

COMPARATIVE ANALYSIS OF FEMALE STUDENTS PHYSICAL FITNESS STATE AND PHYSICAL ACTIVITY

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Summary: Strengthening and preserving of student's health, increase of their level of physical fitness are the urgent tasks which could be followed by the higher establishments.

The main task of the given research is the implementation of the comparative analysis of physical fitness and motor activity of female students of the I – IV year students of the Eastern European National University.

The research of physical fitness state and motor activity of female students detected lack of its insufficient output level on the first course, further slight improvement on the second course and the emergence to the downward tendency during senior courses.

The given results testify the interdependence of researched indicators.

Key words: health, physical fitness, physical activity, students, higher establishments

Introduction

State approach of society to physical education and sports at the universities needs knowledge of management aspects of educational process of physical education which is based on account of morphofunctional opportunities, psychophysical peculiarities and structure of student's morbidity and specific of future careers.

Strengthening and preserving of student's health, increase of their level of physical fitness are the urgent tasks which face to the ukrainian society. To solve this difficult and important problem above all is to reconcile student's lifestyle with optimal patterns of physical activity, increasing of level of physical training, keeping rational regime of work and rest.

Objectives

The main task of the given research is the implementation of the comparative analysis of physical fitness and motor activity of female students of the I – IV year students of the Eastern European National University.

Materials and methods

To solve the given tasks we used theoretical analysis and literature generalization; questionnaires; teacher testing; pedagogical supervision; pedagogical experiment; methods of mathematical statistics.

Index indicators of daily physical activity and physical fitness testing are determined by Framingham Heart methodology.

Results

Data about student's physical fitness state have an important value to the optimal definition and normalization of physical loading during the process of physical training education in higher establishment. Physical fitness in some way is an indicator of student's physical activity, an integral indicator of functioning of organs and systems. In turn, physical activity is one of the main factors which determine the youth level of physical health.

There is no doubt there is an interdependence between physical education, motor activity and person's health. There is a large and controversial factual material to this problem in domestic and foreign literature which needs new understanding and theoretical justification. To our mind correct in its essence idea "Movement - the key to health" doesn't find practical implementation. Curative effect of "movements" depends not only on physical educa-

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tion but on the organization of the educational process in higher education institution, the usage of free time, i.e. on the total value of daily motor activity. The latest can vary in a wide range that is why health effects of organizational forms of physical education would be different. To our mind one of the main factors in shaping health is usual for it daily motor activity which include different forms and means of physical education in rational ratios.

The definition 'motor activity' includes amount of movements which the person does during her life. Motor activity during student's age can be divided into 3 components: activity during physical education, physical activity which is performed during training, socially useful work, spontaneous physical activity in leisure time (Бекас 2002, Грибан 2009, Круцевич 2012, Ніколаєв 2004).

In modern conditions scientific researches are actively held to optimize physical education in higher education. It is proposed to improve curriculum, methods and forms of training, to increase motor activity of young people, to form a healthy lifestyle. The vast majority of scientists ascertain health-oriented physical education subject to rational dose of loads due to individual indicators of physical fitness (Бекас 2002, Бубка 2002, Грибан 2009, Ніколаєв 2004).

Physical fitness is an important characteristic of health and integral indicator of students' physical activity because during physical exercises all the organs and systems of organism come into interrelation. Average indicators of girls' physical fitness are given in (table 1).

According to the curriculum requirements the evaluation results of level of speed development of students of all courses are evaluated average in 1 point. Individual analysis of test indicators suggests about large discrepancy between the results. For example, 19,05% of the students of the I course did the test for 1 point, 38,09% - for 2 points, 9,52% - 3 points, 4,76% - 4 points, any of the students didn't do the test for the excellent mark. 28,57% of girls according to the results of the race for 100m didn't get any marks. Among second year students any marks weren't got by 17,65% of girls, 29,41% of girls did the test on 1 point, 35,29% - 2 points and 17,65% - 3 points. A similar trend is observed at other courses.

Table 1. The physical fitness level of 1 - 4 year students

Indicators	Year of study											
	1			2			3			4		
	X	S	Sx	X	S	Sx	X	S	Sx	X	S	Sx
Run 100 m, s	17,63	1,19	0,26	17,41	1,06	0,18	17,55	0,98	0,15	17,73	0,32	0,12
Run 2000 m, mn, s	12,03	1,17	0,30	10,94	1,23	0,21	11,83	1,17	0,19	12,00	0,49	0,18
Shuttle run 4 x 9 m, s	10,83	0,61	0,14	10,57	0,52	0,09	10,85	0,65	0,10	12,03	0,79	0,23
Long jump from place, sm	1,79	0,17	0,04	1,77	0,13	0,02	1,86	0,18	0,03	1,58	0,12	0,03
Hanging on folded hands, s	20,66	12,09	2,85	13,05	7,25	1,13	17,21	5,41	0,82	11,31	9,33	2,59
Body slope forward from a seated position, sm	22,93	5,06	1,31	19,06	5,74	0,91	18,42	3,75	0,57	18,00	4,58	1,22
Body raise from the supine to the sitting position for 1 min, times	35,44	7,83	1,84	35,52	6,40	0,96	38,77	6,13	0,93	26,21	5,71	1,53

In general, a downward trend of running results at 100 m is revealed in the process of learning among students (Pic. 1).

Endurance in students compared with the speed is better developed. Average results of running at 2000 meters among the girls on the I, III, IV courses is 2 points and on the II course - 3 points. Analysis of the testing indicates a large discrepancy between the results of students on the II and III courses. For example, 5.88% students of the II course did not receive any points, 8.82% completed test score for 1 point, 32.35% - 2 points, 14.71% - 3 points, 20.59% - 4 points and 17.65% - 5 points. The girls of the IV course marked another pattern. In particular 57.14% for the testing results received 1 point and 42.86% - 2 points. While studying in higher educational establishment girls show best result of running at 2000 m on the II course. In general, students of the II, III, IV courses have higher level of endurance than the first year students.

The average indicators of the development of students' agility of the I, II and III courses (based on the results of shuttle run 4 x 9 m) is evaluated within 3 points. Girls of the IV year studying did not invest in normative values.

For individual results of shuttle running it is revealed that 5.56% of girls of the I course fulfilled the test for 1 point, 27.78% - 2 points, 38.89% - 3 points, 11.12% - 4 points and 16.67% - 5 points. A similar trend is observed also at the II

and III courses. Simultaneously, 41.67% of students of the IV year in testing process did not receive any points, 25.0% - 1 point, 25.02% - 2 points, 8.33% - 3 points. The general trend of development of students' agility of during their studying in higher educational establishment is similar to the endurance and speed. From the I to the II course is a rapid improvement in the results, after which rates are falling and the IV course testing results at 111.0% are worse than on the I year.

Average indicators of groups of students' speed and power abilities of the I and II courses are evaluated by 2 points, II course - 3 points. Girls of the IV course did not invest in regulatory requirements.

The analysis of individual testing results shows a large discrepancy of ratings of the I, II and III courses. For example, 32.35% of girls of the II course completed a long jump from place for 1 point, 29.41% - 2 points, 26.47% - 3 points, 5.88% - 4 points, 2.94% - 5 points and 2.94% - did not receive any points. At the IV course only 69.23% of respondents completed the test for 1 point, and 30.77% - did not receive any points. The changes of results in a broad jump from a place during studying of students are given by (Fig. 1).

Unlike agility, endurance and speed, the best results in terms of the length of the jump seats are found among the girls from the III course.

The results of testing the force (the hanging on the bent arms) demonstrate an appropriate indexes among the girls from the I and III courses which are estimated on the state tests for four points. Students from the 2nd year of studying received on the average 3 points. The girls from the IV course received 2 points. In general, we can observe a great divergence between the points of students from different courses. For example, 26.83% of girls from the III course completed a test on 1 point, 9.75% - on 2 points, 12.2% - on 3 points, 17.07% - on 4 points, 21.95% - on 5 points and 12.2% of students did not receive any points.

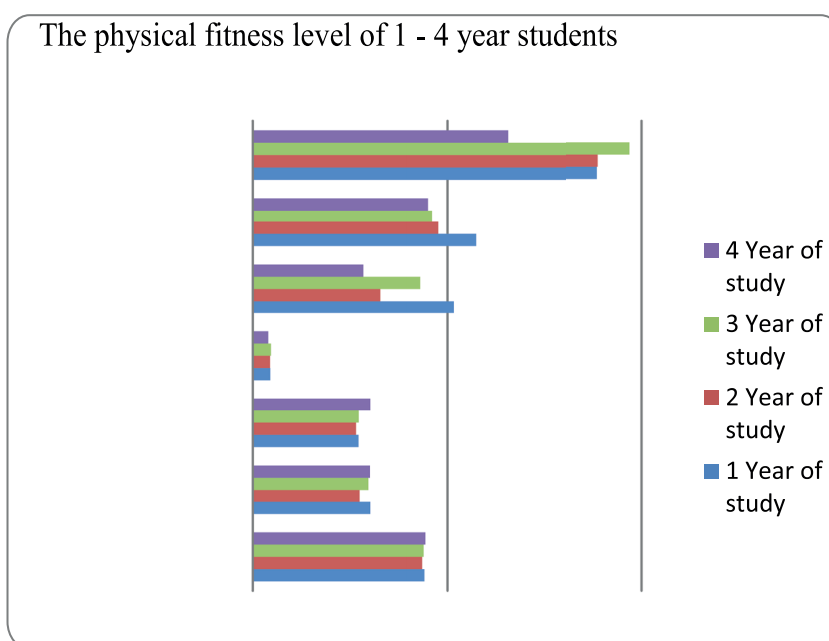


Figure 1. The physical fitness level of 1 – 4 year students

The given data show a permanent decrease of girls' flexibility during all years of studying. Especially the rapid deterioration of the results is observed from the I to the II courses.

While studying in higher education establishments there is a reduction of strength from the I to the II courses followed by an increase of them in the III course and the reduction in the IV course.

The level of development of the muscles of the trunk is significantly lower than the level of the development of the shoulder girdle. For lifting the torso for 1 minute students from the I and II courses received on the average 2 points, students from the III course - 3 points. Girls from the IV course did not miss in the normative values.

During the studying the average indexes of lifting the body for 1 minute are the best in students from the II and III courses. The results in girls from 4 course are much more lower than the girls from 1 course have.

Flexibility is the most developed among all physical qualities. The average results of the body slope forward from a seated position are 4 points among the girls from the III and IV courses and 5 points in the girls from the I course.

An individual analysis of the test results shows that all the girls invested in normative values according to the programmatic requirements.

In general, the majority of students performs the test for 4 or 5 points. Changes of the indexes of the body slope forward from a seated position are relatively stable along the whole studying.

Using the Framingham Heart methodology for determining daily physical activity, we were able to compare these parameters between the students from 1-4 courses of studying (Деделюк 2012) (Table 2, Fig. 2).

Table 2. Daily physical activity indicators of 1 - 4 year students

Indicators	Year of study											
	1			2			3			4		
	X	S	Sx	X	S	Sx	X	S	Sx	X	S	Sx
Baseline	8,12	0,11	0,02	8,07	0,27	0,06	7,35	0,72	0,07	8,3	0,28	0,07
Sitting level	5,92	0,94	0,21	4,48	1,04	0,23	4,71	1,13	0,12	8,28	0,94	0,23
Low level	6,82	1,76	0,39	8,06	1,47	0,22	7,59	1,56	0,16	6,37	0,8	0,19
Average level	2,67	1,09	0,24	2,96	1,31	0,29	2,16	1,23	0,13	1,04	0,44	0,11
High level	0,33	0,29	0,06	0,45	0,45	0,1	0,11	0,38	0,04	–	–	–
Daily physical activity	32,93	2,09	0,47	34,75	1,54	0,34	29,76	2,71	0,28	29,44	0,53	0,13

Indexes of daily physical activity among the students of the I – IV courses are between 29,44 – 34,75 points. In the same time the girls of the I – IV courses have considerably higher level of physical activity compared with the dependents of senior courses.

The difference between students of the II – III years of studying in higher establishment is 4,99%.

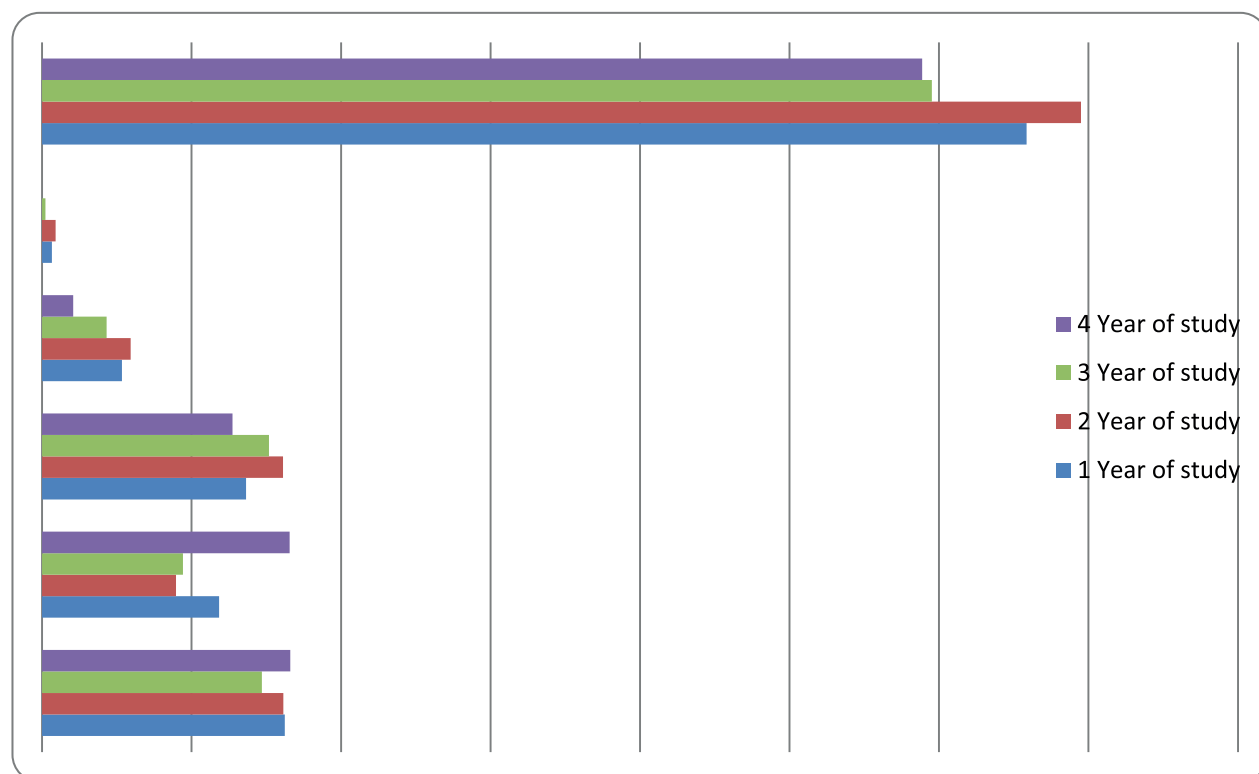


Figure 2. Daily physical activity indicators of 1 – 4 year students

The structure of the students' daily physical activity consists of basic schedule: 7,35 – 8,12 hours; sitting: 4,48 – 8,28; small level: 6,37 – 8,06 hours; medium: 1,04 – 2,96 hours and high: 0,11 – 0,45 hours. It should be mentioned that students of the IV year studying haven't high level of daily motor activity at all. Index of daily motor activity is 66,18% of the total daily motor activity, specially organized – 1,37%. Last 32,45% of daily motor activity occupy activities which are connected with passive recreation and leisure.

Results

Research, which has recently conducted in our country and abroad, indicating the presence of a relationship between physical fitness, physical activity and health (Adamczyk 2010, Бубка 2002, Круцевич 2012, Ніколаєв 2004). It is established that individuals with high potential indicators of physical fitness have good resistance to a wide range of adverse effects - from hypoxia and loss of blood supply to changes in acid-base status of the internal environment. At the same time, decreased motor activity (hypokinesia) leads to the disbalance of consistency in the muscle system and internal organs.

Regarding health status of students who participated in the study, average and below average levels of physical fitness, it can be argued that the level of physical activity is insufficient and does not maintain a high functional status of the organism.

Training effect has only a high level of physical activity, which includes organized fitness classes and intensive sports and outdoor games. A component of this motor activity is in many female students only in the form of mandatory exercise, if that day is none, then there is no high level of physical activity.

In the experiment, we studied in parallel the interests and motivation of students, allowing us to identify the aspirations of girls, shortcomings in the educational process, to form certain measures to improve physical education in higher education. Results indicate that the level of interest to students' physical education is low and decreases in the learning process.

Analysis of the survey showed that in the first place student put motive attendance in physical education - striving to improve health (first rank place throughout the years).

Conclusions

1. Basic provisions concerning the definition and regulation of students' physical activity which are developed in scientific literature show that physical activity is an important part of students' lifestyle and is closely connected with health and physical fitness.
2. The study of physical fitness of students found it insufficient output level in the first year, further slight improvement in the second year studying and the emergence of downward trends in senior courses. Similar dynamics is observed in determining the level of students' daily physical activity. These results suggest interdependence of studied parameters.
3. Indicators of the level of physical fitness and physical activity are directly dependent on the students' ratio to physical education and sports, interest and motivation for active exercise.

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