

TENNIS PRACTICE EFFECTS ON MALE COLLEGE STUDENTS' PHYSICAL FUNCTION IN DIFFERENT CLASSES



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EFEITO DA PRÁTICA DO TÊNIS EM DIFERENTES CLASSES SOBRE A FUNÇÃO FÍSICA DOS ESTUDANTES UNIVERSITÁRIOS MASCULINOS

EFFECTO DE LA PRÁCTICA DEL TENIS EN DIFERENTES CLASES SOBRE LA FUNCIÓN FÍSICA DE ESTUDIANTES UNIVERSITARIOS VARONES

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ABSTRACT

Introduction: Recent studies corroborate the statement that tennis practice affects the physical health of college students differently, depending on the evolutionary class in this sport. However, it is still necessary to consolidate a theoretical basis for college students to maximize the gain of benefits tennis practice, as a reference for teaching and updated training. **Objective:** Provide a scientific and theoretical background to guide the physical exercise of college students. **Methods:** An experimental study on different periods of tennis exercises in different classes during 16 weeks was carried out on 60 college students. Biological and anthropometric data were collected and statistically analyzed to verify the effects of the interventions. Maximizing results and best sports practices were discussed. **Results:** The relatively long duration of a single exercise in tennis can improve the recovery rate of the cardiovascular response load, achieving greater gain from cardiovascular exercise. After 16 weeks of tennis exercise, both groups' progression rates significantly improved compared to college students with less practice. **Conclusion:** Tennis exercise can improve lung function and cardiac function in male college students; the improvement in the physical function of students who practice tennis three times a week is significantly higher than male college students who practice tennis once a week. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

Keywords: Students; Physical Fitness; Tennis.

RESUMO

Introdução: Estudos recentes corroboram para a afirmativa de que prática do tênis afeta diferentemente a saúde física dos universitários, dependendo da classe evolutiva nesse esporte. Porém ainda é necessário consolidar uma base teórica para os estudantes universitários maximizarem o ganho dos benefícios da prática tênis, como uma referência para o ensino e treinamento atualizado. **Objetivo:** Fornecer embasamento científico e teórico visando orientar o exercício físico dos estudantes universitários. **Métodos:** Um estudo experimental sobre distintos períodos dos exercícios de tênis em diferentes turmas durante 16 semanas foi realizado em 60 universitários. Os dados biológicos e antropométricos foram coletados e analisados estatisticamente para verificar os efeitos das intervenções. Discutiuiu-se a maximização dos resultados e as melhores práticas esportivas. **Resultados:** A duração relativamente longa de um único exercício no tênis pode melhorar a taxa de recuperação da carga de resposta cardiovascular, obtendo maior ganho com o exercício cardiovascular. Após 16 semanas de exercício no tênis, o índice de evolução dos dois grupos foi significativamente aprimorado em comparação com o índice evolutivo dos estudantes universitários com menor prática. **Conclusão:** O exercício de tênis pode melhorar a função pulmonar e a função cardíaca dos estudantes universitários do sexo masculino, a melhoria da função física dos estudantes que praticam tênis três vezes por semana é significativamente superior aos estudantes universitários masculinos que praticam tênis uma vez por semana. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Estudantes; Aptidão Física; Tênis.

RESUMEN

Introducción: Estudios recientes corroboran por la afirmativa que la práctica del tenis afecta de manera diferente a la salud física de los estudiantes universitarios, dependiendo de la clase de evolución en este deporte. Sin embargo, sigue siendo necesario consolidar una base teórica para que los estudiantes universitarios aprovechen al máximo los beneficios de la práctica del tenis, como referencia para la enseñanza y la formación actualizada. **Objetivo:** Proporcionar fundamentos científicos y teóricos para orientar el ejercicio físico de los estudiantes universitarios. **Métodos:** Se llevó a cabo un estudio experimental sobre diferentes periodos de ejercicios de tenis en diferentes clases durante 16 semanas en 60 estudiantes universitarios. Se recogieron datos biológicos y antropométricos y se analizaron estadísticamente para verificar los efectos de las intervenciones. Se debatió sobre la maximización de los resultados y las mejores prácticas deportivas. **Resultados:** La duración relativamente larga de un único ejercicio en tenis puede mejorar la tasa de recuperación de la carga de respuesta cardiovascular, consiguiendo una mayor ganancia del ejercicio cardiovascular. Tras 16 semanas de ejercicio de tenis, el índice de evolución de ambos grupos mejoró significativamente



en comparación con el índice de evolución de los estudiantes universitarios con menos práctica. Conclusión: El ejercicio de tenis puede mejorar la función pulmonar y cardíaca de los estudiantes universitarios varones, la mejora de la función física de los estudiantes que practican tenis tres veces por semana es significativamente mayor que la de los estudiantes universitarios varones que practican tenis una vez por semana. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptor: Estudiantes; Aptitud Física; Tenis.

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INTRODUCTION

A popular movement around the world, which originated in developed Europe, flourished in the United States and spread to the world in the 19th century. In 1994, The China University Tennis Association is established in the capital and holds regular college tennis tournaments every year.¹ The competition sets up high bonuses, Stimated college students' enthusiasm to learn tennis, The establishment of the association and the success and holding of the competition promoted the development of tennis on campus; Driven by education, Tennis is being popularized rapidly in our country, Tennis drives industrialization by campus. Constantly improve the physical quality of the senior students, It is an important means to be in line with The Times; Tennis is both entertaining and competitive. Not only to exercise your physical fitness, Strengthen the quality of the will, It fits the situation of physiological development at all ages, In the context of the lifelong sports era. Its value has been highly affirmed by people from all walks of life; But the tennis history is short.² The campus development is not mature, Lack of teaching mechanism and content, And is restricted by the site and equipment, Low course selection volume (participation rate); The most important thing in tennis courses is to cultivate your sentiment, Promoting personality development, Must conform to the contemporary educational goals. Focus on combining knowledge and skills with professor, Content standardization, Cultivate students' habit of lifelong exercise.³

Today's physical education teaching advocates health quality education. The purpose of school physical education is to teach students sports knowledge, methods and skills, cultivate students' "lifelong sports" thought, develop students' physical quality in an all-round way, and enhance students' physical fitness.⁴ Tennis class is a major project of college physical education class, and the number of students is large. The inherent characteristics and value of tennis make more and more people gradually join the ranks of tennis. Compared with other sports, tennis has a higher value of its own exercise.⁵ The academic community has carried out in-depth research and discussion on the exercise value of tennis from different perspectives of its own field. To sum up, the above materials are all related to tennis. The research related to tennis technology has reached a high level, and the research on tennis's psychological health has gradually been paid attention to. At present, the current situation of tennis in colleges and universities in China is different.⁶ There are many problems in the implementation of tennis in colleges and universities. The correct reasons are summarized and corresponding measures are put forward to promote the steady development of tennis in colleges and universities.⁷ Therefore, to study the influence of tennis teaching on students' physical health, to find out the problems existing in teaching, and to improve the theoretical basis to improve the teaching method of tennis class.⁸ In This paper, the experimental study of tennis sports for 60 boys in 16 weeks of different classes is to implement the spirit of "the CPC Central Committee and the State Council on strengthening the physical education" proposed by the decision of deepening the education reform."⁹ In line with the college students for physical exercise to provide scientific and reasonable theoretical guiding ideology

for the purpose, keep up with the trend of The Times to tennis project as a starting point, reveal different classes of tennis on the influence of university boys physical health is different, provide theoretical basis for college students for tennis exercise, and provide a reference for tennis teaching and training.¹⁰

Research object and method

Subjects of study

A total of 60 boys from 2 tennis classes of 2012 in Wuyi University were selected as research subjects (non-sports students), one of which was 1 time / week (S1) and the other class was 3 times / week (S2). The selected research subjects were freshmen without any tennis experience. The basic information of the study subjects is shown in Table 1.

The study is Purely observational studies which no need to registry ID of ICMJE, and all the participants were reviewed and approved by Ethics Committee of Xinyang University, China (NO. 2021015)

Research method

Literature method: search the information of physical function, tennis and institutional health through CNKI;

Physical fitness test method: the physical health indicators are tested according to the national physical health indicators test methods and standards;

Mathematical statistics method: SPSS17.0 software is used to calculate the data obtained before and after the experiment. Data are shown with the mean soil standard deviation. Comparison between groups was performed by the independent sample T test and the paired sample T test.

Teaching experiment design

In this paper, 60 students from two administrative classes of compulsory university public sports courses are selected, and the actual sample size is 60 (considering that the experiment subjects cannot be conducted normally due to physical reasons, and 10 are candidates), and the experiment subjects are randomly divided into 2 groups, one is control group (n=35); the other group is experiment (n=35). In order to exclude other unrelated factors, the gender, age, culture and other factors of the two groups were controlled to ensure that the subjects and the control group did not participate in this experiment, including 15 boys in the control group, the experimental group and 20 girls in the experimental group.

Using univariate experimental analysis, the two groups, after test, and compare test results, after random sampling, compare two groups of basic quality and physical quality test, and collect data comparative analysis, ensure the experiment before the experiment and the control object in the same " level, the test and test experimental data processing with t-test method. Independent variable: Physical function training.

Table 1. Basic information table of the study subjects.

| Number of people (n) | Height (cm) | Body weight (kg) | Age (years) |
|----------------------|-------------|------------------|-------------|
| S1 (n=30) | 170.77±3.85 | 59.26±5.62 | 19.77±1.19 |
| S2 (n=30) | 172.23±3.40 | 63.1±4.75 | 19.67±1.15 |

Cause variable: tennis forehand action learning effect irrelevant variable control: before the experiment and experiment group, student age and gender, technical level of students, teaching experiment time and place, teaching content, teachers, to ensure that there is no difference between groups in irrelevant variables, avoid the influence of irrelevant variables on the experiment, the teaching experiment belongs to single blind experiment, in addition to the teacher, students do not know to participate in the experiment.

This teaching experiment includes four stages: teaching implementation test, teaching implementation, teaching experiment test and teaching experiment test. According to the idea of writing, the experimental group and control group adopted the tennis training method of physical function training and traditional physical training respectively. The influence of different training methods on the four evaluation indexes of tennis forehand hitting is analyzed. The experiment uniformly arranged the university public body tennis class of the same grade, with tennis forehand hitting as the main teaching content, the experimental course is held by the same tennis teacher, conducted 16 weeks of 32 class hours of tennis course, and ensured that the time load of each tennis course is consistent. In the special training stage of the experimental group, the physical function training was integrated, and the heart rate and exercise load of the two groups of experimental subjects were monitored and adjusted in time, and the subjective feedback of the experimental subjects after each class was timely accepted to ensure the secret of the experiment in the experiment process. The specific experimental ideas presented in this paper are shown in Figure 1.

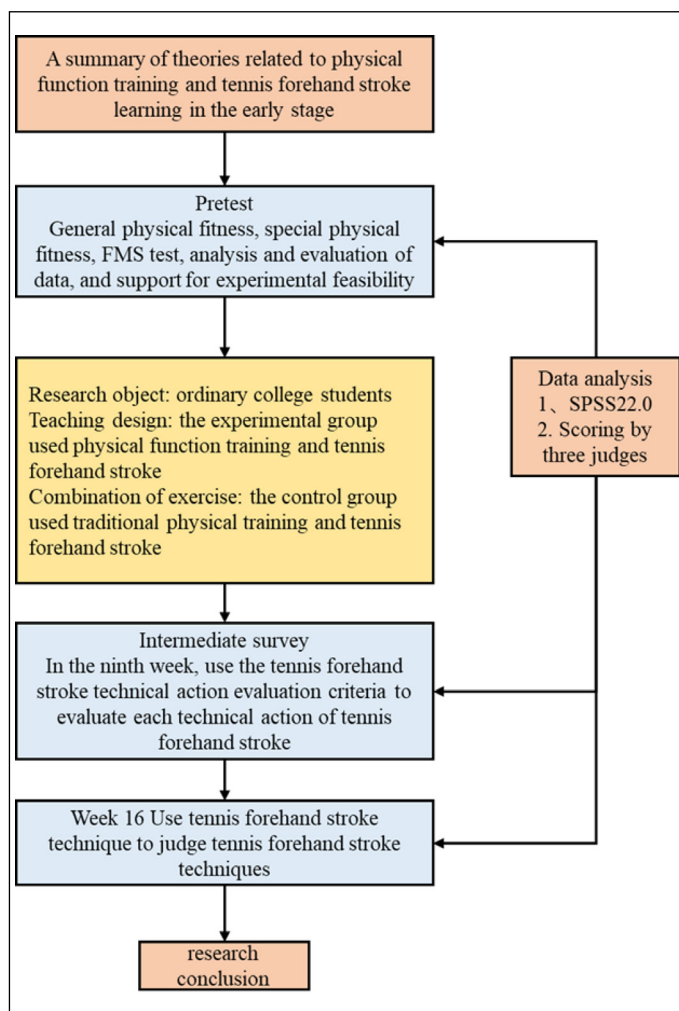


Figure 1. Experimental ideas.

Experimental result and analysis

Experimental result

As shown in Table 2, after 16 weeks of tennis exercise, lung performance in S1 ($P < 0.05$); in S2 ($P < 0.01$), and in S1 and S2 ($P < 0.05$). After 16 weeks of tennis exercise, the step index of S1 was significant ($P < 0.05$), the step index of S2 was very different ($P < 0.01$), and the increase of S1 and S2 ($P < 0.05$). It suggests that tennis has obvious effect on improving the step index of male college students. According to the results of this study, after 16 weeks of different times of tennis practice, the improvement of the step index was significantly different.

Experimental analysis

The effect of tennis exercises on the lung capacity of male college students: Pulmonary capacity is the total amount of gas exhaled after the human maximum inhalation, which effectively reflects the potential of respiratory function. From the perspective of human anatomy and physiology, the factors affecting the vital capacity include the development of respiratory muscle, the capacity of the chest wall, and the size of the chest, etc. If the strength of respiratory muscle is enhanced and the capacity of lung tissue is improved, the vital capacity will also change accordingly. Other studies have shown that tennis strengthens the depth of breathing, increases the number of alveolar vessels, increases the market capacity, and increases the strength of the respiratory muscles, so the more exercises, the more opportunities to exercise and the more abilities. After 16 weeks of tennis exercise, the lung capacity of the two groups of male college students was significantly improved. The results of this study are consistent with this conclusion.

In this experiment study the subjects are beginners, although after 16 weeks of tennis practice, the subjects still can't coordinate the whole body strength on the ball, most of the power is the ground but the legs to the hip, in the process of the body in force, leg strength is rarely used. S1 group practice less, the mastery of tennis technology is less unfamiliar back and forth, pick up the ball more waste practice time, so the human chest muscles, diaphragm, intercostal muscles and intercostal muscles and respiratory aid muscle strengthening range is relatively low; S2 group practice time, tennis technology more skilled continuous hitting rounds on the upper body hit more times, so the human pectoralis muscle, diaphragm, intercostal muscles and intercostal muscles and respiratory aid muscles are strengthened. It is suggested that the increase in the lung capacity of male college students with more practice times is significantly different.

The influence of tennis practice in 16 weeks on the step experiment of male college students: Step test is generally a quantitative load experiment used to evaluate the function of the human cardiovascular system, and the experimental results are expressed by the step test index. The test assessed the function of the cardiovascular system by observing the same speed of the same time required for the heart rate to return to a quiet state after exercise. Previous studies showed that the relatively long duration of a single exercise in tennis can improve the recovery rate of cardiovascular response load, and get more cardiovascular exercise. After 16 weeks of tennis exercise, the step index

Table 2. Results of the physical function test indicators of male college students before and after the experiment.

| Indicators | S1 (N=30) | | S2 (N=30) | |
|-----------------|----------------|----------------------|----------------|----------------------|
| | Pre-experiment | After the experiment | Pre-experiment | After the experiment |
| Spirometry (ml) | 3867.2±376.28 | 3907.87±360.54* | 3884.67±366.37 | 4082.67±295.79*** |
| Step Index | 51.22±3.28 | 51.62±3.21* | 51.64±3.81 | 53.72±3.73*** |

Note: * $P < 0.05$ in S1 and S2, significant difference ** S1 and $P < 0.01$ within S2, very significant difference. # Comparison between S1 and S2 was $P < 0.05$, $P < 0.01$, and S1 and S2.01, with very significant differences.

of the two groups was significantly improved compared with the step index of the fewer male college students. The results of this study are consistent with the previous study.

CONCLUSIONS

Tennis exercise can promote the improvement of lung function and heart function of male college students. The improvement of physical function of male college students with more practice times is obviously different than the improvement of physical function of male college students with less practice times. Tennis exercise has an obvious effect on promoting the physical enhancement of male college students. The characteristics of tennis fitness have an obvious effect on the enhancement of cardiovascular

system function and respiratory system function of male college students. Tennis exercise 3 times a week is a better effect on enhancing physical fitness than tennis exercise once a week. It is suggested that colleges and universities should fully consider this point when promoting and popularizing tennis sports. The results of 16 weeks of tennis exercise show that the more beginners hit the rounds, the more obvious. It is suggested that more attention should be paid to cultivating students' playing ability in the arrangement of college tennis courses, and the number of tennis walls should be increased in the field as possible for students to practice.

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