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## State of Physical Fitness of the Students of Ukrainian Higher Educational Institutions

 Grygoriy Griban<sup>1</sup>,  Nadya Dovgan<sup>2</sup>,  Ganna Tamozhanska<sup>3</sup>,  Bogdan Semeniv<sup>4</sup>,   
Alexander Ostapenko<sup>5</sup>,  Nataliia Honcharuk<sup>6</sup>,  Oksana Khurtenko<sup>7</sup>,  Larysa Kozibroda<sup>8</sup>,   
Oleksandr Husarevych<sup>9</sup>,  Anatolii Denysovets<sup>10</sup>,  Oleksandr Hrynychuk<sup>11</sup>,  Kostiantyn Prontenko<sup>12</sup>,  
and  Ihor Bloschynskiy<sup>13</sup>

<sup>1</sup>Doctor of Pedagogical Sciences, Professor, Professor of the Department of Physical Education and Sport Improvement, Zhytomyr Ivan Franko State University, Zhytomyr, Ukraine.

<sup>2</sup>Doctor of Pedagogical Sciences, Professor, Professor of the Department of Horting and Rehabilitation, National University of the State Fiscal Service of Ukraine, Kyiv, Ukraine.

<sup>3</sup>Ph.D. in Pedagogics, Head of the Department of Physical Rehabilitation and Health, National University of Pharmacy, Kharkiv, Ukraine.

<sup>4</sup>Ph.D. in Pedagogics, Associate Professor, Head of the Department of Physical Education, Sports and Health, Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies, Lviv, Ukraine.

<sup>5</sup>Ph.D. in Pedagogics, Head of the Laboratory for Physical Development and Healthy Lifestyle, Institute of Educational Problems of National Academy of Pedagogical Sciences of Ukraine, Kyiv, Ukraine.

<sup>6</sup>Ph.D. in Physical Education and Sport, Associate Professor, Associate Professor of the Department of Physical Rehabilitation and Health, National University of Pharmacy, Kharkiv, Ukraine

<sup>7</sup>Ph.D. in Psychology, Associate Professor, Associate Professor of the Department of Theory and Methods of Physical Education, Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University, Vinnytsia, Ukraine.

<sup>8</sup>Ph.D. in Physical Education and Sport, Associate Professor, Associate Professor of the Department of Physical Education, Lviv Polytechnic National University, Lviv, Ukraine.

<sup>9</sup>Ph.D. in Physical Education and Sport, Associate Professor of the Department of Social Rehabilitation Technologies, Zhytomyr Institute for Economics and Humanities of Higher Educational Establishment "Open International University of Human Development "Ukraine", Zhytomyr, Ukraine.

<sup>10</sup>Senior Lecture of the Department of Physical Education, Zhytomyr National Agroecological University, Zhytomyr, Ukraine.

<sup>11</sup>Head of the Physical Education, Zhytomyr Automobile and Road College of National Transport University, Zhytomyr, Ukraine.

<sup>12</sup>Doctor of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Physical Education, Special Physical Training and Sport, S. P. Koroliiv Zhytomyr Military Institute, Zhytomyr, Ukraine.

<sup>13</sup>Doctor of Pedagogical Sciences, Professor, Head of the English Translation Department, Faculty of Foreign Languages and Humanities, Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine, Khmelnytskyi, Ukraine.

### Abstract

The article is devoted to the problem of increasing the level of physical fitness of the students of Ukraine. The role of physical education in the improvement of health, working capacity and the efficiency of the educational and future professional activity of students is shown in the article. The aim is to study the state of physical fitness of the students of a different gender at the different stages of study at higher educational institutions of Ukraine. The study was conducted at Zhytomyr National Agroecological University. 394 students (199 males, 195 females) of the 1st-4th years of study participated in the investigation. The research methods included the analysis and generalization of educational and methodical literature, pedagogical observation, testing; the methods of mathematical statistics. The assessment of the students' level of physical fitness was carried out according to the State tests and standards of the assessment of the Ukrainian population's physical fitness by the exercises characterizing the level of different physical qualities development, such as power, endurance, speed, agility, flexibility. It was found that the students of the 2nd year of study had the best level of physical fitness. Starting from the 2nd year, the rates of the improvement of the level of physical qualities of both male and female students are slowed



down and decreased by individual tests. In the senior years, there is a significant decrease in the level of physical fitness. It was found that the level of physical fitness of male students is higher than the female students. The conducted analysis gives grounds to assert that the state of physical fitness of both male and female students of the 1st-4th years of study can be considered unsatisfactory in general. Conclusions. The study of the state of physical fitness of students of Ukraine showed that the traditional system of physical education at higher education institutions was not fully able to provide the required level of physical fitness and working capacity of students for future professional activity and vital activity. This necessitates the search for efficient ways of the improvement of the traditional system of physical education at higher education institutions of Ukraine.

**Keywords:** physical fitness, physical education, physical qualities, students

## 1. Introduction

An important component of health, the basis of high performance and vitality, on which all the motor activity of a person is carried out, is the level of physical fitness [1, 2]. An increase in the level of physical fitness of students is one of the priority tasks of the departments of physical education in Ukrainian higher education institutions. At the same time, the departments of physical education and modern methods of physical training do not fully satisfy the natural biological need of students in physical activity [3, 4].

Among the main reasons for the low level of physical fitness and health of young students in Ukraine are the devaluation of the social prestige of a healthy lifestyle; underestimation of the social, health-improving and educational role of physical education and sports in the educational institutions; a low level of physical development and health of school graduates; the lack of sufficient interests, motives, and needs of students for traditional physical education classes; the lack of diversity in the means of physical education; insufficient health-promoting and training orientation of the forms and means of physical education; the conditions of study in modern educational institutions, characterized by an increase in the volume of education activity and low motor activity of students; the students' lifestyle [5, 6].

## 2. Literature Review

Physical fitness is an important characteristic of health status and an integral indicator of the physical activity of students [7]. The level of physical fitness of the student depends on the mastering of the means, forms and types of physical training, which are used during instructional and independent physical exercises. Using proper physical exercises and regulating the intensity of their performance, it is possible to purposefully influence the stimulation of all systems of an organism, increase the level of their functioning, ensuring a high level of physical fitness of students [8, 9, 10].

Physical fitness is the students' willingness to perform the physical activities required by the curriculum. It reveals the level of the development of physical qualities that has been achieved in the process of physical education. Physical fitness is the result of the students' physical activity, an integral indicator because all organs and systems of an organism come into contact during physical exercise [11, 12]. Physical fitness is considered not only as a function of the motor apparatus but also as the functioning of the whole organism [13]. The physical fitness of students is related to the level of physical health, but it cannot be stated definitely that a student who has a high level of physical health also has a high level of physical fitness. Therefore, the results of motor tests of the students with a "safe" level can serve as a model for the development of motor skills of the students with lower levels of physical health. It is obvious that physical fitness first should be focused on improving the health of students and only indirectly on the results of motor tests.

Many years of experience and research suggest that the physical fitness of the students of higher education institutions is laid in their early years, especially when studying at school [9]. The level of readiness of a university applicant, one's level of health will greatly affect the content and level of workload in physical education classes at higher education institutions and ultimately the level of physical fitness [14].

Determining the fitness level is important when recommending exercise regimen, selecting or creating wellness training programs, and evaluating the efficiency of the influence of certain physical activities on the organism [15]. The theory and methodology of physical education [7] offer many ways and means of



controlling the development of physical qualities, which can provide a rather high and reliable level of assessment of the students' physical fitness. There are many pedagogical, medical, biological and instrumental techniques [16, 17, 18] that allow determining the level of physical fitness of students clearly. At the same time, they are practically not used in the process of physical education to estimate the level of physical fitness of students but are used by teachers of higher educational institutions for scientific research in this field.

A rather efficient form of assessment of the level of physical fitness and the system of physical education of students was proven a module-rating system [3]. This system is today one of the most advanced systems of assessment of knowledge, abilities, state of physical fitness and independent work of students in the departments of physical education. It comprehensively, consistently and systematically provides an opportunity to evaluate the students' theoretical knowledge throughout the study period, the improvement of the tests in physical training from course to course in the practical section, reveals the content and structure of vocationally applied physical training, has criteria for assessing the students' independent work.

The analysis of special literature [2, 4, 9, 16, 19-21] showed that the existing methods of the organization of physical education do not provide the increase in physical fitness of a considerable part of students in the period of study in higher educational institutions. Well-timed and high-quality diagnostics of the current level of physical fitness of the students of various specialties have an important applied role. Therefore, it is extremely important to use new methodical approaches and innovative technologies for the express evaluation of the current level of physical fitness of students.

**The aim of the article** is to investigate the state of physical fitness of the students of different gender of higher education institutions of Ukraine at the different stages of the study.

### 3. Method

#### 3.1. Participants

The assessment of the students' physical fitness was carried out at Zhytomyr National Agroecological University during the physical education process. The study involved 394 students of the 1st-4th years of the main educational department (199 males and 195 females) of the faculties of agroecology, economics, and agribusiness, veterinary medicine, the mechanization of agriculture.

#### 3.2. Materials

The methods of research included the analysis and generalization of educational and methodical literature, which made it possible to find out the current state of physical fitness of students; pedagogical observation and testing that were used to diagnose the level of development of the students' physical qualities; the methods of mathematical statistics that were used for qualitative processing of the obtained data.

To test the level of physical fitness, control exercises from the State tests and standards of the assessment of the Ukrainian population's physical fitness were used [22].

The following tests were used to evaluate power qualities: 1) standing long jump; 2) push-ups; 3) pull-ups (males), hanging on the crossbar with bent arms (females); 4) sit-ups for 1 min from a position of lying on the back, hands on the nape, legs fixed. In order to evaluate the speed characteristics, the 100 m race was used. The shuttle running 4 x 9 m characterized the development of agility. The endurance assessment was exercised by the 3000 m (males) and 2000 m (female) race. The forward reach from a sitting position was used for the assessment of flexibility. Control tests and standards of assessment of the physical fitness of students (both males and females) are presented in Table 1.

#### 3.3. Procedure

The procedure for calculating an individual grade of the students' physical fitness is shown in Table 2. The students' possible final grades in physical education, taking into account the results of 8 physical exercises, are in the range of 9-45 points. The evaluation scale of the results of the students' physical fitness testing is given in Table 3.



**Table 1.** Tests and standards of assessment of the students' physical fitness

Tests	Gender	Points / Standards				
		5	4	3	2	1
3000 m race, min, s	Male	12.00	13.05	14.30	15.40	16.30
2000 m race, min, s	Female	9.40	10.30	11.20	12.10	13.00
100 m race, s	Male	13.2	13.9	14.4	14.9	15.5
	Female	14.8	15.6	16.4	17.3	18.2
Standing long jump, cm	Male	260	241	224	207	190
	Female	210	196	184	172	160
Push-ups, times	Male	44	38	32	26	20
	Female	24	19	16	11	7
Pull-ups, times	Male	16	14	12	10	8
Hanging on the crossbar with bent arms, s	Female	21	17	13	9	5
Sit-ups for 1 min, times	Male	53	47	40	34	28
	Female	47	42	37	33	28
Shuttle running 4 x 9 m, s	Male	8.8	9.2	9.7	10.2	10.7
	Female	10.2	10.5	11.1	11.5	12.0
Forward reach, cm	Male	19	16	13	10	7
	Female	20	17	14	10	7

**Table 2.** The procedure for calculating an individual grade of the students' physical fitness

Test	Score	Test coefficient	Result taking into account the coefficient
3000 m race (males)	1-5	2	2-10
2000 m race (females)	1-5	2	2-10
100 m race	1-5	1	1-5
Standing long jump	1-5	1	1-5
Push-ups	1-5	1	1-5
Pull-ups (males)	1-5	1	1-5
Hanging on the crossbar with bent arms (females)	1-5	1	1-5
Sit-ups for 1 min	1-5	1	1-5
Shuttle running 4 x 9 m	1-5	1	1-5
Forward reach	1-5	1	1-5

**Table 3.** The evaluation scale of the results of the students' physical fitness testing

Points	The level of physical fitness	Qualitative assessment of the level of physical fitness
41-45	High	Excellent – «5»
32-40	Above the middle	Good – «4»
23-31	Middle	Satisfactory – «3»
14-22	Below the middle	Unsatisfactory – «2»
9-13	Low	Bad – «1»

During the academic year, students were specially trained to take tests. In the practical section of the program (physical training), the strategy of a differentiated approach to students was implemented. The content of the practical section included the means of physical training, which contribute to the improvement of the basic systems (cardiovascular, respiratory, musculoskeletal, muscular) of an organism,



meet the interests of students and do not need additional equipment, and their impact was quickly adjusted during the educational process. The content of the students' physical training provided the achievement of a certain level of the development of physical qualities, the acquisition of motor abilities and skills, which contribute to the successful combination of studying with physical education classes and allowed the students to adapt to the educational process and life activity successfully.

In the process of physical training, a wide range of traditional and innovative means and methods of physical education was used. The main means of the practical section were generally developing, professionally applied, sports, recovering, therapeutic, recreational, and preventive physical exercises. The exercises were performed according to certain methods, which allowed influencing the development of the individual physical qualities of students and comprehensive training. The exercises were also selected depending on the predominant motor skills, such as running, jumping, acrobatic, gymnastic, playing, etc.

#### 4. Results and Discussion

The conducted analysis of the physical fitness of students showed that the levels of development of their physical qualities are not the same. Most students receive positive grades only after special training during physical education classes, attending additional classes in various physical training aimed at developing physical qualities. The level of the students' physical fitness is influenced by many factors, some of which are not directly dependent on the scientific and methodical support of the physical education process, the professional level of the teaching staff of the department, the material and technical support and equipment of the sports base of higher educational establishments and the state of sports and mass, health and physical activities. All factors that influence the students' level of physical fitness can be divided into two general groups: 1) the factors that a university applicant has or that have influenced one's life activity before entering a higher education institution (heredity, health, physical condition, abilities and skills, motivation and the level of interests, lifestyle); 2) a group of factors that directly affect a student while studying at a higher education institution (curriculum and standards, material and technical support, the level of requirements and assessment, psychological climate, the level of sports and mass work, teacher, lifestyle, education, environmental conditions). The level of influence of these factors is not definite and depends on the individual characteristics of students, teachers and many other factors that may arise in the process of physical training.

The students' insufficient level of physical fitness and lack of uptrend during the student life is caused by the low quality of physical education at both school and higher educational establishments, by the activation of bad habits of students, the lack of interest and persistent motivation for systematic physical exercises.

The analysis of the level of the physical fitness of both male (Table 4) and female (Table 5) students gives grounds to state that the level of physical fitness of the students of the 1st-4th years can be generally considered as unsatisfactory.

Concerning the endurance development (the 3000 m race), the male students of the 1st-4th years had an average level of the development of this physical quality that corresponded to the satisfactory grade. The students of the 2nd year of study were found to have the best level of endurance development, and the students of the 3rd year – the worst. The students had similar satisfactory indicators of the speed development (the 100 m race), but no significant differences were found between the students of the 1st-4th years. The results of students of the 1st year in the standing long jumps accounted for 220.5 cm that corresponded to the unsatisfactory grade and below the middle level of power qualities development. The 2nd, 3rd, and 4th-year students had a middle level of readiness in terms of this standard that generally corresponded to a satisfactory grade. The 4th-year students achieved the best result (227.1 cm). This indicated that meeting the same standard every year led to a better mastering of the jump technique. Satisfying the standard in push-ups, the students of the 2nd-4th years reached above the middle level of power readiness that corresponded to the good grade, only the freshmen received a satisfactory grade. The male students of all grades met the standard in pull-ups with an unsatisfactory grade; the students of the 2nd year showed the best result (11.5 times) that corresponded to below the average level. Complying with the standard in sit-ups for 1 min, the students of the 1st, 2nd and 4th years received a satisfactory grade, and



the students of the 3rd year received unsatisfactory. The students of the 1st year fulfilled the norms in 4 x 9 m shuttle running with an unsatisfactory grade. The males of all other years managed to achieve only a satisfactory grade. The assessment of flexibility (forward reach) revealed a very low level of its development. The 1st year students received a bad grade for the test and the students of all other years received an unsatisfactory grade (Table 4).

**Table 4.** The level of the physical fitness of male students ( $n=199$ ,  $X \pm m$ )

Tests	The year of study			
	1st	2nd	3rd	4th
3000 m race, (min, s)	13.44.8 $\pm$ 1.15	13.33.9 $\pm$ 1.06	14.14.2 $\pm$ 0.54	14.05.3 $\pm$ 0.58
100 m race, (s)	14.16 $\pm$ 0.69	14.10 $\pm$ 0.73	14.10 $\pm$ 0.62	14.12 $\pm$ 0.62
Standing long jump (cm)	220.5 $\pm$ 21.54	225.5 $\pm$ 13.87	225.3 $\pm$ 17.47	227.1 $\pm$ 17.39
Push-ups (times)	36.2 $\pm$ 7.46	39.4 $\pm$ 7.26	38.2 $\pm$ 6.23	39.9 $\pm$ 5.36
Pull-ups (times)	10.2 $\pm$ 4.89	11.5 $\pm$ 3.03	10.2 $\pm$ 3.52	11.1 $\pm$ 3.15
Sit-ups for 1 min (times)	41.2 $\pm$ 7.26	42.1 $\pm$ 6.48	38.7 $\pm$ 10.49	40.9 $\pm$ 7.38
Shuttle running 4 x 9 m (s)	9.8 $\pm$ 0.58	9.6 $\pm$ 0.48	9.5 $\pm$ 0.50	9.4 $\pm$ 0.42
Forward reach (cm)	8.0 $\pm$ 6.80	10.9 $\pm$ 6.96	10.4 $\pm$ 6.32	10.5 $\pm$ 5.87

The female students' endurance development was assessed by the 2000 m race. The female students of all grades completed the test with an unsatisfactory grade; the best result was recorded in the 2nd year (11 min 38.6 s). The development of the speed of female students corresponded to a bad grade that means that this characteristic was at a low level of development. Similar results were obtained when performing standing long jump, where the assessment of the strength of the legs muscles of the students corresponded to the bad level. Only the 2nd-year female students received a satisfactory grade for push-ups, and the students of all other years – unsatisfactory (Table 3).

**Table 5.** The level of the physical fitness of female students ( $n=195$ ,  $X \pm m$ )

Tests	The year of study			
	1st	2nd	3rd	4th
2000 m race, (min, s)	11.49.5 $\pm$ 1.13	11.38.6 $\pm$ 0.44	11.57.2 $\pm$ 0.48	12.08.5 $\pm$ 0.52
100 m race, (s)	17.98 $\pm$ 1.11	17.44 $\pm$ 0.99	17.51 $\pm$ 1.44	17.74 $\pm$ 1.23
Standing long jump (cm)	163.6 $\pm$ 11.83	170.3 $\pm$ 13.18	169.1 $\pm$ 11.16	172.0 $\pm$ 11.34
Push-ups (times)	12.3 $\pm$ 6.23	16.6 $\pm$ 5.60	13.0 $\pm$ 5.98	14.4 $\pm$ 6.08
Hanging on the crossbar with bent arms, (s)	11.2 $\pm$ 8.31	13.1 $\pm$ 5.64	10.6 $\pm$ 6.67	10.4 $\pm$ 6.00
Sit-ups for 1 min (times)	35.8 $\pm$ 7.61	38.7 $\pm$ 8.70	37.9 $\pm$ 7.18	38.4 $\pm$ 6.70
Shuttle running 4 x 9 m (s)	11.6 $\pm$ 0.57	10.9 $\pm$ 0.56	11.2 $\pm$ 0.54	11.1 $\pm$ 0.55
Forward reach (cm)	12.9 $\pm$ 6.08	14.8 $\pm$ 5.14	12.9 $\pm$ 6.50	12.6 $\pm$ 5.68

Performing hanging on the crossbar with bent arms confirmed that only the 2nd-year female students were able to get a satisfactory grade and the female students of all other years received an unsatisfactory grade. Only 1st-year female students received an unsatisfactory grade for sit-ups for 1 min, while other female students showed a middle level of the development of abdominal muscles. The female students' dexterity was assessed by the 4 x 9 m shuttle running. The 1st and the 3rd-year students received an unsatisfactory grade and the students of the 2nd and the 4th years completed the test with a satisfactory grade. The level of the flexibility development of female students was low because the female students of the 1st, 3rd and 4th years fulfilled the norm for an unsatisfactory grade, only the students of the 2nd year showed an average result of 14.9 cm, which was rated as satisfactory.

The analysis of the changes in the levels of development of the individual physical qualities of students showed that starting from the 2nd year, the rates of improvement of the level of physical qualities

of both male and female students were slowed down and decreased, according to individual tests. In general, in the 3rd and 4th year, there was a decrease in the level of physical fitness of both male and female students (Tables 6, 7).

**Table 6.** The difference in the level of the physical qualities development of male students of the 1st-4th years

Tests	The differences between the years of study					
	the 1st - the 2nd	the 1st - the 3rd	the 1st - the 4th	the 2nd - the 3rd	the 2nd - the 4th	the 3rd - the 4th
3000 m race, (min, s)	+ 10.9	- 29.4	- 20.5	- 40.2	- 31.3	+ 8.9
100 m race, (s)	+ 0.06	+ 0.06	+ 0.04	0.00	- 0.02	- 0.02
Standing long jump (cm)	+ 5.01	+ 4.82	+ 6.63	- 0.19	+ 1.62	+ 1.81
Push-ups (times)	+ 3.20	+ 2.06	+ 3.79	- 1.14	+ 0.59	+ 1.73
Pull-ups (times)	+ 1.32	0.00	+ 0.85	- 1.32	- 0.47	+ 0.85
Sit-ups for 1 min (times)	+ 0.91	- 2.53	- 0.28	- 3.44	- 1.19	+ 2.25
Shuttle running 4 x 9 m (s)	+ 0.24	+ 0.29	+ 0.43	+ 0.05	+ 0.19	+ 0.14
Forward reach (cm)	+ 2.92	+ 2.40	+ 2.49	- 0.52	- 0.43	+ 0.09

Note. «+» – positive changes, «-» – negative changes.

**Table 7.** The difference in the level of the physical qualities development of female students of the 1st-4th years

Tests	The differences between the year of study					
	the 1st - the 2nd	the 1st - the 3rd	the 1st - the 4th	the 2nd - the 3rd	the 2nd - the 4th	the 3rd - the 4th
2000 m race, (min, s)	+ 10.9	- 7.7	- 19.0	- 18.6	- 29.4	- 11.3
100 m race, (s)	+ 0.54	+ 0.47	+ 0.24	- 0.07	- 0.30	- 0.23
Standing long jump (cm)	+ 6.74	+ 5.51	+ 8.40	- 1.23	+ 1.66	+ 2.89
Push-ups (times)	+ 4.31	+ 0.74	+ 2.10	- 3.54	- 2.21	+ 1.36
Hanging on the crossbar with bent arms, (s)	+ 1.93	- 0.66	- 0.80	- 2.59	- 2.73	- 0.14
Sit-ups for 1 min (times)	+ 2.85	+ 2.17	+ 2.55	- 0.68	- 0.30	+ 0.38
Shuttle running 4 x 9 m (s)	+ 1.61	+ 0.40	+ 0.55	- 0.31	- 0.16	+ 0.15
Forward reach (cm)	+ 2.04	+ 0.08	- 0.24	- 1.96	- 2.28	- 0.32

Note. «+» – positive changes, «-» – negative changes.

The comparison of our research results with those of the other authors [4, 12, 17, 19] shows that a significant number of students' physical fitness indicators do not differ significantly and they are generally unsatisfactory. The data obtained confirm that such a state of development of physical qualities is peculiar to the majority of the students of higher educational institutions of different regions of Ukraine.

The results were analyzed on a five-point scale (5–1 points) as a level of physical fitness: a high level (5 points), above the middle (4 points), middle (3 points), below the middle (2 points) and low (1 point) (Tables 2, 3). There was introduced an additional very low level of physical fitness, which corresponded to zero grade, for the students who received less than 9 points (according to different scales, there is no such grade) for all tests in meeting the standard. The studies confirmed the need for such an assessment, since 1.9-4.3 % male students of different courses had the level of physical fitness that corresponded to less than 9 points for meeting eight standards (Table 8). The indicators of female students were even lower: 4.5-10.6 % female students received zero grade (Table 9).

**Table 8.** Generalized indicators of the male students' distribution by the level of physical fitness (n=199, %)

The year of study	Points (% of male students)						Total points	Quality point
	«5»	«4»	«3»	«2»	«1»	«0»		
1st	-	9.6	46.2	40.4	1.9	1.9	24.1	2.63
2nd	2.1	22.4	49.0	26.5	-	-	27.4	3.00



3rd	–	29.8	34.0	25.5	6.4	4.3	24.4	2.79
4th	2.1	23.4	51.1	17.0	4.3	2.1	26.2	2.96
Average data	1.0	21.0	45.1	27.7	3.1	2.1	25.5	2.84

Among the freshmen and 3rd-year male students, no students with a high level of physical fitness were found. In the 2nd and 4th years, there were 2.1 % of such students. During studying at a higher education institution, the number of students with above the middle level of physical fitness tended to increase in the 2nd, 3rd and 4th years. In the first year, their number was 9.6 % of the total number; it was two or three times increased in the senior years. The number of students with a middle level of physical fitness was the highest in the 4th year (51.1 %) and the lowest in the 3rd year (34.0 %). In the 1st year, it was 46.2 % there was a slight increase in the number of male students with a middle level of physical fitness (49.0 %) in the 2nd year. The number of male students with below the middle level of physical fitness accounted for 40.4 % in the 1st year; their number was decreased to 26.5 % in the 2nd year; to 25.5 % in the 3rd year; to 17.0 % in the 4th year. 3.8 % freshmen were defined to have bad and very bad levels of physical fitness; there were no such students in the 2nd year; this number was increased significantly to 10.7 % in the 3rd year; to 6.4 % in the 4th year. Thus, during four years of study at a higher education institution, the level of physical fitness of male students was increased in the 2nd year, and then it was slowed down and became lower, in comparison to the 2nd year. In the 4th year, there was a slight increase again. The highest level of the physical fitness of male students was observed in the 2nd year, and the lowest – in the 1st year (Table 8).

**Table 9.** Generalized indicators of the female students' distribution by the level of physical fitness (n=195, %)

The year of study	Points (% of male students)						Total points	Quality point
	«5»	«4»	«3»	«2»	«1»	«0»		
1st	–	2.1	20.8	41.6	29.2	6.3	16.9	1.83
2nd	–	4.5	50.1	38.6	2.3	4.5	21.9	2.48
3rd	4.3	12.8	10.6	38.3	23.4	10.6	19.0	2.08
4th	–	7.7	21.1	48.1	15.4	7.7	18.4	2.04
Average data	1.1	6.8	25.1	41.9	17.8	7.3	19.0	2.10

There were almost no female students with a high level of physical fitness during studying at a higher education institution, except for the third year, where 4.3 % such students were found. Only 2.1 % female students with above the middle level of physical fitness were found in the 1st year, 4.5 % in the 2nd year, 12.8 % in the 3rd year, and 7.7 % in the 4th year (Table 9). There were 20.8 % female students with a middle level of physical fitness in the 1st year, 50.1 % in the 2nd, 10.6 % in the 3rd, 21.1 % in the 4th. It was found 41.6 % female students with below the middle level of physical fitness in the 1st year, 38.6 % in the 2nd, 38.3 % in the 3rd, 48.1 % in the 4th. The students of the 1st (35.5%) and the 2nd year (6.8%) were defined to have the highest rate of low and very low levels of physical fitness.

The analysis of the obtained data shows that the level of fitness of male students is better than the one of female students. The male students gained 1.5-6.0 points for the tests in the 1st year, 2.3-6.6 points in the 2nd year, 2.0-5.3 points in the 3rd year, 2.1-5.6 points in the 4th year, indicating that that the level of development of individual physical qualities is disparate. The results of female students, were slightly lower, namely 1.0-4.3 points in the 1st year, 1.5-4.5 points in the 2nd year, 1.6-3.5 points in the 3rd year, 1.2-3.2 points in the 4th year.

Analyzing the indicators dynamics of the level of physical fitness of the students of different years of study, it can be noted that the number of students belonging to one or another level of physical fitness differs for various authors [1, 9, 18, 21], and in general, it characterizes a rather low level of physical fitness of students of Ukraine, especially female students. The number of female students with bad and very bad levels of physical fitness is 9.3 times higher than the number of males with the same level of physical fitness in the 1st year. There are a significant number of female students with this level of physical fitness in the 3rd and 4th years.



In general, the level of physical fitness of students (both males and females) is insufficient to improve health, increase physical and mental capacity, provide efficient training at a higher educational institution, and to improve the efficiency of future professional activity.

## 5. Conclusions

1. In order to optimize the definition and regulation of physical activity in the process of physical education at higher education institutions, the information on the state of physical fitness of students is important. Physical fitness is to some extent an indicator of the students' physical activity, an integral indicator of the functioning of organs and systems of the body. Through physical exercises and tests, a teacher can determine the level of functioning of certain systems of an organism that can directly affect the state of the physical fitness of a student.

2. On the one hand, physical education provides comprehensive and harmonious development of the student's physical qualities, and, on the other hand, it allows student to identify one's deficiencies in physical fitness and to eliminate them and prepare for the tests better in the next semester or year. A student gains points and receives a corresponding grade for the fulfillment of all requirements of the tests in the physical training. This allows determining the student's rating in the group, among the other students of the same year, and at the faculty.

3. A study of the level of physical fitness of students during studying at higher educational institutions indicates that the level of physical fitness of male students is higher than the one of female students. Both male and female students of the 1st year showed the worst level of development of physical qualities that indicates the unsatisfactory level of physical fitness. The students of the 2nd year were defined to have the best indicators of the level of physical fitness. The analysis of the results of physical fitness of students of Ukrainian higher education institutions confirmed a discrepancy between their physical fitness and future professional activity and viability.

4. The students' insufficient level of physical fitness and lack of uptrend during the student life is caused by the low quality of physical education at both school and higher educational institutions, by the activation of bad habits of student youth, the lack of interest and persistent motivation for systematic physical exercises. The low level of the physical fitness of students is accompanied by uncertainty in their actions, depression, adaptation discomfort, the deterioration of recovery processes during physical and mental activity, and satisfactory performance of the cardiovascular system that in general influences the student's studying activities negatively. The study of the state of physical fitness of students of Ukraine showed that the traditional system of physical education at higher education institutions is not able to provide the required level of physical fitness and capacity of students for future professional activity and viability.

The prospects for further research are aimed at the development of innovative technologies to improve the students' physical fitness during studying at higher educational institutions.

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