

# INFLUENCE OF BASKETBALL ON THE COLLEGE STUDENT'S HEALTH



ORIGINAL ARTICLE  
ARTIGO ORIGINAL  
ARTÍCULO ORIGINAL

INFLUÊNCIA DO BASQUETEBOL NA SAÚDE DOS ESTUDANTES UNIVERSITÁRIOS

INFLUENCIA DEL BALONCESTO EN LA SALUD DE LOS ESTUDIANTES UNIVERSITARIOS

Ying Liao<sup>1</sup>   
(Physical Education Professional)

1. College of Sports Science,  
Lingnan Normal University,  
Zhanjiang, Guangdong, China.

## Correspondence:

Ying Liao  
Zhanjiang, Guangdong, China.  
524048.  
gdmzlyw@sina.com

## ABSTRACT

**Introduction:** Healthy fitness training includes training of muscular strength, flexibility, and coordination, muscular endurance, cardiopulmonary endurance, neuromuscular composition, among other factors that promote the improvement of body capacity through its training. Currently, there needs to be more documents that provide a theoretical and practical basis for promoting basketball on campus and promoting healthy physical fitness in college students. **Objective:** Discuss the influences of basketball on health and fitness indicators in college students. **Methods:** This paper makes an updated literature review, practices the experimental method, elaborates the results with the mathematical statistics method, and discusses the expert interview method, questionnaire survey method, and logical analysis method. **Results:** The main exercises include dribbling, shooting, three-step, defense, health-related physics, strength and endurance, flexibility, etc., once a week for 60 minutes. The vital capacity and body composition index of 60 students were tested, and the data from each step were compared. **Conclusion:** Basketball can significantly improve college students' muscular strength and endurance level; basketball has a good role in promoting college students' physical fitness, including cardiorespiratory endurance and flexibility. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

**Keywords:** Basketball; Physical Fitness; Student Health.

## RESUMO

**Introdução:** O treino de aptidão física saudável inclui um treino de força muscular, flexibilidade e coordenação, resistência muscular, resistência cardiopulmonar, composição neuromuscular, entre outros fatores que promovem a melhora da capacidade corporal através de seu treino. Atualmente há uma carência de documentos que forneçam uma base teórica e prática para a promoção do basquetebol no campus universitário para a promoção da aptidão física saudável dos estudantes universitários. **Objetivo:** Discutir as influências do basquetebol nos indicadores de saúde e da aptidão física nos estudantes universitários. **Métodos:** Este artigo faz uma análise bibliográfica atualizada, pratica o método experimental, elabora os resultados com método de estatística matemática, além de abordar o método de entrevista de peritos, o método de inquérito por questionário e o método de análise lógica. **Resultados:** Os principais exercícios incluem os dribles, disparos, três passos, defesa, física relacionada com a saúde, força e resistência, flexibilidade, etc., uma vez por semana durante 60 minutos cada vez. O índice de capacidade vital e o índice de composição corporal de 60 alunos foram testados, e os dados de cada etapa foram comparados. **Conclusão:** O basquetebol pode melhorar significativamente a força muscular e o nível de resistência muscular dos estudantes universitários; o basquetebol tem um bom papel na promoção da aptidão física dos estudantes universitários incluindo a resistência cardiorrespiratória e a flexibilidade. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

**Descritores:** Basquetebol; Aptidão Física; Saúde do Estudante.

## RESUMEN

**Introducción:** El entrenamiento de la aptitud física saludable incluye un entrenamiento de la fuerza muscular, la flexibilidad y la coordinación, la resistencia muscular, la resistencia cardiopulmonar, la composición neuromuscular, entre otros factores que promueven la mejora de la capacidad corporal a través de su entrenamiento. En la actualidad, faltan documentos que proporcionen una base teórica y práctica para la promoción del baloncesto en el campus para el fomento de la aptitud física saludable en los estudiantes universitarios. **Objetivo:** Discutir las influencias del baloncesto en los indicadores de salud y estado físico de los estudiantes universitarios. **Métodos:** Este trabajo realiza una revisión bibliográfica actualizada, practica el método experimental, elabora los resultados con el método de la estadística matemática, además de abordar el método de la entrevista a expertos, el método de la encuesta por cuestionario y el método del análisis lógico. **Resultados:** Los principales ejercicios incluyen regate, tiro, tres pasos, defensa, física relacionada con la salud, fuerza y resistencia, flexibilidad, etc., una vez a la semana durante 60 minutos cada vez. Se analizó el índice de capacidad vital y el índice de composición corporal de 60 estudiantes, y se compararon los datos de cada etapa. **Conclusión:** El baloncesto puede mejorar significativamente el nivel de fuerza y resistencia muscular de los estudiantes universitarios; el baloncesto tiene un buen papel en la promoción de la aptitud física de los estudiantes universitarios, incluyendo la resistencia cardiorrespiratoria y la flexibilidad. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

**Descriptor:** Baloncesto; Aptitud Física; Salud del Estudiante.



## INTRODUCTION

With the development of China's economy and the continuous improvement of people's living standards, people pay more attention to health, and "health" has become a hot topic of social discussion. College students are the national key training goal, the important successors of social history, and shoulder the great responsibility of realizing the Chinese national dream.<sup>1</sup> Only when college students have strong physique and strong personality can they meet the challenges and difficulties in the future.<sup>2</sup> At present, according to the data of national college students' Health-related Physical test, the Health-related Physical of college students has a downward trend in strength, speed, sensitivity and other aspects. How to solve the problem of college students' physical health in the new period will be a problem worth discussing.<sup>3</sup>

As one of the most popular sports among college students, basketball has become one of the main ways of College Students' daily sports activities. With the continuous development of the times, the traditional teaching mode is constantly impacted, and it is extremely inconsistent with the needs of talent training in the new era.<sup>4</sup> Health-related Physical is a group of physical elements related to people's ability to complete physical activities. According to the relationship between Health-related Physical and health, it can be divided into competitive Health-related Physical and healthy Health-related Physical.

This study takes basketball as an intervention means, takes ordinary undergraduate students of a university as the research object, and takes the physical quality of college students as the measurement index to explore the positive effect of College Students' fitness training on basketball, and provides data support and theoretical reference for the popularization and promotion of basketball in Colleges and universities.<sup>3</sup>

## Health fitness training

### Concept definition

Throughout the history of mankind, from the hunting period, when survival is the goal, to the present, the improvement of personal life quality is the main focus. It can be said that the concept of Health-related Physical has existed since ancient times, but people's life goals have also been different because of different historical periods. Therefore, the meaning of Health-related Physical given by the times is also different. The concept of Health-related Physical originated in America in 1960s. American scholars have explored and studied Health-related Physical, among which the representative studies are: some scholars believe that Health-related Physical refers to the performance characteristics of an individual's athletic ability.<sup>5</sup> Some scholars believe that Health-related Physical is an individual's ability to meet the challenges of future life. Some scholars also believe that Health-related Physical refers to the ability of human body to resist the risk of diseases, and have enough energy to participate in leisure activities and be able to deal with all kinds of emergencies.

The concept of healthy Health-related Physical is formed on the basis of Health-related Physical, which is one of the core elements of Health-related Physical.<sup>6</sup> The purpose of healthy Health-related Physical is to enable people to have a healthy body to cope with daily work and have the energy to enjoy leisure and cope with changes so as to achieve a high-quality life. Its measurement is mainly based on cardiopulmonary endurance, muscle strength and muscle endurance, flexibility and body composition.

The significance of introducing Health-related Physical training into college physical education is mainly reflected in four aspects: first, to improve college students' physical strength, and to make better use of daily study and life; Second, to stimulate more development potential of college students; Third, it is conducive to the growth and progress of college students' body, mind, mood and other aspects; Fourthly,

strengthen the functions of college students' heart, lungs, muscles, reaction ability, etc., to help students shape stronger physical quality and enhance their immunity.<sup>7</sup>

## Research status

At present, some achievements have been made in the research on the health fitness of college students in China. Through literature analysis, it is not difficult to find the following problems: (1) affected by the way of sports, different sports have different effects on the indicators of the health fitness of ordinary college students; (2) Because of gender difference, the same item has different effects on the health fitness of ordinary college students. Therefore, through the experimental research on the health and Health-related Physical of ordinary college students, teachers can understand the changes of the physical indicators of the students, provide a theoretical basis for improving the teaching quality from the side, and highlight the necessity of research on the impact of different sports on the health and Health-related Physical of ordinary college students. At present, the research on basketball sports and healthy fitness in China has achieved certain results, which also proves that it is feasible to add healthy fitness elements to basketball elective courses. At the same time, through the research results, teachers have a considerable understanding of the impact of basketball projects on students' various indicators, and it is beneficial to improve the classroom quality of basketball elective courses in China.<sup>8</sup>

Foreign related research can be divided into the following categories: The first category, theoretical research on Health-related Physical. The second category is about the research of fitness index of healthy people. The third category is about the research on the influence of sports intervention on health fitness. Foreign research also involves the measurement and evaluation of Health-related Physical, policies and regulations, health effects and so on. Foreign research results are generally the same as the mainstream of domestic research, and the existing foreign research results have important theoretical and reference value for guiding this research.<sup>9</sup>

## Research experiment

### Experimental objective

Before the experiment, students' Health-related Physical is tested to master their Health-related Physical status. Teachers set training objectives for students according to the results, and explain the level of Health-related Physical to be achieved in the future. The determination of training objectives is conducive to the progress of Health-related Physical training, and it is also the guarantee for the implementation of specific teaching courses in each link of the whole training process.

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 Lingnan Normal University, China (NO. 2021013)

### Research object

In order to ensure the accuracy of the experimental results, the subjects of this study were selected according to the following criteria: no professional sports training experience; No smoking and drinking history; No history of cardiovascular disease and good health; Body mass index (BMI) is between 19kg / MS and 33kg / NF; Participants agreed to keep their daily diet and lifestyle during the intervention period.

Number and gender: 30 male and 30 female ordinary college students were selected. The experimental subjects are shown in Table 1.

## Experimental method

### Documentation method

Consult the relevant literature, compare, analyze and synthesize the research results related to this study, draw on scientific research methods and concepts, and provide relevant theoretical basis for this study.

**Table 1.** Basic information of subjects.

Gender	Number	Age	Height(cm)	Weight(kg)
Man	30	20	178.05±9.24	72.53±5.24
Women	30	20	163.43±7.85	53.25±6.73

### Questionnaire survey

A questionnaire survey was conducted on the graduates and students who had participated in the study and practice of basketball elective courses, and the interest, motivation and physical exercise of learning basketball were investigated and analyzed.

### Mathematical statistics

Firstly, the data obtained from the experiment are sorted out and classified by Excel. Secondly, the data after sorting and classification are analyzed by SPSS data analysis software for general linear analysis and t-test.

### Logical analysis

Combined with the data processing results, course content and relevant literature, the data results were analyzed.

### Expert interview method

At the beginning of the study, on the basis of consulting relevant literature and materials, in order to ensure the scientificity and preciseness of the experiment and the accuracy of the final results of the experiment, experts in relevant fields were interviewed to consult and study relevant issues, consult and discuss specific and feasible improvement measures, and the experimental design, the selection of experimental measurement indicators and the course contents were evaluated and demonstrated through interviews with experts. To ensure the feasibility and effectiveness of the research.

### Experimental method

Using body composition tester and vital capacity tester, 30 male and female students were selected as the research objects in a college basketball elective course. The intervention process was divided into three stages: before, after the 5th week and after the 10th week of Health-related Physical training. The main exercises include dribbling, shooting, three-step layup, defense, Health-related Physical, strength and endurance, flexibility, etc., once a week for 60 minutes each time. The vital capacity index and body composition index of 60 students were tested, and the data of each stage were compared. Through the research of each index data, it is concluded that Table 2 shows the changes of BMI index.

**Table 2.** Changes of BMI index of students before and after Health-related Physical training intervention.

Gender	Physical index	Before intervention	The 5th week after the intervention	The 10th week after the intervention
Man	BMI index	23.15±5.53	22.82±5.33	22.52±5.28
Women	BMI index	23.06±5.51	22.65±5.32	22.44±5.25

### Proposal

First of all, it is suggested that college basketball elective courses should improve the intensity and load of sports, and three basketball courses can be arranged every week, which can promote the healthy development of students. Then, physical education teachers can combine more basketball games, increase the number of matches, enhance students' interest in sports, stimulate students' sense of competition and team spirit, and effectively promote the effect of students' classroom learning. Finally, in the practice of basketball teaching, the teaching content should increase the training of students' coordination quality and strength quality, which can effectively improve the learning quality of basketball skills and avoid injuries. In a word, it is necessary for college teaching to introduce the Health-related Physical training mode, guide students to feel their progress from emotional learning, perceive the charm of sports, and cultivate their interest and habit of continuing to engage in physical training.

### CONCLUSIONS

After 5-10 weeks' Health-related Physical training intervention, students' Health-related Physical status has been further improved, and the vital capacity index has increased obviously. On the body composition index, students' body BMI index has decreased, body fat rate has decreased, waist-hip ratio has decreased, and upper limb muscle content has increased. All in all, comparing the effect after the ten-week experiment, adding Health-related Physical training content in basketball teaching will help to improve students' understanding ability and training effect of basketball. Through a number of interesting basic health Health-related Physical training programs, students' participation enthusiasm and sports level will be enhanced, and the teaching quality will also be improved. Therefore, this paper believes that the introduction of Health-related Physical training is helpful to improve college students' basketball teaching and realize the goal of developing healthy sports in the new curriculum reform of college physical education.

The author declare no potential conflict of interest related to this article

**AUTHORS' CONTRIBUTIONS:** The author made significant contributions to this manuscript. Ying Liao: writing and performing surgeries; data analysis and performing surgeries; article review and intellectual concept of the article.

### REFERENCES

- Kidokoro T, Kohmura Y, Fuku N, Someya Y, Suzuki K. Secular trends in the grip strength and body mass index of sport university students between 1973 and 2016: J-Fit + study. *J Exerc Sci Fit.* 2020;18(1):21-30.
- Li SF, Lu F, Wang HH. Exploring the Relationships of Physical Activity, Emotional Intelligence and Health in Taiwan College Students. *J Exerc Sci Fit.* 2009;7(1):55-63.
- Neto CF, Neto GR, Araújo AT, Sousa MSC, Sousa JBC, Batista GR, et al. Can Programmed or Self-Selected Physical Activity Affect Physical Fitness of Adolescents?. *J Hum Kinet.* 2014;4(3):125-30.
- Fiori F, Bravo G, Parpinel M, Messina G, Malavolta R, Lazzar S. Relationship between body mass index and physical fitness in Italian prepubertal schoolchildren. *PLoS ONE.* 2020;15(5):e0233362.
- Villareal ES, Molina JG, Castro-Maqueda G, Gutiérrez-Manzanedo JV. Effects of Plyometric, Strength and Change of Direction Training on High-School Basketball Player's Physical Fitness. *J Hum Kinet.* 2021;78(1):175-86.
- Mohammed MHH. Effect of eight weeks basketball and swimming on health-related fitness of male university students. *Br J Sports Med.* 2016;50(Suppl 1):A35.1-A35.
- Zribi A, Zouch M, Chaari H, Bouajina E, Nasr HB, Zaouali M, et al. Short-Term Lower-Body Plyometric Training Improves Whole-Body BMC, Bone Metabolic Markers, and Physical Fitness in Early Pubertal Male Basketball Players. *Pediatr Exerc Sci.* 2014;26(1):22-32.
- Holt EE. The relationship between health-related physical fitness and pre-season overuse knee injuries in collegiate basketball. Cleveland: Delta State University; 2008.
- Zribi A, Zouch M, Chaari H, Bouajina E, Zaouali M, Nebigh A, et al. Enhanced Bone Mass and Physical Fitness in Prepubescent Basketball Players. *J Clin Densitom.* 2014;17(1):156-62.