joy brought by the competition, avoid being disturbed by the outside world and affect their physical development. Athletes need to control their bodies, because tennis is a highly flexible sport, athletes themselves lower their energy level, the pursuit of stable development.

5. The relationship between physiological structure and motor performance

5.1 Objects of study

Hubei teenager tennis players, aged 12-18 years old, sent out 110 questionnaires, 12 invalid questionnaires, 98 valid questionnaires, the recovery rate of questionnaires was 89.1%.

5.2 Research method

By means of literature review, the questionnaires were analyzed and sorted out.

5.3 Result analysis

In the Table, we found that the overall score of the Juvenile Tennis Players in Hubei Province is in the middle level, and they scored higher in clear goals and pleasant experiences. Because most teenagers' tennis competitions adopt professional competition system, athletes pay more attention to Zhang and participation in the competition. They like tennis and feel happy in the sport. Due to the influence of parents and coaches, adolescents have no obvious self-consciousness loss characteristics.

Table 1 Fluency Psychology of Juvenile Tennis Players in Hubei Province

Character Name	Average	Standard deviation	Average 95% confidence interval	
	M	SD	Upper limit	Lower limit
Challenge-Skill Balance	13.92	2.98	13.18	14.67
Action-Consciousness Fusion	11.81	3.37	10.97	12.65
Clear goals	16.98	2.19	16.44	17.53
Clear feedback	14.01	2.72	13.34	14.69
Concentration and Current Tasks	15.05	2.93	14.32	15.78
High sense of control	13.11	2.94	12.37	13.84
Loss of self-consciousness	11.44	4.10	10.41	12.46
Time Conversion	11.73	3.32	10.91	12.56
A pleasant experience	16.90	2.46	16.31	17.54

Table 2 Comparison of Mental Fluency between Men and Women Tennis Players

Features	Male		Female		T	P
	SD	SD	M	SD		
Challenge-Skill Balance	14.50	2.87	13.05	1.70	2.091	0.041
Action-Consciousness Fusion	13.50	3.32	11.80	2.50	2.040	0.046
Clear goals	16.90	2.15	16.75	1.62	0.294	0.770
Clear feedback	14.43	2.45	13.05	2.52	2.070	0.043
Concentration and Current Tasks	15.55	3.04	13.90	1.86	2.233	0.029
High sense of control	13.75	2.75	12.10	2.10	2.385	0.020
Loss of self-consciousness	13.36	2.84	12.95	4.66	0.438	0.663
Time Conversion	13.39	2.30	13.00	2.92	0.571	0.570
A pleasant experience	17.39	1.91	17.05	2.35	0.671	0.546

Due to gender differences, there are also some differences in physiological structure, which will affect the performance of athletes in the competition, but also affect the mentality of distant mobilization. Men's specialty is in the early stage of sports competition. The reason for the difference between male and female athletes is that male athletes pay more attention to competition, male athletes' physical quality is higher, female's psychological quality is not high, easy to be nervous and sensitive.

6. Conclusion

In terms of the relationship between physical structure and sports performance, we can see that good physical quality and psychological quality have a lot of influence on the performance of athletes in the competition. Athletes are not nervous and insensitive in the course of competition. They have certain confidence in their tennis skills, and their overall performance will be higher. Athletes need to have a good psychological state in the whole competition process. When they train them, they should strengthen physical fitness exercises to help them learn tennis match skills.

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