Analysis of the negative dynamics in the level of physical training of medical university students in the first four years of study

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Abstract

Objective of the study was to theoretical and practical evidence for alterations in the physical fitness of students throughout their time at a medical university.

Methods and structure of the study. A series of tests was administered to evaluate the evolution of students' physical condition over the course of their university studies.

Results and conclusions. It was discovered that the physical fitness of students in their first and second years of university is average, but it reaches its peak in the second year. After that, in the third and fourth years, there is a sharp decline in physical fitness. Therefore, the authors concluded that after two years of study, students experience a significant decrease in their physical fitness, indicating that the third and fourth years of study are a crucial time for students' health.

Keywords: *level of physical fitness, physical health, physical activity, students, physical qualities, motivation.*

Introduction. The work of students requires the exertion of all mental functions, and is often associated with stressful situations [1]. Research shows that regular optimal physical activity helps improve memory, attention, speed of thought processes and creativity [2, 3]. An effective combination of intellectual and physical activity is the key to successful study at a university and achieving high results in future professional activities [4]. In this regard, the role of physical education in a university is of critical importance. Innovative approaches to the organization of physical education are actively introduced in modern universities [5]. Various types of physical activity are used, including fitness, yoga, swimming, team sports. Sports sections are organized, sports events and competitions are held.

Objective of the study was to theoretical and practical evidence for alterations in the physical fitness of students throughout their time at a medical university.

Methods and structure of the study. The analysis and generalization of scientific and methodological literature, development of a methodology for determining significant indicators of the Level of Physical Fitness of students for the translation of the obtained results into a point system, a pedagogical experiment, and mathematical analysis of the study were carried out.

The program for studying the level of physical fitness was tested among students in the following specialties: pediatrics, dentistry, medical and preventive care, clinical psychology. Students of the 1st to 4th years of study with the medical groups «Basic» and «Preparatory» were involved in the study by random sampling, their ages ranged from 18 to 22 years. A total of 360 students (180 women and 180 men) were involved in this study. The study also took into account the distribution of participants by year of study. As a result, there were 90 students (45 women and 45 men) for each year of study. Data processing was performed using Excel-97, Google Forms. Study procedure: After a warm-up corresponding to the nature of the upcoming physical activity, students underwent an assessment of their physical qualities using six proposed tests.

Table 1. The procedure for calculating points based on testing results

Test number	Unit of measurement	Points									
		1 point		2 points		3 points		4 points		5 points	
		Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
1	%	>76	>76	66-75	66-75	41-65	41-65	21-40	21-40	<20	<20
2	sec	>9,3	>8,3	9,1-9,2	8,1-8,2	8,9-9,0	7,8-8,0	8,3-8,8	7,2-7,7	<8,2	<7,1
3	cm	<164	<208	165-169	205-209	170-179	210-224	180-194	225-239	>195	>240
4	number of times	<7	<23	8-9	24-27	10-11	28-31	12-16	32-43	>17	>44
5	number of times	<28	<31	29 - 33	30 - 32	32 - 34	33 - 36	35 - 42	37-47	>43	>48
6	cm	<6	<4	7	5	8 - 10	6 - 7	11-15	8-12	>16	>13

Test № 1. 20 squats in 30 seconds. The increase in heart rate after squats was recorded in relation to the heart rate at rest as a percentage.

Test № 2. Shuttle run 3 segments of 10 meters. The time to cover the distance was measured in seconds.

Test № 3. Long jump from a place. The length of the jump was measured in centimeters.

Test № 4. Push-ups from the floor. The maximum number of push-ups that the subject could perform was counted.

Test № 5. Raising and lowering the torso from a supine position. The number of repetitions of cycles of raising and lowering the torso in 1 minute was counted.

Test № 6. Forward bend from a standing position with straight legs. The distance in centimeters was measured to which the subject could lower his fingers below the level of the platform on which he stood (Table 1).

After calculating the total score, the physical fitness level of each subject was assessed according to Table 2.

Table 2. Physical fitness level

Total points scored	Physical fitness level
27-30	excellent
21-26	good
15-20	average
9-14	low
8 and less	very low

The results in points were systematized by groups, taking into account the year of study and gender. This allowed us to determine the average values of the physical fitness level and its dynamics compared to the initial level (1 year of study), expressed as a percentage. These results are presented in Table 3: for women, for men, and also the combined results.

Results of the study and discussion. Regardless of gender, there is an increase in the physical fitness level in the second year of study (Table 3). When sports events are held by the sports center (physical education department), most of the participants are first- and second-year students, which confirms the good motivation for physical education and sports of junior students. The academic discipline «Physical Education and Sports» taught to students during the first year of study can also help maintain motivation for such activities. According to statistics from the student sports club, the majority of those involved in sports in the club are first- and second-year students (164 people in the first year, 173 in the second year, 122 in the third year, 112 in the fourth year). Regardless of gender, there is a fairly sharp decrease in the physical fitness level in the third year of study, which stabilizes at a low level in the fourth year of study (Table No. 3). Since the curriculum continues to include classes in the discipline «Applied Physical Education and Sports», such a decrease in the physical fitness level may indicate a decrease in the number or com-

Table 3. Results of the level of physical fitness of students by courses

Year of study (course)	Average Female Score (Change, %)	Male Average Score (Change, %)	Average score without gender (Change, %)
1	17,29	19,81	18,55
2	18,57 (+7,4)	20,67 (+4,34)	19,62 (+5,77)
3	16 (-7,4)	17,53 (-11,51)	16,77 (-9,6)
4	15,45 (-10,64)	18,23 (-7,98)	16,84 (+9,22)

plete absence of independent physical education and sports classes in students' free time in the third and fourth years of study. A decrease in students' motivation for such classes may occur due to a high academic workload and combining study with work, which can negatively affect physical activity. Thus, the third and fourth years of study are a critical point for students' physical health due to a sharp decrease in the physical fitness level, which can lead to a decrease in the overall health of student youth [6]. In this regard, it is necessary to introduce innovative approaches to teaching physical education, increase students' knowledge of their bodies, a healthy lifestyle, and conduct educational work to justify the importance of sports [7]. Individually determine the body's capabilities, form groups of students with the same level of physical fitness.

Conclusions. The results of the research work showed a significant decrease in the physical fitness of university students after two years of study, due to a high academic load and loss of motivation for independent sports activities, which can lead to a decrease in health and negatively affect the process and results of education. In this situation, third- and fourth-year students are recommended, in addition to attending mandatory physical education classes, which are included in the university curriculum, to improve and maintain their level of physical fitness through independent and organized physical education and sports classes outside of school hours with the support of the structure available at the university (student sports club). It is also necessary to individualize the educational process, introduce a differentiated approach to each student. Individually determine the capabilities of the body and form groups of students with an equivalent level of physical fitness for the corresponding physical load in physical education classes.

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