

TENNIS INFLUENCES ON THE PHYSICAL HEALTH OF FEMALE UNIVERSITY STUDENTS

INFLUÊNCIAS DO TÊNIS NA SAÚDE FÍSICA DAS UNIVERSITÁRIAS

INFLUENCIAS DEL TENIS EN LA SALUD FÍSICA DE LAS UNIVERSITARIAS



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ABSTRACT

Introduction: Tennis is a confrontational sport that combines aerobic exercise with anaerobic exercise. Long-duration tennis can significantly improve female college students' physical qualities, such as strength, flexibility, sensitivity, and endurance, and help improve their physical health. **Objective:** Verify tennis's influences on female college students' physical health through long-duration tennis training. **Methods:** This paper aims to explore the influence of tennis on college students' physical health to provide some theoretical basis and practical guidance for colleges and universities to conduct tennis elective courses. **Results:** The elective tennis course has a good influence on the body shape of female college students. **Conclusion:** The university students' vital and aerobic metabolic capacity were significantly improved, and cardiac function was effectively benefited. The sport of tennis promotes blood flow and improves cardiopulmonary function. An influence on the height of female college students was not found. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

Keywords: Tennis; Students; Health.

RESUMO

Introdução: O tênis é um esporte de confronto que combina o exercício aeróbico com o exercício anaeróbico. O tênis de longa duração pode melhorar significativamente as qualidades físicas das estudantes universitárias femininas, tais como força, flexibilidade, sensibilidade e resistência, e ajudar a melhorar sua saúde física. **Objetivo:** Verificar as influências do tênis na saúde física das universitárias através do treino em tênis por longa duração. **Métodos:** Este trabalho visa explorar a influência do tênis na saúde física das estudantes universitárias, a fim de fornecer alguma base teórica e orientação prática para que faculdades e universidades realizem cursos eletivos de tênis. **Resultados:** O curso eletivo de tênis tem uma boa influência sobre a forma corporal das universitárias. **Conclusão:** A capacidade vital das estudantes universitárias e a capacidade metabólica aeróbica foram significativamente aprimoradas, e a função cardíaca foi efetivamente beneficiada. O esporte de tênis promoveu o fluxo sanguíneo e melhorou a função cardiopulmonar. A influência sobre a altura das estudantes universitárias não foi constatada. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Tênis; Estudantes; Saúde.

RESUMEN

Introducción: El tenis es un deporte de confrontación que combina el ejercicio aeróbico con el anaeróbico. El tenis de larga duración puede mejorar significativamente las cualidades físicas de las estudiantes universitarias, como la fuerza, la flexibilidad, la sensibilidad y la resistencia, y contribuir a mejorar su salud física. **Objetivo:** Verificar las influencias del tenis en la salud física de las estudiantes universitarias mediante un entrenamiento de tenis de larga duración. **Métodos:** Este trabajo tiene como objetivo explorar la influencia del tenis en la salud física de las estudiantes universitarias con el fin de proporcionar una base teórica y una orientación práctica para que los colegios y universidades realicen cursos electivos de tenis. **Resultados:** La asignatura optativa de tenis tiene una buena influencia en la forma del cuerpo de las estudiantes universitarias. **Conclusión:** La capacidad vital de las estudiantes universitarias y la capacidad metabólica aeróbica mejoraron significativamente, y la función cardíaca se vio efectivamente beneficiada. El deporte del tenis favorece el flujo sanguíneo y mejora la función cardiopulmonar. No se encontró una influencia en la estatura de las estudiantes universitarias. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptores: Tenis; Estudiantes; Salud.



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INTRODUCTION

In the 21st century, the economic development and the improvement of living standards have brought unprecedented impact on the mind and body of modern college students. The great pressure is mainly reflected

in the aspects of individual food, clothing, housing and transportation, study and life, dealing with people and social interaction, etc. It is the main health condition and existing problems of contemporary college students.¹ Because of the characteristics of tennis, such as fast ball speed,

variety, fitness and fun, college tennis elective courses have also taken a share in many selected sports, and occupy a more important position.² As a special cultural group in society, college students are the main source of talents in all levels of society and the backbone of national development. Their physical health is one of the important signs of the comprehensive strength of the national population and the necessary guarantee of national human resources.³ According to the monitoring data of students' physical health, the level of college students' physical shape index is increasing, the quality index of strength needs to be improved, and the nutritional status also needs to be improved. The index of students' vital capacity is on the rise, but overall, the physical health of college students has obviously declined.⁴ At present, the overall situation of Chinese students' physical health is still worrying, so it is necessary to intensify the work and further strengthen school physical education. Therefore, it is still necessary to deepen the reform of the teaching mode of physical education in colleges and universities, and constantly improve the physical quality of college students.

Tennis is about winning the sense of beauty and rhythm. Girls don't need much effort to play tennis, but they can cultivate the rhythm of their movements and the coordination of their bodies, and enhance the temperament and beauty of the students.⁵ At present, the overall situation of Chinese students' physical health is still worrying, so it is necessary to intensify the work and further strengthen school physical education. Although elective courses are a way to improve students' physical health, the differences in selected items, teaching forms, teaching materials and teaching methods will inevitably lead to different influences on students' physical fitness.⁶ As a fashionable sport, tennis has been developed in many colleges and universities, and the elective course of tennis has become a popular course for female college students.⁷ After studying elective courses, whether the female college students' physical health level has reached the desired level, what is the difference in the degree of influence of each project on their physical fitness, and how much it promotes the comprehensive physical fitness of college students, are the problems facing the current college researchers.⁸ This study takes tennis as a means of exercise, formulates sports intervention programs, analyzes the influence of tennis elective courses on female college students' physical health, and provides some theoretical basis and practical guidance for improving female college students' physical health and optimizing the teaching mode of tennis elective courses.

Characteristics of tennis

Tennis is a civilized, elegant, fashionable, physical and mental sport, which has been favored by college students for its unique charm since it first entered Chinese universities.⁹ At the same time, tennis elective course has become a popular course for female college students. Tennis is a net-separating antagonistic event that combines aerobic exercise with anaerobic exercise. Through long-term tennis training, female college students' vital capacity and aerobic metabolism ability have been significantly enhanced, their heart function has been effectively improved, blood output has been promoted every time, and finally their cardiopulmonary function has been improved. Based on this, tennis has the following characteristics: ① Tennis is a whole-body, aerobic and anaerobic sport. ② Tennis is a difficult sport to get started. ③ Tennis is a sport suitable for men, women and children.¹⁰ ④ Tennis has high ornamental and commercial value. Based on the changes of physique indexes of female college students before and after tennis elective course, this paper obtains the intervention effect of tennis on female college students' physique, and then puts forward corresponding research countermeasures, providing theoretical basis for improving college students' physique through tennis elective course in the future.

Research object and method

Experimental method

In this paper, the influence of tennis elective course on female college students' physical health is taken as the research object, and 300 female college students in a university are selected as the research object. Students take 20-week elective courses, one required course per week and two voluntary courses on weekends. Before and after the experiment, the subjects were tested with the same equipment, and the real data of each physical health index of the subjects were collected. Select the height, weight, vital capacity and other indicators for comparison before and after the experiment.

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 North China University of Water Resources and Electric Power, China (NO. 2022017)

Literature data method

By searching the information about college students, physical health and tennis through university libraries and the internet, we can get the information about the current situation of female college students' physical health and the influence of tennis on female college students' physical health, thus providing more detailed theoretical reference materials for this study.

Mathematical statistics

All data are expressed as mean standard deviation ($\bar{x} \pm s$). Within-group T-test was adopted, and the significance level was $P < 0.05$. All data statistics were completed by SPSS.

Experimental purpose

After 20 weeks of tennis training, the physical health indexes of female college students before and after the experiment were tested.

RESULTS AND ANALYSIS

In this index, height can be used to evaluate the physical development and health status of female college students. Influenced by factors such as height inheritance, nutrition, environment, living habits and sports. Weight can be used as one of the important indicators to reflect and measure a person's health status. Generally, it reflects the symmetry of a person's body together with height. Body mass index (BMI) is an important index to evaluate the level of human morphological development, nutritional status and body symmetry, which can indirectly reflect the body composition of human body. Sebum thickness is an important index for inferring the body fat content and judging the development of subcutaneous fat. Sebum thickness is usually measured in the upper arm, amine and buttocks. In this study, the sebum thickness was measured in the legs, abdomen and arms. The influencing factors of sebum thickness are mainly related to nutritional status and physical exercise. Vital capacity refers to the maximum amount of air exhaled by a person after inhaling fully, which reflects the maximum capacity of lung ventilation at one time. It can fully reflect the lung ventilation function, and it is one of the indexes reflecting respiratory function. For example, Table 1 shows the comparison of body shape indexes of freshmen girls before and after the experiment. Table 2 shows the comparison of freshmen's female students' physical function before and after the experiment. Table 3 shows the comparison of physical fitness indexes of freshmen girls before and after the experiment. Where "*" means $p < 0.05$; "**" means $p < 0.01$.

From the above table analysis, it can be concluded that:

1. Tennis elective course has a good influence on college girls' body shape. Among them, there is no significant difference in body shape

Table 1. Comparison of body shape indexes of freshmen girls before and after the experiment.

Index	Before experiment	After the experiment	Average number of female freshmen in China
Height (cm)	162.41±4.52	162.43±4.53	161.19±11.26
Weight (kg)	54.12±6.11	(53.05±6.11)*	55.25±6.21
BMI	20.16±2.31	20.17±2.32	-
Thigh sebum thickness	13.14±2.85	12.54±2.66	-
Abdominal sebum thickness	17.51±2.63	(15.35±2.55)*	-
Arm sebum thickness	12.45±2.74	12.16±2.65	-

Table 2. Comparison of physical function of female freshmen before and after the experiment.

Index	Before experiment	After the experiment	Average number of female freshmen in China
Vital capacity (ML)	2315.22±624.40	(2616.25±615.15)**	2575.24±602.26
Step experiment index	50.20±18.56	(52.70±18.66)**	51.85±18.55

Table 3. Comparison of physical fitness indexes of freshmen and female students before and after the experiment.

Index	Before experiment	After the experiment	Average number of female freshmen in China
Sitting body flexion (cm)	12.44±5.14	(16.15±4.35)*	13.55±5.45
1min sit-ups	21.81±5.52	(30.42±4.21)**	22.81±5.41
Standing long jump (cm)	(160.1±11.2)**	168.7±12.2	161.3±12.7
50m(s)	9.7±1.3	(9.4±1.5)*	9.5±1.4
800m(s)	255.2±15.9	(247.5±36.2)*	252.5±40.1

between female college students before and after the experiment, and there is no obvious change before and after the experiment. This shows that tennis elective course has no influence on female college students' height, but tennis elective course has certain influence on female college students' weight. Tennis belongs to aerobic exercise, and its metabolism is dominated by aerobic energy supply. Aerobic energy supply mainly consumes sugar, fat and protein in the body. When tennis practice lasts for more than half an hour, the body mainly consumes energy mainly supplied by fat, so as to achieve the purpose of reducing body fat.

2. Tennis can enhance the improvement of blood circulation system, consume excess heat and improve cardiopulmonary function; It can increase the immunity of human body, and achieve the purposes of improving health, physique and body and mind. Specifically, when female college students choose tennis elective courses, with the development of tennis skills and the strengthening of classroom training time, the depth and rate of breathing are also strengthened, which makes the female college students' breathing function strengthen, thus enhancing their vital capacity. The contents of physical function test in

this study are vital capacity and step test. By analyzing the test data of the two indexes, it can be seen that tennis elective course can improve the cardiopulmonary function of freshman girls to some extent, and it can also improve the lung function. Therefore, tennis elective course can improve the heart and lung function of freshmen, and it can also improve the lung function.

3. Tennis elective course has certain influence on the physical quality of female college students. Specifically, it can obviously improve the flexibility, abdominal strength and leg strength of female college students. The strength of technical movements and classroom training in tennis elective courses is improved, so the abdominal flexibility of girls' sit-ups is improved. At the same time, from the experimental results, after 20 weeks of tennis elective courses, female college students' 50-meter and 100-meter scores have been improved. After statistical analysis, there are significant differences between the indexes before and after the courses, which indicates that tennis elective courses can improve female college students' moving speed quality to some extent.

CONCLUSIONS

In this paper, taking tennis as a means of exercise, the author formulates an intervention plan for sports, analyzes the influence of tennis elective course on female college students' physical health, and provides reference for improving female college students' physical health and optimizing the teaching mode of tennis elective course. Long-term tennis can significantly improve the physical qualities of female college students, such as strength, flexibility, sensitivity and endurance, and help to improve their physical health. At the same time, it can promote the blood output every time, and finally improve their cardiopulmonary function. It is found that tennis elective course can promote the body shape of female college students. Tennis elective course can improve college girls' body machine; Tennis elective course promotes the improvement of female college students' physical quality. However, the influence of tennis on the height of female college students is not obvious. It is hoped that through this research, we can find out a healthy lifestyle that is more conducive to the physical and mental development of female college students, provide effective exercise and health promotion methods for obese patients, and improve the body fat and health status of female college students.

Suggestion: Physical quality practice is boring. Combining tennis with quality practice can improve students' interest in quality practice. Interesting sports improve students' enthusiasm, and also improve the cardiopulmonary function of female college students, which is also the reason for the improvement of physical function after learning tennis options. Tennis options have a certain impact on physical function. In addition, in terms of teaching, the introduction of tennis professionals is an indispensable condition for the development and popularization of tennis courses. Good tennis facilities can also create a good tennis learning atmosphere. At the same time, colleges and universities can appropriately increase the teaching time and frequency of tennis elective courses, so that the tennis skills and physique of tennis elective courses can be better developed.

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