

## SECTION 28.

### PHYSICAL CULTURE, SPORTS AND PHYSICAL THERAPY

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## MONITORING OF PHYSICAL PREPAREDNESS OF UKRAINIAN STUDENTS

**Introduction.** Assessment of physical fitness level is an important task for organizational and pedagogical measures' substantiation. Detailed assessment of fitness level helps to improve physical education among students at higher educational establishments. In addition, the significant role of physical fitness assessment consists in the need to determine the optimal physical load and the expediency of adequate selection of techniques at training classes [1, 5]. Scientific researches by [2, 6] have confirmed the fact that in recent years the level of students' health has decreased to a great extent. Only one in five schoolchildren as well as only one in ten students in Ukraine have a sufficient level of motor activity and healthcare. These statistical data show Ukraine to be one of the least physically developed countries in Europe [3, 5]. It has been found out that only 2% of students have adequate physical fitness, 20-25% of students have a satisfactory level of fitness, 41-44% have a low level of fitness, and 33-34% are in a very poor physical conditioning [4]. Motor activity itself is one of the most effective, cost-effective means of healing. Academic classes in physical education at higher education institutions do not fully utilize their potential in the improvement of students' health. The evidence of this is the existing negative dynamics in the number of diseases every year. Regarding all the material above, we have distinguished a problem area, which requires detailed analysis.

**Material & methods.** There were boys and girls aged 17-20 years who participated in the experiment. The experiment involved 727 students who were studying in the first, the second and the third courses. All the students were enrolled into the group of general physical preparation (GPP) at Ivan Franko Lviv National University and Lviv Polytechnic National University main departments. In order to assess students' physical fitness, the theoretical analysis and generalization of scientific as well as methodological literature has been conducted.

*Procedure:* Physical fitness testing has been carried out according to the national standards. Total endurance has been measured by running 2000 m (for girls) and 3000 m (for boys); force has been measured by pulling up (for boys) as well as flexion and extension of arms in a lying down position (for girls); speed has been measured by running 100 m race; agility has been measured by shuttle running 4x9 m; strength endurance has been measured by trunk lifting in a seated position,

flexibility has been measured by bending the trunk forward in a seated position. The level of students' physical preparedness has been determined by the standards of physical fitness (5-point scale), where "5" stands for excellent, "4" – good, "3" – satisfactory, "2" – unsatisfactory, "1" – bad. *Data analysis:* We have calculated the average and standard deviations as well as the coefficient of variation and the reliability of the results obtained by the Student Criterion.

**Results.** The results of the endurance testing, we have revealed that the female students' marks are unsatisfactory in all courses of studying, whereas the male students' marks turn out to be satisfactory. The results of the students running 100 m race have shown a wave-like dynamics. The indicators of physical fitness have slightly improved within the period of studying in the first and the second course ( $p < 0.05$ ), however in the third year of studying the results have significantly deteriorated ( $p < 0.001$ ). According to our data, the average indicator of running 100 m race among male students ( $14.08 \pm 0.87$  s) corresponds to a satisfactory level. Female University students have demonstrated low results in running 100 m race ( $17.40 \pm 0.87$  s); the results of the female students are evaluated with 1 point (on a 5-point scale). The average indicators of standing long jump among the boys (studying in the first course) stand for  $224.43 \pm 12.68$  cm. These indicators have been slightly improved in the second year of studying (to  $227.00 \pm 7.60$  cm), albeit they have decreased in the third year of studying (to  $225.79 \pm 10.11$  cm).

Table 1

### Physical preparedness of male students

№	Physical exercise	1 course	2 course	3 course
1.	Running 3000 m/minute	14.14±1.18	14.25±0.59	14.21±0.41
2.	Running 100 m/second	14.07±0.07*	13.92±0.49*	14.15±1.13
3.	Running 30 m/second	4.14±0.35	4.15±0.21*	4,31±0.22*
4.	Standing long jump/cm	224.43±12.68*	227.00±7.60	225.79±10.11
5.	Shuttle running, 4x9 m	9.93±0.49*	9.81±0.78*	10.12±0.92*
6.	Trunk lifting in the seated position, amount/1 minute	44.25±0.71	43.41±4.95	42.52±4.50*
7.	Pulling up on the crossbar, amount	9.96±1.41*	10.88±2.12*	8.98±3.79*
8.	Trunk bending forward in a seated position/cm	12.98±0.71*	11.90±4.15	11.68±4.06*

\* Difference between 1, 2, 3 courses,  $p < 0,05$ ;

According to the results of agility testing we have determined the negative dynamics of students' results (from the first to the third year of study). The students of the third course demonstrate a sharp decline in coordination ( $p < 0.001$ ). Female students are prone to deteriorate their indicators of physical fitness every year ( $p < 0.001$ ) (Table 1). The strength indicators have been determined as unsatisfactory. The development of arms strength and muscle has been admitted as being low among both boys and girls (despite the increase of the results in the second course). Students have been recorded to show significant deterioration of the results in pulling up the crossbar when studying in the third year ( $p < 0.05$ ). In order to determine students abdominal muscle strength, we have analyzed students' indicators after doing special exercises. We have revealed that the level of physical fitness is significantly better. This can be explained with the fact that the average indicator of physical preparedness is  $44.25 \pm 0.71$  among students of all courses. The  $44.25 \pm 0.71$  indicator corresponds to a satisfactory level (despite the negative dynamics of the indicators). Female students demonstrate more stable level of fitness. The deterioration of physical fitness among female students has been detected after the second year of studying ( $p < 0.05$ ). Moreover, there is no significant difference in female students' fitness development within the period of the first and the third year of studying ( $p > 0.05$ ). The average

indicator corresponds to a satisfactory level of physical preparedness. Having analyzed the level of female students' flexibility, we have observed a satisfactory level of females' physical preparedness. However, the negative dynamics of the results has been detected within the period of studying in the first, the second and the third course ( $p < 0.001$ ) (Table 2).

Table 2

### Physical preparedness of female students

№	Physical exercise	1 course	2 course	3 course
1.	Running 2 km/minute	11.56±1.00*	11.28±0.97	11.41±0.83
2.	Running 100 m/second	17.33±0.79*	17.07±0.76*	17.72±0.68*
3.	Standing long jumping/cm	183.06±13.69	181.23±13.00	176.63±12.42*
4.	Shuttle running, 4x9 m	11.09±0.57*	11.29±0.60*	11.48±0.53*
5.	Trunk lifting in the seated position, amount/1 minute	40.14±5.41	41.17±4.56*	39.39±5.70
6.	Flexion and extension of arms in a lying down position, amount	11.20±4.22*	12.39±4.50*	10.76±4.12
7.	Trunk bending forward in a seated position, cm	15.63±3.93*	15.28±4.15*	13.91±3.32*
8.	Integral assessment of physical preparedness	19.38±4.36	19.84±4.36	16.74±3.22*

\* Difference between 1, 2, 3 courses,  $p < 0,05$

The analysis of upper shoulder girdle strength indicates a significant deterioration of the results among girls (from the first to the third year of study) ( $p < 0.001$ ). It is worth noting that both male and female students have demonstrated an unsatisfactory level of upper shoulder girdle strength. Therefore, in our opinion, it is expedient to pay more attention to the development of muscle strength in hands and feet, since this is the weakest link in the structure of students' physical fitness. However, the results are deteriorated again ( $p > 0.05$ ) in the third studying year (these changes have not been statistically confirmed). The positive dynamics of speed and strength skills' development is observed only in the first and the second course ( $p < 0.05$ ); however in the third course students demonstrate the same level of preparedness as they do in the first course ( $p > 0.05$ ). When it comes about female students, the level of their speed and strength preparedness is satisfactory in the first course, but in the second and the third course it gradually decreases and reaches unsatisfactory level ( $p < 0.001$ ).

**Conclusions.** The results of our research have confirmed the fact of students' low physical fitness (from  $2.17 \pm 0.71$  points to  $2.00 \pm 0.71$  points ( $p < 0.001$ ) among male students and from  $1.91 \pm 0.56$  points to  $1.73 \pm 0.47$  points ( $p < 0.001$ ) among female students). Therefore, it is important to find the ways so that students can improve their physical fitness. One of the ways to solve the problem is to make students familiar with the valeological culture as well as to provide theoretical and methodological knowledge for teaching physical education effectively. In our opinion, application of modern approaches into physical education teaching and training, will motivate and stimulate young people to improve their physical fitness results.

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