

A HOME-BASED SPORTS TRAINING IN PHYSICAL HEALTH PROMOTION FOR UNIVERSITY STUDENTS

PESQUISA SOBRE O TREINO ESPORTIVO DOMICILIAR NA PROMOÇÃO DA SAÚDE FÍSICA EM ESTUDANTES UNIVERSITÁRIOS

INVESTIGACIÓN SOBRE EL ENTRENAMIENTO DEPORTIVO EN CASA EN LA PROMOCIÓN DE LA SALUD FÍSICA DE LOS ESTUDIANTES UNIVERSITARIOS



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ABSTRACT

Introduction: Physical education classes in universities have migrated to online teaching aiming to reduce the risk of infection under epidemic prevention and control normalization. However, the impact of home-based physical training on the physical health of university students is not complete because the home-based physical training program could not be adjusted in a timely manner. **Objective:** Analyze the current situation of home-based sports training and its effect on the health of college students. **Methods:** A questionnaire has been employed in order to analyze the current situation of home-based sports training. Sixty individuals were selected, distributed into experimental (n=30) and control group (n=30). The control group was without specific physical training while the experimental group received online monitoring from physical education teachers to perform sports training at home, three times a week, one hour a day, for a total of two months. Pre- and post-training changes were compared by in-person fitness tests. Results were contrasted via Excel and SPSS. **Results:** Home fitness training can be accomplished in many ways, with the virtual physical education class being a primary option. The results of the influence of home-based physical training on changes in physical function of University students are considerable ($P < 0.05$). **Conclusion:** Through comparison of fitness test results, home-based physical training was found to have a beneficial effect on the physical performance of college students and can be safely replicated in institutions. **Level of evidence II; Therapeutic studies: investigation of treatment outcomes.**

Keywords: Exercise; Training; Exercise; Students; Student Health.

RESUMO

Introdução: As aulas de educação física nas universidades migraram para o ensino online visando reduzir o risco de infecção sob a normalização da prevenção e controle de epidemias. Porém, o impacto do treinamento físico domiciliar na saúde física dos estudantes universitários não é completo pois o programa de treinamento físico domiciliar não pôde ser ajustado em tempo hábil. **Objetivo:** Analisar a situação atual do treino esportivo domiciliar e seu efeito na saúde dos universitários. **Métodos:** Um questionário foi utilizado para analisar a situação atual do treino esportivo domiciliar. Foram selecionados 60 indivíduos, distribuídos em grupo experimental (n=30) e controle (n=30). O grupo controle sem treinamento físico específico enquanto o grupo experimental recebeu acompanhamento online dos professores de educação física para realizar treinamentos esportivos em casa, três vezes por semana, uma hora por dia, num total de dois meses. As alterações pré e pós-treino foram comparadas por testes de aptidão física presencial. Os resultados foram contrastados via Excel e SPSS. **Resultados:** O treinamento físico domiciliar pode ser realizado de muitas formas, sendo a aula de educação física virtual uma opção primária. Os resultados de influência do treinamento físico domiciliar sobre as mudanças da função física dos Universitários são consideráveis ($P < 0,05$). **Conclusão:** Através da comparação dos resultados dos testes de aptidão física, constatou-se que o treinamento físico domiciliar tem um efeito benéfico sobre o desempenho físico dos universitários, podendo ser replicado com segurança nas instituições. **Nível de evidência II; Estudos terapêuticos: investigação dos desfechos do tratamento.**

Descritores: Exercício Físico; Treinamento Físico; Estudantes; Saúde do Estudante.

RESUMEN

Introducción: Las clases de educación física en las universidades han migrado a la enseñanza en línea con el objetivo de reducir el riesgo de infección bajo la normalización de la prevención y el control de epidemias. Sin embargo, el impacto del entrenamiento físico en el hogar sobre la salud física de los estudiantes universitarios no es completo, ya que el programa de entrenamiento físico en el hogar no pudo ser ajustado oportunamente. **Objetivo:** Analizar la situación actual del entrenamiento deportivo en casa y su efecto en la salud de los estudiantes universitarios. **Métodos:** Se utilizó un cuestionario para analizar la situación actual del entrenamiento deportivo en casa. Se seleccionaron 60 individuos, distribuidos en grupo experimental (n=30) y grupo de control (n=30). El grupo de control sin entrenamiento físico específico, mientras que el grupo experimental recibió un seguimiento online por parte de los profesores de educación física para realizar un entrenamiento deportivo en casa, tres veces por semana,



una hora al día, durante un total de dos meses. Los cambios previos y posteriores al entrenamiento se compararon mediante pruebas de aptitud física en persona. Los resultados se contrastaron mediante Excel y SPSS. Resultados: El entrenamiento físico a domicilio puede impartirse de muchas maneras, siendo la clase de educación física virtual una de las principales opciones. Los resultados de la influencia del entrenamiento físico en casa sobre los cambios en la función física de los estudiantes universitarios son considerables ($P < 0,05$). Conclusión: A través de la comparación de los resultados de las pruebas de aptitud física, se descubrió que el entrenamiento físico en casa tiene un efecto beneficioso en el rendimiento físico de los estudiantes universitarios y puede reproducirse con seguridad en las instituciones. **Nivel de evidencia II; Estudios terapéuticos: investigación de los resultados del tratamiento.**

Descriptor: Ejercicio Físico; Entrenamiento Físico; Estudiantes; Salud del Estudiante.

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INTRODUCTION

COVID-19 suddenly came to the end, causing schools to suspend classes and unable to conduct normal teaching activities.¹ In addition, most students' homes are not equipped with complete sports facilities and venues, so they are unable to exercise. Based on this point, the school has implemented the online teaching mode, but in addition to theoretical extracurricular, physical education courses can only be carried out at home.² The literature analyzes the results of the physical condition test of college students and the physical exercise of students in their spare time. Through comprehensive research, it is found that the physical health status of college students shows a downward trend, and the students' awareness of participating in sports is relatively weak.³ The literature shows that the obesity trend of students is increasing year by year, and men are more serious than women; Students lack aerobic exercise, resulting in a downward trend in vital capacity; Their physical qualities such as endurance and flexibility are poor. Literature shows that physical exercise behavior has a great impact on students' social ability, cultural literacy, physical quality, invention and innovation, ideological and moral character, and good exercise behavior can improve students' comprehensive ability.⁴

According to the literature, as a form of physical exercise, home sports activities can promote the gradual development of students' comprehensive ability, and participating in sports activities can effectively promote the transformation of students' self-development, family responsibility consciousness and innovative thinking. Therefore, students are encouraged to improve basic sports and core material literacy, and cultivate their sports safety consciousness and basic daily work skills.⁵ During the epidemic period, there were differences in students' exercise behavior at home in different regions, and there were also differences in motivation or influencing factors to promote exercise behavior. In order to further explore the relevant factors and the current effect of home-based training, this paper analyzes the current situation of College Students' home-based exercise and its effect on College Students' health by means of questionnaire and experiment.⁶

METHOD

Questionnaire and data analysis

Based on a certain understanding of the current home sports training, 60 students were selected according to the principle of voluntariness, including 30 in the experimental group and 30 in the control group. The control group did not carry out additional sports training at home every day. The study and all the participants were reviewed and approved by Ethics Committee of Xi'an University of Posts & Telecommunications (NO.2019XUPT-Z012). On the basis of ensuring certain site and network conditions, the experimental group followed the physical education teachers to carry out home sports training, three times a week, one hour each time, for a total of two months. Before and after the experiment,

according to the physical test items of college students, the physical fitness of the two groups were measured with the help of the offline opportunity of normalization of epidemic prevention and control.

Mathematical statistics

This paper uses Excel and SPSS software to sort out and analyze the obtained data. In order to make the research results more clear, it also uses the way of drawing, which is convenient for discussion.

RESULTS

Analysis on the current situation of home sports training

The way of home sports participation is shown in Figure 1. Among them, the first way is school online physical education, with 189 participants, accounting for 45.87%; The second way is sports app, with 97 participants, accounting for 23.54%; The third way is sports live broadcasting, with 57 participants, accounting for 13.83%; The fourth way is short video app, with 32 participants, accounting for 7.77%; The fifth way is WeChat official account and small program. The number of participants is 26, accounting for 6.31%. The last way to rank is other, with 11 participants, accounting for 2.67%.

The effect of home sports is shown in Figure 2. Score 5 points, that is, 55 people think "the effect is particularly good", accounting for 13.35%; Score 4 points, that is, 78 people think "the effect is better", accounting for 18.93%; Score 3 points, that is, 158 people think "the effect is average", accounting for 38.35%; Score 2 points, that is, 86 people think "the effect is not very good", accounting for 20.87%; Score 1, that is, the number of people who think "the effect is very bad" is 35, accounting for 8.50%.

Promoting effect of home physical training on physical health of College Students

Statistical analysis (Table 1): the VAS score of the experimental group before and after training ($t = 8.60, P = 0.00$), indicating that there was significant difference between the experimental group before and after training ($P < 0.05$); The VAS score of the control group before and after training ($t = 0.64, P = 0.55$), indicating that there was no significant difference between the control group before and after training ($P > 0.05$).

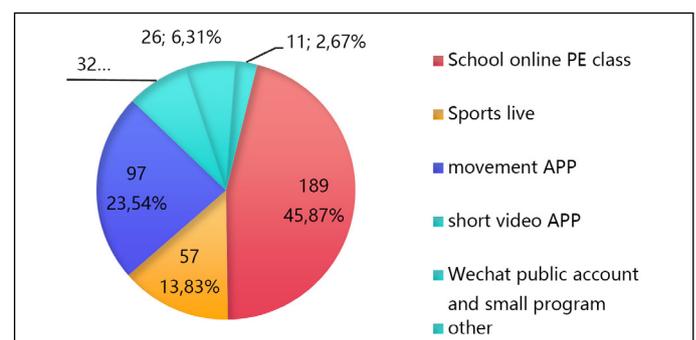


Figure 1. Analysis on the ways of home sports participation.

The influence results of home physical training on the changes of body shape and function of college students are shown in Table 1. In the experimental group, the height increased from (176.773 ± 3.643) cm before the experiment to (176.928 ± 3.684) cm after the experiment; The body weight increased from (67.996 ± 9.978) kg before the experiment to (62.896 ± 8.371) kg after the experiment; The body index increased from (22.235 ± 2.915) before the experiment to (19.533 ± 2.469) after the experiment; Vital capacity increased from (3607.052 ± 293.051) ml before the experiment to (4044.607 ± 295.178) ml after the experiment, $P < 0.05$, indicating that there was a significant difference. In the control group, the height increased from (177.633 ± 4.795) cm before the experiment to (177.602 ± 4.853) cm after the experiment; The body weight increased from (68.412 ± 9.837) kg before the experiment to (73.682 ± 9.061) kg after the experiment; The body index increased from (22.118 ± 2.790) before the experiment to (23.546 ± 3.619) after the experiment; Vital capacity increased from (3592.804 ± 269.990) ml before the experiment to (3614.743 ± 251.537) ml after the experiment ($P < 0.05$).

The influence results of home physical training on the changes of College Students' physical function are shown in Table 2. In the experimental group, the forward flexion performance of sitting body increased from (15.220 ± 2.958) cm before the experiment to (17.207 ± 2.614) cm after the experiment; The result of 50m ranged from (7.485 ± 0.324) s before the experiment to (7.334 ± 0.209) s after the experiment; The results of standing long jump ranged from (206.479 ± 4.538) cm before the experiment to (217.074 ± 3.639) cm after the experiment; The results of pull-up ranged from (2.545 ± 1.695) before the experiment to (4.448 ± 1.844) after the experiment; The results of 1000 meters ranged from (266.897 ± 4.599) s before the experiment to (258.311 ± 3.190) s after the experiment ($P < 0.05$).

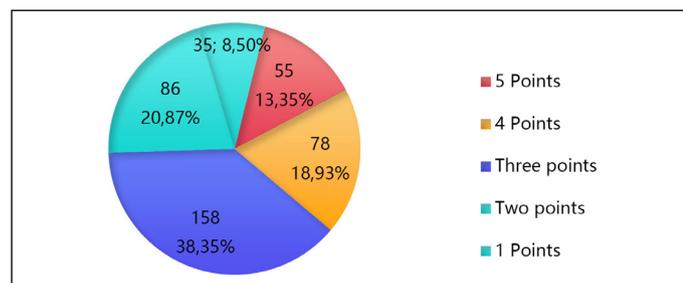


Figure 2. Effect analysis of home sports.

Table 1. Influence of home physical training on College Students' body shape.

Option	Experience group		Control group	
	Before experiment	After the experiment	Before experiment	After the experiment
height	176.773 ± 3.643	176.928 ± 3.684	177.633 ± 4.795	177.602 ± 4.853
weight	67.996 ± 9.978	62.896 ± 8.371	68.412 ± 9.837	73.682 ± 9.061
Body index	22.235 ± 2.915	19.533 ± 2.469	22.118 ± 2.790	23.546 ± 3.619
Lung capacity/ml	3607.052 ± 293.051	4044.607 ± 295.178	3592.804 ± 269.990	3614.743 ± 251.537

Table 2. Influence of home physical training on the changes of College Students' physical function.

Option	Experience group		Control group	
	Before experiment	After the experiment	Before experiment	After the experiment
Sitting bracing/cm	15.220 ± 2.958	17.207 ± 2.614	14.960 ± 3.306	15.165 ± 3.170
50 m/s	7.485 ± 0.324	7.334 ± 0.209	7.497 ± 0.369	7.648 ± 0.279
Long jump remote/cm	206.479 ± 4.538	217.074 ± 3.639	205.788 ± 5.533	205.688 ± 4.770
Brazer up/one	2.545 ± 1.695	4.448 ± 1.844	2.642 ± 1.657	2.330 ± 1.296
1000 m/s	266.897 ± 4.599	258.311 ± 3.190	266.299 ± 4.271	273.122 ± 3.822

In the control group, the forward flexion score of sitting position increased from (14.960 ± 3.306) cm before the experiment to (15.165 ± 3.170) cm after the experiment; The score of 50 meters changed from (7.497 ± 0.369) s before the experiment to (7.648 ± 0.279) s after the experiment; The results of standing long jump ranged from (205.788 ± 5.533) cm before the experiment to (205.688 ± 4.770) cm after the experiment; The results of pull-up ranged from (2.642 ± 1.657) before the experiment to (2.330 ± 1.296) after the experiment; The results of 1000 meters ranged from (266.299 ± 4.271) s before the experiment to (273.122 ± 3.822) s after the experiment, $P < 0.05$, indicating that there was a significant difference.

The impact of home physical training on the physical test scores of college students is shown in Table 3. In the experimental group, the number of people who failed (0-60 points) increased from 5 before the experiment The number of people decreased to 4 after the experiment; The number of passing (60-70 points) increased from 7 before the experiment to 8 after the experiment; The number of ordinary (70-80 points) decreased from 8 before the experiment to 6 after the experiment; The number of good (80-90 points) increased from 6 before the experiment to 7 after the experiment; The number of excellent (90-00 points) increased from 4 before the experiment to 5 after the experiment. In the control group, the number of people who failed (0-60 points) increased from 5 before the experiment to 6 after the experiment; The number of passing (60-70 points) decreased from 6 before the experiment to 5 after the experiment; The number of ordinary (70-80 points) increased from 9 before the experiment to 10 after the experiment; The number of good (80-90 points) ranges from 7 before the experiment to 7 after the experiment, without rise or fall; The number of excellent (90-00 points) decreased from 3 before the experiment to 2 after the experiment.

Influencing factors of home sports training promoting college students' physical health

The influencing factors of home sports training are shown in Figure 3. Among them, the four items with higher scores were "lack of necessary training venues", accounting for 96.353%; The factor of "restriction of network conditions" accounts for 88.590%; "Monotonous learning

Table 3. Influence of home physical training on College Students' physical test results (person).

Option	Experience group		Control group	
	Before experiment	After the experiment	Before experiment	After the experiment
Legal (0-60 points)	5	4	5	6
Comply (60-70 points)	7	8	6	5
General (70-80 points)	8	6	9	10
Good (80-90 points)	6	7	7	7
Excellent (90-00 points)	4	5	3	2

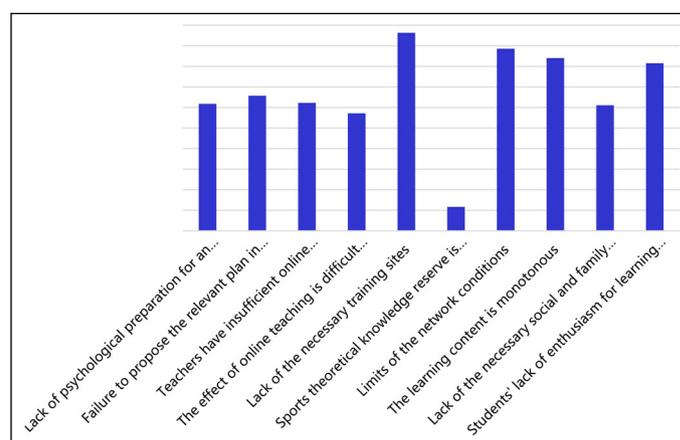


Figure 3. Influencing factors of home sports training.

content" factor, accounting for 84.045%; "Students' lack of enthusiasm for learning and exercise" accounted for 81.523%. Among them, the four items with average scores were "failure to put forward relevant plans in time", accounting for 65.719%; "Teachers' online teaching ability is insufficient", accounting for 62.248%; "Lack of psychological preparation for sudden epidemic" accounted for 61.752%; "Lack of necessary social and family help" accounted for 61.105%. The two items with lower scores were "it is difficult to evaluate the effect of online teaching", accounting for 57.194%; The factor of "insufficient reserve of sports theoretical knowledge" accounted for 11.690%. This shows that home sports training is greatly affected by the venue and students' mentality, which needs to be solved jointly by home and school.

DISCUSSION

In the process of online teaching and training of college physical education courses during the epidemic, college physical education teachers actively participated in each online teaching and made efforts to adjust the training process, organization form, time arrangement and training methods, so as to design and form a reasonable step plan. The new teaching methods and training methods make these teachers with high professional quality and educational level feel pressure, and the initial effect of teaching and training is not satisfactory due to various deficiencies of online teaching platform. Therefore, schools should actively strengthen teacher training and provide appropriate teacher training courses. The most important thing is to improve the ability of teacher training to deal with the epidemic. On the other hand, with the advancement of educational informatization, teachers should constantly self-study, master online teaching skills, and quickly respond to the changes and transformation of online and offline teaching methods. Under the background of "Internet plus" education, online teaching and

training is integrated with various intelligent platforms, and teaching is no longer satisfied with simple knowledge transfer. The allocation of teaching resources should be deep, complex and wide to meet the knowledge needs of students. The new challenges are related to big data, network connectivity and human flexibility and intelligence. Teachers need to take effective measures to adapt to the new regulations. Today, the challenges facing society put forward greater requirements for teachers. Teachers should take this epidemic as an opportunity and take online courses as an upsurge to further improve online physical education teaching ability, constantly strengthen online teaching skills, carry out online explanation, online guidance and online demonstration, and improve their comprehensive ability.⁷

CONCLUSION

The results of this study show that with the normalization of epidemic prevention and control, home sports training is gradually on the right track. Students can carry out sports training in various forms, and school online physical education is the first choice; Through the comparison of the results of the two physical tests, it can be seen that home sports training can promote the changes of College Students' body shape and function, so it is worth popularizing. However, home sports training also has some disadvantages, such as being greatly limited by conditions and places, and students are generally satisfied with it. Therefore, in the follow-up online sports training teaching, we should also comprehensively consider all factors and scientifically design the training scheme, so as to make home sports training achieve better results and better serve students.

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AUTHORS' CONTRIBUTIONS: The author made significant individual contributions to this manuscript. XL: study design and implementation, results analysis, and writing of the manuscript.

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