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PHYSICAL ABILITIES OF SOFIA UNIVERSITY "ST. KLIMENT OHRIDKSI" STUDENTS ENLISTED FOR CIRCUIT WORKOUTS CLASSES

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ABSTRACT

This article analyzes the state of the physical abilities of students enrolled for fitness classes - circular training at Sofia University "St. Kliment Ohridski" in the 2018-2019 academic year. The data are part of the author's dissertation work. The aim of the study was to determine the level of physical capabilities of the students at the beginning of the experiment. **Methods:** A variation analysis has been applied to determine the average level of students on each test studied. These values were compared with the relevant age and gender. **The Results** show that in most tests students have physical capabilities of good, medium and below average level. **Conclusions:** The author recommends working purposefully on the general physical training of young people.

Key words: general fitness, circuit training, physical abilities, health, university students

INTRODUCTION

Sport for health worldwide is gaining more and more importance. The need for it is perceived and realized as one of the main factors that affect people's physical fitness, as a result of which a number of health problems related to stagnant lifestyles are solved. The need for motor activity is mainly nurtured in the family, in schools and logically continues in universities, where already fully realized students, along with the curriculum, also attend sports activities under a certain plan and program. In terms of the effect of these activities, it is necessary to be targeted, to attend regularly and continuously, and last but not least to be based on pedagogically justified training programs.(1) On the negative consequences of the lack of movement, both in terms of physical (the organs of the circulatory organs are most affected) and on mental and emotional health, the author G. Nikolov, widely examines and analyzes the changes that occur in the living organism under the influence of immobilization, in his book "Immobilization – Enemy No. 1" (1990) (2). Modern training in higher education is associated with constantly increasing tension and intensity of students' learning work, which predetermines high requirements for their health, mental and physical capacity .The need to provide opportunities for additional motor activity and maintain good health in order to actively combat immobilization creates prerequisites for the promotion and introduction of new fitness disciplines. Which in turn helps to maintain the motivation of the students and their interest.

From all of the above, we believe that there is an opportunity to create a model that improves the learning process and increase the motor activity of students. The effect on the body of those involved, as well as the development of a very good physical condition, led us to offer modern models of training to increase physical fitness, while examining its effectiveness on students and offering /developing the curriculum for sports classes at the University as a discipline for physical development. This will increase the

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activity of students (3), their motivation (4), will educate the need for a need to perform motor activity (5) and last but not least increase their working capacity in all aspects of the modern way of life (6).

METHODS

The hypothesis of our dissertation work was based on the assumption that the implementation of circular training as part of the curriculum on discipline physical education and sport in the higher education system will improve the motor qualities of students, improve the development of aerobic capacity and, last but not least, emotional health.(1) In order to monitor the effectiveness of the proposed methodology, a test battery was drawn up to establish the condition and the development of the physical fitness of the persons studied. In order to determine the entry level of the participants, prior to the start of the experiment, we conducted a basic testing.

The experiment was conducted within the 2018-2019 academic year. Subject of the study were 150 students of University "St. Kliment Ohridski", aged 18-23, In different years of their Bachelor studies. All were included in 3 Pilates groups and 5 circuit training groups. In connection with the conduct of a pedagogical experiment, two groups were formed:

- Experimental group – 22 female students practicing circuit training
- Control group – 22 female students practicing Pilates

In order to monitor the effectiveness of the proposed methodology, a fitness test battery was developed for establishing the current condition and the development of the participants' physical capabilities. In order to determine the entry level of the participants, prior to the start of the experiment, we conducted a basic testing.

For the correct interpretation of the study's data, we applied variance analysis of each test.

RESULTS

Table 1. *Variance analysis of physical fitness indicators at the beginning of the experiment. (7-8)*

Physical fitness		**min**	**max**	**R**	$\overline{X}$	**S**	**V%**	**As**	**Ex**
Test name	**measurement**								
Experimental group									
BMI	kg/cm	17	27	10	**21,45**	2,61	12	0,359	-0,403
Forward bend	cm	38	65	27	**46,27**	7,6	16	**1,231**	0,799
Sit-ups	rep/30″	10	18	8	**13,14**	2,66	20	0,24	-1,215
Push-ups	rep/30″	9	20	11	**13,91**	3,31	24	0,149	-0,735
Long jump	cm	132	168	36	**152,77**	12,17	8	-0,571	-1,062
Beep	m/rep	4	15	11	**8,95**	3,23	**36**	0,026	-0,442
Control group									
BMI	kg/cm	17	27,7	10,7	**20,93**	2,99	14	0,553	-0,109
Forward bend	cm	44	65	21	**49,73**	6,09	12	**1,481**	1,142
Sit-ups	rep/30″	8	16	8	**13,00**	2,00	15	-0,943	0,561
Push-ups	rep/30″	3	13	10	**9,86**	3,03	31	-0,977	-0,01
Long jump	cm	123	160	37	**146,59**	11,85	8	-0,828	-0,527
Beep	m/rep	4	11	7	**7.82**	2.3	**29**	-0.349	-1.271

N=22, α = 0,05, As $_{0,05}$ ***= 1,024 , Ex*** $_{0,05}$ ***= 1,985***

It was of interest to us to determine the state of the physical capabilities of the persons surveyed, so we compared the average levels of each test with those recommended for the respective age and gender. We present several examples in **Tables 2-7.**

Table 2. *BMI classification* (9-10)

Body Mass Index BMI	**Classification**
< 18,5	**Underweight**
18,5-24,99	**Normal weight**
>25	**Overweight**
>30	**Obesity**

Table 3. *Recommended values for forward bend test (11)*

gender	**Excellent**	**above average**	**average**	**Bellow average**	**bad**
women	> 32	32-37	38-48	49-54	< 54

Table 4. *Recommended values for sit-ups (12-13)*

Gender	**Excellent**	**above average**	**average**	**Bellow average**	**bad**
women	> 25	21 - 25	15 - 20	9 - 14	< 9

Table 5. *Recommended values for push-ups-women (12-13)*

age	**Excellent**	**good**	**average**	**Satisfactory**	**bad**
20 - 29	> 48	34 - 38	17 - 33	6 - 16	< 6

Table 6. *Recommended values for long jump (12-13)*

age	**Excellent**	**above average**	**average**	**Bellow average**	**bad**
>16	> 191см	191 – 178с	177 – 163см	162 – 150см	< 150см

Table 7. *Recommended values for beep test (14-15)*

result	**women**	**men**
Excellent	**>12**	**>13**
Very good	**10-12**	**11-13**
good	**8-10**	**9-11**
Average	**6-8**	**7-9**
bad	**4-6**	**5-7**
Very bad	**<4**	**<5**

The variance analysis of BMI is presented in **Table 1.** It is noticeable that the lowest value of the indicator is in EG - X min = 17, and the highest value of BMI is at CG – X max = 27.7. The mean values of the study groups are similar - 21,45 (EG) and 20,93 (CG). There is no statistical significance of the difference (d = 0.517) between the two groups (P(t) = 45,51). The variation rate in both groups is satisfactorily homogeneous: V = 12 % (EG) and V = 14 % (CG). With regard to the indicator body mass index determining the severity and degree of obesity, the average values of the persons surveyed at the beginning of the study indicate that their weight is in normal values.

In the "Bend forward" indicator for tracking overall flexibility, we notice a discrepancy in the minimum values, which are higher at CG (X min = 44 cm) than those at EG (X min = 3 cm). The range of values is 6,0, the mean values are EG – 46,27 and CG - 49,73. The difference between the two groups iss d = -0.3.455 which is of no statistical significance (P(t) = 89.65). The

variation rate in both groups is satisfactorily homogeneous: V = 16 % (EG) and V = 12 % (CG). As shown in the table, the persons surveyed on this indicator are around average and slightly below average flexibility. This suggests that the level of flexibility in participants is close to below average.

The indicator "Sit-ups" data show a difference in minimum and maximum values in both groups Xmin = 10 and Xmax= 18 (EG) and Xmin = 8 – Xmax = 16 (CG). The range of values and the means are equal to or similar. The coefficient of variation is satisfactorily homogeneous, the difference between the two groups d = 0,136 has no statistical significance P(t0= 15,15. When compared with the recommended values for sit-ups, again the level of students is below average. In the "Push-ups" test, again the minimum and maximum values differ in EG and CG. According to the coefficient of variation, both groups in this indicator at the beginning of the study are non-homogeneous - V = 31 % in CG. According to Table 5, the mean values in the Experimental and Control groups is a satisfactory level (6-16).

The test “Long jump” is designed to measure the explosive strength of the muscles of the lower extremities. According to the coefficient of variation, the groups are highly homogeneous (V = 8% in both groups of EG and CG). The mean values are 152.77 in EG and 146.59 in CG. There is no statistically reliable difference P(t)= 90,48, indicating that the two groups have a very close entry level.

The "Beep Test" is for monitoring cardiorespiratory endurance. According to the coefficient of variation, both groups in this indicator are non-homogeneous (V= 36 in EG and V = 29 in CG). The mean values are similar, the range of values is R=4. The difference between the two groups d= 1,136 has no statistical significance P(t)= 81,39.

As seen in tests done to track the current state of students' physical abilities, a decreased level of physical fitness is established. Performance in the test battery shows good, medium, or below average. Almost one in ten premature deaths is associated with a low level of physical activity and, above all, a sedentary lifestyle.(16) The above mentioned facts show that, unfortunately, the results of our research confirm the conclusions made by a number of authors - the young generations in Bulgaria lead a sedentary lifestyle, which is expressed in very low levels of physical fitness indicators in the age at which the optimum of their psycho-motor functions and physical qualities should be manifested (17). A sedentary lifestyle is a threat to the health of millions of people. (16) Regular exercise, exercise, refusal to consume harmful foods and healthy sleep will change health and increase levels of physical fitness indicators.

RECOMMENDATIONS:

From the analysis of the current state of Sofia University “St. Kliment Ohridski” student’s fitness, we can draw the following conclusions:

1. The state of the physical capabilities of the participants in most tests is unsatisfactory.
2. Work purposefully on the general physical training of young people.
3. A model for improving the process of Physical education and thus increasing the physical activity of university students.
4. Introducing circuit workouts in sports classes at the university for attracting more students to actively engage in physical activities.

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