

**BADMINTON AS ONE OF THE MEANS OF HEALTH AND
RECREATIONAL ACTIVITIES OF STUDENTS**

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Purpose: to assess the influence of badminton classes according to the health-improving and recreational program on the physical fitness and health of students.

Material and methods: 13 female applicants for higher education of the second year of the Kharkov State Academy of Physical Culture took part in the study. The health-improving and recreational program was implemented within 6 months. To assess its effectiveness at the beginning and at the end of the experiment, the participants were determined by anthropometric indicators (body weight, standing height, muscle strength of the hand), physiological indicators (vital capacity of the lungs (VC)). The assessment of the physical working capacity of female students and the effectiveness of their respiratory system was carried out using the tests of Rufier, Shtange, Genche. The level of their health was assessed according to Pirogova's method.

Results: the studies carried out confirmed the information of scientists about the unsatisfactory state of physical fitness and the level of health of student youth. The presented materials made it possible to state the positive influence of health-

improving and recreational classes using badminton means on the indicators of the functional state of the cardiovascular and respiratory systems, the level of physical performance and physical health of girls.

Conclusions: the results of the studies indicate that the indicators of body weight, standing height did not change almost, and indicators of hand strength, vital capacity of the lungs improved during the cycle of training sessions. The results of the conducted research testify to the improvement of the functional state and the level of health of the female students, who trained according to the health-improving and recreational program, which is based on the means of badminton.

Keywords: health, physical fitness, physical development, functional tests, Shtange's test, Genche's test, students, badminton.

Introduction

In recent years, there has been a steady increase in the number of students with disabilities. According to a number of researchers [5, 8], the level of physical health of students is assessed as "unsatisfactory", and the level of their physical health as "below average". Most experts attribute the low level of health of student youth not only to unfavorable socio-economic living conditions, but also to a decrease in students' interest in physical education and a decrease in their physical activity. Analysis of special studies has shown that only 25-30% of the total daily need for physical activity in students is occupied by physical education classes [1, 2, 7, 9]. The analysis of special literature also shows that today the number of students who are assigned to a special medical group, as well as the number of young students who after a medical examination are exempt from exercise within the system of physical education [6, 10, 11]. The problem of assessing the current functional state of the body [4] and control over it are important in human life, because one of the most important indicators of their health is the level of functional development of adaptive systems of the human body [12, 13, 14].

Purpose of the study was to evaluate the impact of badminton classes on the health and recreation program on the physical fitness and health of students.

Material and Methods of research

The consistent pedagogical experiment was attended by 13 students who studied in the discipline "Recreational Games" in the second year of the Kharkiv State Academy of Physical Culture (KhSAPC). Health and recreational classes were held twice a week on the basis of SHVSM. The experiment lasted for 6 months. To assess the impact of health and recreation badminton on the health and fitness of students at the beginning and end of the experiment, they measured body weight, standing height, hand muscle strength, vital capacity of the lungs (VCL), as well as tests Rufier, Shtange, Genche, Romberga, The level of health of female students was assessed according to the method of O. Pirogova. Student's criterion was used for comparative analysis of average group indicators of sample groups.

Results of the research

The results of the study are presented in table 1. They indicate that at the beginning of the experiment, the level of health of female students was assessed according to the method of O. Pirogova and was – 0,66 units, which is assessed as "average". After the entire cycle of health and recreational badminton, it was – 0,9 units, which is estimated as "above average".

During the experiment, the absolute indicators of body weight and height in female students who participated in the experiment remained virtually unchanged. Thus, the average group weight at the beginning and end of the experiment was 55,92 kg and 55,07 kg, respectively. The difference between the mean group values is statistically insignificant $t < t_{kr}$, (Table 1). The obtained data also show that the difference between the average group growth rates has not changed either. Thus, the average growth rate at the beginning of the experiment in female students was 168,07 cm, and at the end – 168,2 cm. The results showed that the value of the Kettle Index at the beginning of the experiment was 19,8 kg / m², and at the end of 19,5 kg / m², which indicates a normal ratio of body weight and height in the participants of the experiment. The results obtained during the implementation of the health and

recreation program "Badminton" also indicate that the difference between the average group indicators of vital capacity of the lungs in participants at the beginning (3,64 l) and at the end of the experiment (3,96 l) is not statistically significant.

The results of the study indicate that the girls who participated in the implementation of the health and recreational program, the average group strength of the hand during the experiment significantly improved. If at the beginning of the experiment it was – 24,9 kg, at the end – 32,4 kg ($t_r = 2,28$, and $t_{kr} = 2,06$ ($t_r > t_{kr}$)) (Table 1).

The functional state of the cardiovascular system of the participants of the experiment was assessed by the results of the Rufier test. The results obtained indicate that during the period of health and recreational training they have significantly improved their ability to work. If at the beginning of the experiment it was assessed as "satisfactory" (Rufier index = 11,3), then at the end as "average" (Rufier index = 8,89).

Table 1

Level of health and physical development of girls who are engaged in health and recreational badminton

№	Indicators	At the beginning of the experimental (n= 12)		At the end experimental (n=12)		t_r	t_{kr}	The result of the comparison t_r with t_{kr}	The difference between the averages
		\bar{X}_1	m_1	\bar{X}_2	m_2				
1	Level of physical health	0,66	0,04	0,90	0,02	2,77	2,06	$t_r > t_{kr}$	significant
2	Body weight, kg	55,92	1,89	55,07	1,65	0,34	2,06	$t_r < t_{kr}$	not significant
3	Standing height, cm	168,07	1,74	168,2	1,64	0,05	2,06	$t_r < t_{kr}$	not significant
4	VCL	3,64	0,16	4,02	0,13	1,9	2,06	$t_r < t_{kr}$	not significant
5	Brush strength, kg	24,9	1,00	32,4	0,8	2,28	2,06	$t_r > t_{kr}$	significant
6	Rufier index	11,3	1,58	8,89	1,3	2,69	2,06	$t_r > t_{kr}$	significant

The influence of regular badminton classes on the health and recreational program on the functional state of the girls' body was assessed by the results of tests by Shtange, Genche, Romberga (Fig. 1). The materials presented in the figure indicate that the Barbell test, which was used to assess respiratory function in female

students at the beginning of the experiment, was 39,2 s, which is normal for healthy but not trained individuals. At the end of the experiment, it was already 53,69 s, which is the norm for athletes.

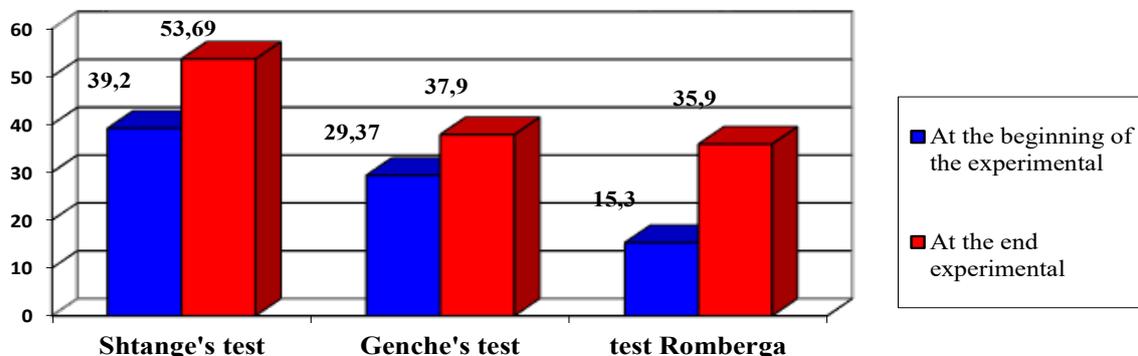


Fig. 1 Changes in the indicators of the functional state of the body of girls during badminton classes according to the health and recreational program

Evaluation of changes in the system of external respiration in the participants of the experiment under the influence of health and recreational training was conducted on the basis of the Genche test. Presented in Figure 1 results indicate that at the beginning of the experiment the sample rate was 29,37 s, which corresponds to the level of healthy untrained individuals. After the experiment, it was 37,9 s, which corresponds to the level of women athletes.

Romberg's test was used to evaluate the effectiveness of the vestibular apparatus in the participants of the experiment. According to the results of the study, during the experiment the stability of the vestibular apparatus in them improved. If at the beginning of the survey the preservation of posture without tremor occurred for 15,3 s, then at the end of the cycle of training sessions of health and recreational orientation, this figure was 35,9 s.

Conclusions / Discussion

An analysis of the special literature shows that 90% of students have serious health problems. More than 50% of student youth do not meet the average level of the state standard of physical fitness (Krutsevich T.Yu., Bezverkhnyaya G.V., Shapovalova V.A., Dovgan N.Yu., Golovanova N., Asauliyuk I., Dyachenko A.). In

the study of Malkhazov O.R. there has been a significant deterioration in students' fitness and health over the past 20 years. Scientists O.A. Tomenko, S.A. Lazorenko, N.Yu. Dovgan, S.S. Galuza also noted in her research that the physical health of student youth is unsatisfactory. 95% of boys and 99% of girls have low and below average levels of physical health, according to our study.

Comparison of the results of our research with the results of research by a constellation of authors (K.E. Bezukh, V.V. Chistyakov, V.Y. Volkov, S.M. Kuchkin, V.V. Chistyakov, I.O. Asulyuk, A.A. Dyachenko, G.V. Tolcheva) shows that a significant number of indicators of the functional state of students is mostly at an unsatisfactory level.

The study confirmed the results of the authors [3; 8; 10] on the need to study changes in indicators of physical condition of students under the influence of various sports, and deepens the data of scientists [3; 9; 11] on this issue.

The conducted researches allowed to establish positive significant changes in the indicators of the functional state of the cardiovascular and respiratory systems, the level of physical capacity and physical health of female students under the influence of badminton according to the health and recreational program. Their level of physical health has improved and is 0,9 units (above average).

The results of the study indicate that during the period of health and recreational badminton classes in female students significant changes in standing body length and body weight did not occur.

The results of the study indicate that the girls who participated in the implementation of the health and recreational program, the average group index of hand strength and vital capacity of the lungs during the experiment significantly improved. During this time, their respiratory function has significantly improved, as evidenced by the results of the Shtange and Genche tests.

Summarizing the data obtained, it can be concluded that badminton recreation program has a positive effect on the functional state of the cardiovascular and respiratory systems, as well as the level of physical fitness and physical health of students.

Prospects for further research in this area. Correction and improvement of the training process, which is based on health and recreational technologies using badminton.

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