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The level of physical condition of students of different faculties of pedagogical university

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ABSTRACT

Physical condition is one of the components of human health. Thus, students as future teachers of different specializations should be diagnosed in order to characterize their level of physical condition. The aim of the present research is to define the students' level of physical condition, to determine the factors that influence it. The research was conducted in 2017 and involved 75 students aged from 17 to 21 years old of the first and second courses of Sumy State Pedagogical University named after A.S. Makarenko. According to the results of the research, most students of different faculties have an average level of physical condition. At the same time the number of students with a level above the average is greater among future teachers of physical culture. The high level of physical condition is determined in 5,7% of the representatives of the Educational and Research Institute of Physical Culture. The high level of physical condition of the students of other faculties has not been recorded. It is also found out that the number of classes and physical activity of future physical training teachers is much higher than of other students. The data we have received do not differ significantly from the results of other authors and indicate the need to increase the level of physical condition and motor activity of the students by increasing the number of physical education classes for the students of different specializations.

Introduction

By fixing the decline of the level of health of student youth, a number of authors have also pointed to the problem of deterioration of their physical condition and physical fitness [1, 2]. The level of physical condition of the students depends on many factors, the main of which are related to the way of life and level of motor activity [3].

The problem of improving the physical condition of the young generation in recent years has been very important, but its solution is the primary task of modern society. To address this complex task, an integrated scientific

approach should be used to provide a complete understanding of the stages, peculiarities, laws of maintaining health, factors and conditions for improving the physical condition [4].

The researches by the scientists [5, 6, 7, 8] have confirmed the positive effect of the exercises on the condition of all systems of life support of an organism and, accordingly, on the improvement of physical condition and health indicators of the students. To achieve a positive effect, you need to be engaged regularly and systematically. At the moment, the scientists have recorded the deficit of motor activity of the Ukrainian pupils and students at the level of 60-75% of the necessary to maintain the proper level of physical condition. Only 13% of Ukrainians have a physiologically determined level of motor activity. At the same time, in the countries of the European Council it is 40-60%; in Japan it is 70-80% [9, 10].

Physical exercises conducted in higher educational establishments do not provide the students with the necessary amount of motor activity [11, 12]. Their volume is 4 hours per week, which does not correspond to the biological standard of a young person [13]. Training at the Institute or Faculty of Physical Education differs from training in other departments. Students are studying in addition to humanities and practicing in various sports. Still, they have additional classes to improve athletic skills, which are aimed at improving functional and physical condition [14]. In general, physical activity ranges from 12 to 24 hours per week. Accordingly, the level of physical condition of the students of different faculties should be various. But according to the results of the researches of Prikhodko, Ivashchenko, Zhvanova and others [15], the physical condition of the students does not depend on belonging to a particular university. Therefore, there is a need for additional research on the physical condition of the students of different departments of higher educational institutions.

Methods

Participants. The study involved 75 students aged from 17 to 21 years old of the first and second courses of different faculties of Sumy State Pedagogical University named after A.S. Makarenko; for health reasons they belonged to the main group. For comparison the index of the physical condition of students of different departments of the university, the morphological and functional studies of the students were held at the beginning of the school year. 39 indicators of students of Natural Geography Department (NGD) and the Institute of Education and Psychology (IEP) and 36 students of Educational and Research Institute of Physical Education (ER IPE) specialty physical culture and sports were examined.

Methods of research are theoretical analysis and generalization of scientific and methodical literature, information resources of the Internet, pedagogical observation, anthropometric and physiological methods, methods of mathematical statistics. To investigate the functional capabilities of the students, we have conducted an analysis of indicators such as a heart rate at rest, systolic and diastolic pressure. To evaluate the level of physical condition (LPC), an informative methodology for adult populations (Index of Physical Condition (IPC) of adults) was used (after Pyrogova [16]). We used the following formulas for IPC calculation: IPC =(700–3*Heart rate –2,5*Pulse pressure – 2,7* Age +0,28* Weight)/(350–2,6* Age +0,21* Height) where: Pulse pressure = 1/3 * (Systolic pressure – Diastolic pressure) + Diastolic pressure.

The assessment of the physical condition was carried out on a scale of the levels: low (≤0.375); lower than average (0,376-0,525); average (0.526-0.675); higher than average (0.676-0.825); high (≥0.826).

In our analysis of the data, in addition to applying descriptive statistics, we examined the difference in groups with t-test. A significance level of 0,05 and confidence level of 95% was adopted for all statistical analyses.

Results

The average parameters for calculations of LPC students of different departments of the university are given in Table 1.

Table 1. *Characteristics of average parameters for calculations LPC*

Indicators	Statistical characteristics of students				t-value	p
	NGD and IEP (n=39)		ER IPE (n=35)			
	M ± m	S	M ± m	S		
Heart rate, beats/min	74 ±4,9	5,5	71±3,9	5,2	2,569	0,012
Systolic pressure, mm/Hg/c	119±4,3	5,8	121±4,8	6,9	1,232	0,222
Diastolic pressure, mm/Hg/c	79±4,2	5,4	77±5,4	7,5	0,951	0,344
Pulse pressure, mm/Hg/c	92±3,3	4,9	91±4,9	6,8	0,261	0,795
Age, years	19±0,8	1,0	19±0,4	0,7	1,326	0,189
Weight, kg	58±3,9	5,5	66±5,9	7,0	5,588	0,000
Height, cm	167±3,4	4,6	173±4,7	5,7	4,716	0,000
IPC, points	0,628±0,0662	0,0790	0,664±0,0642	0,0854	1,874	0,065

One of the indicators of the efficiency of the cardiovascular system of the students is a heart rate. In a state of a rest of healthy untrained people, the heart rate is in the range of 60-90 beats/min, of the qualified athletes is 45-55 beats/min and below. The heart rate over 90 beats/min (tachycardia) indicates a low level of fitness of the cardiovascular system or is a consequence of a disease or fatigue [17].

The results of the study indicate that the average heart rate of the students of the ER IPC is 71 beats/min, and that the students who are not regularly engaged in sports have an average of 74, indicating a normal level of functioning of the cardiovascular system in both groups, as the indicators are within the normal limits (Table 1). At the same time, a significant difference was found between the indicators of a heart rate of the students of different faculties at the level $p < 0.05$, which indicates a better functional conditions of the students who are systematically engaged in sports.

The studies of blood pressure (systolic and diastolic) of the students are within the limits of the physiological norm, namely: the average index of arterial systolic blood pressure is 119-121 mm/Hg/c, and diastolic is 77-79 mm/Hg/c. This indicates a normal level of functioning of the cardiovascular system of the students of different faculties. The analysis of physical examination results of 1-2-year-old students by height and body mass index is likely to differ due to the fact that mostly male students are studying in the Educational and Research Institute of Physical Education, and female students are in Natural Geography Department and the Institute of Education and Psychology.

The average index of the physical condition of the students of the Educational and Research Institute of Physical Education is 0,664 points corresponding to the average level. It should be noted that no student with a low level of physical condition has been registered. The 8,6% of the examined students of the Educational and Research Institute of Physical Education had the average level, 51,4% of the examined students had an average level, 34,3% had above the average level and 5,7% had a high level.

The students of Natural Geography Department and the Institute of Education and Psychology had the average index of the physical condition. It is also within the average level of 0,628 points. Instead, the number of the students with a level below the average is 3 times greater than that of the contingent – 29.4%. The average and higher average level is determined of the 44,1% and 26,5% of the students, respectively. No one representative of Natural Geography Department and the Institute of Education and Psychology had a high level of physical condition (Table 2).

Table 2. *Percentage of students with different levels of physical condition*

Students	LPC, %				
	Low	Below average	Average	Above average	High
Natural Geography Department and the Institute of Education and Psychology	0,0	29,4	44,1	26,5	0,0
the Educational and	0,0	8,6	51,4	34,3	5,7

Research Institute of Physical Education

Discussion

The results of the studies have proved and supplemented the data of different authors about the students' physical condition. Compared with the average data of other authors, the obtained data do not differ significantly, with the exception of some studies.

According to Petrenko [18] 63,5% of the students of economic specialties have an average level of physical condition, which is 12,1 – 20,4% higher than the students of pedagogical specialties. 14, 3% of the students have a level below the average, which coincides with the number of the students of pedagogical specialties with an identical level of physical condition.

Investigated by Golovchenko et al [19] the contingent students of pedagogical specialties non-sports profile is characterized by an average level of physical condition of 38, 3%.

According to the research of Korolchuk [14], the structure of the educational process at a higher educational institution at the Faculty of Physical Education and Sports contributes to maintaining students' physical condition with an average (47,7%) and above average (45,5%) levels, but with each the next course of study, the percentage of the students with high and above average levels of physical condition decreases. The average index of the physical condition index of the students of the 1-4 years of the faculty of physical education is 0.673 units corresponding to the average level. It should be noted that the author does not register any student with a low level of physical condition. The number of the students whose physical condition varies from 3% (in the first course) to Institute of Physical Education below the average level to 7,4% (in the third courses), and from the high level – from 5,5% (in the first course) to 1,9% (in the fourth course). Our own studies have confirmed the research of this author.

50 first-year students of the Faculty of Physical Education of the Drogobych State Pedagogical University named after Ivan Franko were involved in the pilot study of Fil and Kopko [20]. The authors determined LPC higher than the average both of the boys (0,68 points) and of the girls (0,73 points). These data are somewhat higher than of other authors and are different from ours. The authors explain this by the fact that, in our view, such differences with other authors can be explained by the increased compensatory-adaptive possibilities of the student's organism under the influence of increased weekly physical workload, sports types, a good state of the cardio-respiratory system and the place of residence, the majority of the respondents lives in the mountainous districts of the Lviv region.

The results of Pavlenko's research [21] have shown that 49% of the students of the main group of pedagogical specialties correspond to the average physical level, which coincides with our research.

Tolchieva et al [5] have determined the level of physical condition below the average (0,49 points) for the students of the first year of the classical university managed to improve the average level (0,54 points) for the academic year thanks to hatha-yoga classes.

According to Prikhodko [15], the physical condition of the students does not depend on belonging to a particular university and is determined by four identical factors with the same level of variables. The relative significance of these factors for the structure of the physical condition of men and women is not the same.

In general, in Ukraine there are up to 90% of pupils and students with a deviation in their health, 30-50% of them have poor physical condition. According to a number of scientists [22, 23, 24], the condition of health of student youth is deteriorating every year. During the period of studying at a higher educational establishment, the number of the students in the main medical group is gradually decreasing.

Nowadays physical activity is crucial in providing of health and quality of life. The low level of physical activity is the main cause of leading lifestyle-related chronic conditions [25]. The low level of physical activity has decreased life quality of young people. The low physical activity level and the preference of passive recreation on weekdays and weekends can reduce the life quality on 30 % [2].

Conclusions

The analysis of scientific literary sources has allowed to state that scientists of many countries of the world are concerned about the decrease in motor activity of student youth and, as a result, deterioration of their health, decrease in physical condition and physical preparedness. Specialists in the sphere of physical education and sports have offered different approaches to solving this situation. At the same time, at the state level there is a reduction of the number of hours of physical education for the student youth during training. Such actions do not promote the increase of motor activity of the students, but only deepen the existing problems.

According to the results of our study, most students of various faculties of the pedagogical university are characterized by an average level of physical condition. Among the investigated contingent, the level above the average and high is mostly represented by the representatives of the Educational and Research Institute of Physical Education. No one student of Natural Geography Department and the Institute of Education and Psychology has a high level of physical condition. Our results are the same as most of the other authors. We can state that 40-60% of Ukrainian students have an average level of physical condition, regardless of affiliation to the higher educational institution.

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