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Exploration of Physical Training Pathways in College Tennis Instruction

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Abstract: Tennis, a popular sport in colleges and universities, is deeply loved by teachers and students. However, due to its high physical demands, technical difficulty, and other characteristics, it requires a high level of physical fitness. Compared to competitive tennis, although college tennis instruction may lack competitiveness and involve lower exercise intensity, it still necessitates regular physical training to enhance body coordination, balance, and agility. This can help students stay physically fit while avoiding injuries. This article explores the content of physical training in college tennis instruction, clarifies the important role of physical training, and summarizes a series of physical training pathways to provide reference support for physical training in college tennis instruction.

Keywords: Colleges and universities; Tennis instruction; Physical training; Physical endurance

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1. Introduction

In recent years, tennis, as a highly competitive and full-body sport, has gained popularity and support from a large audience with the rise of various tennis competitions. Many students have also become actively involved in tennis, making it one of the most popular sports in college physical education. Tennis is highly competitive, requiring the involvement of muscles, bones, and joints throughout the body during exercise. Long-term adherence to tennis can effectively improve students' physical fitness and cardiopulmonary function. Physical fitness, as the foundation of tennis, enables athletes to fully utilize their technical skills and complete high-intensity competitive matches [1]. However, in some college tennis instruction, many teachers focus on teaching tennis techniques and movements while neglecting students' physical training, resulting in students lacking sufficient physical fitness to support a complete match and increasing the risk of injury. Therefore, to enhance the quality of tennis instruction in universities, it is essential to place greater emphasis on physical training and select appropriate physical training methods to lay a solid foundation for improving students' tennis skills.

2. The role of physical training in university tennis instruction

2.1. Effective prevention of sports injuries

Tennis is a sport with high intensity, often requiring frequent changes in direction, sudden stops, and jumps during competition, placing significant demands on athletes' muscular strength, skeletal structure, and joint resilience. If athletes lack sufficient physical fitness or fail to warm up adequately, they are prone to cramps and injuries during play. Thus, incorporating systematic physical training can notably enhance athletes' joint flexibility and muscular strength, enabling them to maintain a stable center of gravity throughout the game and significantly reducing the risk of sports injuries. Taking leg muscles as an example, after a period of physical training, the strength of leg muscles will gradually increase, effectively reducing the impact force of body weight during jumping and landing, thereby minimizing the risk of physical injury. Additionally, scientific and reasonable physical training can expand the range of joint motion, preventing restricted movement from causing technical distortions and subsequent sports injuries. Therefore, physical training constitutes a crucial aspect of university tennis instruction, facilitating improvements in students' physical fitness and health levels, enabling them to fully engage in tennis activities, and laying a solid foundation for enhancing their athletic skills [2].

2.2. Enhancing physical endurance

Tennis, played on a large court, demands prolonged running and hitting, placing high requirements on athletes' physical endurance. Insufficient endurance can lead to rapid depletion of physical energy during extended matches, resulting in distorted technical movements, reduced speed, and even injuries sustained while attempting to save balls, thereby detracting from the excitement of the competition. Incorporating basic strength training or aerobic exercises such as long-distance running into daily physical training routines, tailored to students' individual circumstances, can significantly enhance their endurance and cardiopulmonary capacity. This, in turn, strengthens their resistance to fatigue, enabling them to maintain a high level of competitiveness and substantially increasing their chances of victory [3].

2.3. Enhancing psychological resilience

As physical fitness training is a long-term endeavor that cannot be accomplished overnight, and the training process is often tedious and arduous, it is difficult for students to achieve ideal progress if they cannot endure the monotony and hardship of training. However, if students consciously and persistently engage in physical fitness training before undergoing tennis technique training, they can not only improve their physical fitness but also cultivate qualities of perseverance, hard work, and resilience, thereby enhancing their psychological resilience. This will enable them to exercise self-discipline and self-motivation when facing various challenges in the future, and to bravely confront these challenges. Students with good psychological resilience and qualities will also be more courageous in facing various challenges after entering society, laying a solid foundation for their personal development [4].

3. Effective approaches to physical fitness training in college tennis instruction

3.1. Organizing basic physical fitness training

Incorporating physical fitness training into tennis instruction, basic physical fitness training is of paramount importance. Basic physical fitness serves as the foundational ability for tennis technical movements, primarily encompassing fundamental qualities such as flexibility, strength, and coordination. From a practical standpoint, current college students generally exhibit issues such as poor flexibility among males and inadequate

muscular strength among females. Physical fitness training should adhere to the principles of adaptability and comprehensiveness, employing flexible and appropriate methods to enhance students' joint mobility and athletic performance.

Firstly, strengthen joint mobility and flexibility training. During the warm-up phase of tennis activities, static stretching techniques such as side lunges and forward lunges, as well as dynamic stretching exercises like arm circles and high-knee runs, can be employed to mobilize the knees, hips, and shoulders throughout the body. This ensures thorough warming up of joints and muscles, preventing movement deformation and physical injuries during subsequent training. To address the issue of insufficient flexibility in male students, basic physical training should focus on exercises such as dynamic twisting and yoga stretching to gradually improve their flexibility, thereby supporting more extensive movements. For female students with weak muscle strength, localized training methods such as wrist flexion and extension resistance exercises and grip strength training can be employed to significantly enhance wrist strength. This will result in more stable wrists during ball striking and a reduced risk of wrist injuries [5].

Secondly, basic strength and endurance training should be designed specifically in conjunction with tennis techniques. To enhance lower limb muscle explosiveness, exercises like squatting in place, with a 90-degree angle between the thighs and calves, can be adopted to focus on strengthening movement power, supporting rapid starts and movements of the body. Basic training methods such as plank exercises or sit-ups can be used to strengthen the core muscle groups of the back, waist, and abdomen, maintaining body balance during ball striking. Low-intensity, long-duration aerobic training, such as jogging 3 km two to three times a week, can improve physical endurance and cardiopulmonary function, enabling stable physical output during high-intensity rallies. It is important to note that physical training is not achieved overnight and requires a gradual progression. Initially, the focus should be on standardizing movements, followed by a gradual increase in intensity and difficulty to avoid overloading students and causing injuries, which could dampen their training enthusiasm [6].

3.2. Strengthening specialized physical training

After completing basic physical training, students' physical capabilities have been effectively enhanced, and teachers can further strengthen specialized physical training to better serve the demands of tennis techniques. Focusing on the practical abilities required in tennis, such as reaction time, movement speed, balance, and coordination, teachers can conduct specialized training in the following areas:

Firstly, mobility and speed training. Mobility and speed training constitute a fundamental component of specialized physical training. Given the nature of tennis, which demands rapid movement to designated positions and precise ball striking, exercises such as directional change sprints, shuttle runs, or 40-meter sprints can be organized to enhance students' mobility speed. Utilizing a speed ladder for training involves adhering 5 cm-wide square grids to the ground, requiring students to maintain a rapid pace, step into the grids sequentially, and sustain body balance while keeping their center of gravity stable during movement, thereby improving their step frequency control [7]. For students with weaker foundations, a small-step, high-frequency approach through the speed ladder can be adopted, followed by simulating racket-holding and ball-striking actions with both hands to enhance footwork flexibility, as well as improve racket-holding response ability and body balance.

Secondly, balance and coordination training. Throughout tennis physical training, coordination and balance training should be integrated into the entire process. During the teaching of backhand groundstroke techniques, teachers can design a combination of backhand swings and single-leg standing ball-catching exercises. Students

maintain a single-leg support stance, simulating the process of transferring their center of gravity during ball striking. They can also collaborate with other students for ball-catching training, swiftly completing a backhand swing after catching the ball. This gradual improvement in students' hand-foot coordination and center-of-gravity control abilities, along with the ability to perform multiple tasks simultaneously, plays a crucial role in enhancing the precision of their ball striking and body stability [8].

Thirdly, reaction ability and explosive power training. The quality of students' ball striking is largely determined by their reaction ability and explosive power. For technical movements such as rapid body rotation and racket backswing in forehand strokes, daily specialized training can involve organizing students to continuously jump up and down stairs with both feet, focusing on enhancing the explosive power of lower limb muscles. Alternatively, using dumbbells in both hands to simulate racket-swinging actions can exercise the contraction force of hand muscles, gradually improving muscle explosive power through long-term resistance training. For reaction ability training, a method involving random ball throwing by a partner can be employed. One person stands on the opposite side of the court, throwing balls in a straight or diagonal line from different directions, while students need to quickly judge the landing point and catch the ball with their bare hands before it hits the ground, emphasizing the reduction of students' reaction time for ball catching.

3.3. Scientifically designing training programs

Physical training is a long-term endeavor that necessitates tailoring approaches to the varying training needs of students at different stages. Given the significant disparities in physical fitness among college students—some exhibiting strong flexibility but weak explosive power, while others demonstrate high endurance but lack muscular strength—and considering that tennis instruction is typically conducted on a semester-by-semester basis, training programs must be dynamically adjusted in accordance with actual conditions to enhance the effectiveness of physical training.

Teachers can organize physical fitness tests, such as vertical jump height, grip strength, and 30 m sprint time, to comprehensively evaluate each student's initial physical condition and establish layered goals accordingly. For students with weak muscular strength, a stepwise training program incorporating push-ups, standard push-ups, and weighted push-ups can be implemented. For those with poor coordination, composite exercises involving agility ladders with a racket and balance pads with a racket can be organized. Training intensity should be maintained at a moderate level based on students' physical fitness levels, with heart rates consistently ranging between 70% and 80% of the maximum heart rate during exercise. For initial training sessions, the duration should not exceed 40 minutes, gradually extending to 60 minutes as students' adaptability improves. By progressively increasing challenges, students' interest in training can be sustained, ensuring their full engagement [9].

Aligned with semester-specific teaching or competition schedules, physical training can be structured in a phased manner, encompassing foundational training, specialized training, and pre-competition adjustment phases. The foundational training phase focuses on comprehensively enhancing students' flexibility, endurance, and core muscle strength, laying a solid foundation for learning various technical skills later on. The specialized training phase aims to elevate students' tennis skills, with a primary emphasis on explosive power, speed, and coordination, addressing issues such as body imbalance and unstable ball striking during movement. During the pre-competition adjustment phase, the intensity and duration of physical training are reduced, with a focus on enhancing students' reaction speed and explosive power. Additionally, appropriate massage and stretching techniques are employed to alleviate muscle fatigue, prevent injuries, and ensure optimal performance in

competitions.

3.4. Establishing phased goals

The essence of tennis lies in accurately striking and counterattacking the ball during rapid movement, thus demanding a core-dominated and multidimensional approach to physical fitness. Daily physical training should focus on enhancing core stability to lay a solid foundation for executing technical movements. Core stability primarily refers to the ability of the core muscle groups in the pelvis, waist, and abdomen to maintain a neutral position during movement, preventing imbalances in the center of gravity from affecting the accuracy and power of strikes. Static support exercises, such as plank holds, should be performed with the body in a straight line, supported by both arms, lasting 60 to 90 seconds per set, for a total of three sets. Additionally, resistance rotation exercises should be organized, where students fix their feet and rapidly throw a medicine ball to both sides with both hands, performing 15 throws per set, for a total of three sets. By adopting this approach, students' physical fitness can be steadily improved, while their technical skills will also be elevated.

4. Conclusion

In summary, physical training is a fundamental component of college tennis instruction. By formulating scientific and reasonable training plans and setting phased goals, students' endurance, flexibility, agility, explosive power, and psychological resilience can be effectively enhanced, reducing the risk of injury and laying the groundwork for improving tennis skills.

Disclosure statement

The author declares no conflict of interest.

References

[1] Chen Z, 2023, Research on the Application of Multidimensional Training Methods in College Tennis Teaching. Sports Style, (12): 68–70.

[2] Shi M, 2023, Analysis of College Tennis Teaching Strategies Based on Physical Fitness Training. Tennis World, (12): 71–73.

[3] Liu L, 2023, Discussion on Sports Injuries and Preventive Measures in College Tennis Teaching. Tennis World, (10): 91–93.

[4] Lei Y, 2023, Research on Special Physical Fitness Training Methods for High-Level College Tennis Players. Sports and Health, 2(03): 110–112.

[5] Han D, Peng X, 2020, Current Application Status of Multi-Ball Training Method in College Tennis Teaching in China. Stationery & Sporting Goods, (06): 220–221.

[6] Zhang Y, 2021, Reflections on the Integration of Teaching and Training Methods in College Tennis: A Review of "Tennis Teaching and Training." Chinese Journal of Tropical Crops, 42(10): 3119.

[7] Shi X, Shi L, 2021, Problems and Methodological Measures in College Tennis Teaching and Training. Contemporary Sports Technology, 11(06): 52–53 + 56.

[8] Yan S, 2020, Experimental Research on the Impact of Core Strength Training on College Students' Tennis Baseline Hitting Ability, dissertation, Guangzhou Sport University.

[9] Yu H, 2020, Analysis of the “Project Teaching + Physical Fitness Training” Teaching Model in College Tennis Courses. Research on Ice and Snow Sports Innovation, (20): 79–80.