

RESEARCH ARTICLE

# Aerobic Activities and their Effects on the Level of General and Special Endurance of Students

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## Abstract

The results of the analysis of the survey data to identify students with their relation to the assessment of the physical qualities and their own level of physical fitness, in particular - endurance. It was found that the students understand the important influence of endurance and its importance in solving the problems of preparation for employment, and they realize that it is the physical quality of most of them have developed worse than the others solve. One of the main tasks of physical education students during their studies in higher education is to strengthen and improve their health and continue the process of forming their need for physical education. Young people who entered the university, falls under the influence of unusual social factors associated with the need of creative assimilation of large amounts of information, due to the necessity of forming specific professional skills and abilities, and unusual conditions of student life. Feeling discomfort occurs primarily in junior student. This phenomenon can be called “the inability of young people to study in higher education” and it is associated with the following factors: differences in methods and organization of teaching at the university, which differ from school and require a significant increase in autonomy in learning educational material; between the lack of well-established personal relationships, that the contact group, which is typical for a new team in its formative stages; the destruction of the life of the old stereotype that has emerged over the years of schooling, and the formation of a new, “university”; new worries for admission to universities associated with the planning and organization of its educational and free time. To overcome this “university” discomfort of the young man required a significant investment of physical, mental and moral strength. In order to offset the costs of these forces called physical education, which should also be part of preparing students for future careers. Also do not forget that the system- function physical training has two mutually caused facets – pedagogical (educational) and social (recreational), which suggests the modern physical culture as a holistic socio – educational system, the main function of which is health and educational that modern students do not have to be mentioned.

**Keywords:** Interest, Aerobic classes, A positive attitude, General and Special endurance, Physical qualities, Athletic orientation.

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## 1. Statement of the Problem

One of the most important tasks of physical education of students during their studies at a higher educational institution is to strengthen and improve their health, as well as to continue the process of forming their need for physical education.

Young people who enter a higher educational institution come under the influence of unusual social factors related to the need for creative assimilation of a large amount of information, due to the need for the formation of certain professional skills and abilities, as well as unusual conditions of student life. The feeling of discomfort arises first among students of younger years. Such a phenomenon can be conditionally called “inadaptability” of young people to study in a higher educational institution and it is associated with the following reasons: differences in the methods and organization of studies in higher education institutions, which differ from school ones and require a significant increase in independence in learning the study material; lack of well-established interpersonal relationships, i.e. group contact, which is characteristic of a new collective at the stage of formation; the destruction of the old stereotype of life, formed during the years of schooling, and the formation of a new, “university” one; with new worries when entering a university, related to the planning and organization of their study and free time. To overcome such “university” discomfort, a young person is required to expend considerable physical, mental and moral strength. In order to compensate for the costs of these forces, physical education classes are called, which should also become a component of preparing students for future professional activities. It should also not be forgotten that the system-forming function of physical culture has two mutually determined facets - pedagogical (educational) and social (rehabilitation), which allows us to talk about modern physical culture as a complete socio-pedagogical system, the main function of which is health and education [11 ], which is very important for today’s student youth.

## 2. Analysis of Recent Research and Publications

The problem of improving the process of physical education of students has been the subject of attention of specialists for many years [2]. Higher educational institutions are staffed with boys and girls who have just graduated from high school and are not adapted to independent life. The analysis of literary sources

shows that the level of physical training, mental and moral strength of the main mass of students remains quite low [9], it also indicates the deterioration of the physical, mental and moral development of the young generation, the progress of the lack of motor activity [12], which leads to deterioration of student health.

The weak link of the educational process in higher education institutions is the software and methodological support for teaching physical education. The main principle of the functioning of the physical education system in higher education is the principle of health orientation, but the existing programs are unable to improve the physical health, mental and moral condition of students, as well as increase the level of their general working capacity. According to some authors, the deterioration of students’ health is related to the conduct of physical education classes only in the first years instead of the entire period of study, a general reduction in the educational load of physical education [4]. It has now been proven that one or two physical education classes per week are insufficient and only those students who systematically practice individually or in sports sections have proper physical training [7]. Research data of leading scientists testify that during 28 weeks of classes according to the “Basic Curriculum for Higher Education Institutions of Ukraine on Physical Education” (2020), there were no likely changes in physical performance indicators, as well as quality parameters of motor activity [10]. In higher educational institutions, all possibilities of physical education are irrationally used, which requires further improvement of the methodology of conducting and organizing classes, the development and scientific justification of new ways of improving the quality of physical education teaching is necessary.

## 3. Isolation of Previously Unresolved Parts of the General Problem

Based on this, in order to improve the general and special endurance of students during physical education classes, we will test the hypothesis about the need to include in the physical education program with a sports focus (table tennis) aerobic classes (cross training and elements of basic aerobics).

## 4. The Purpose of the Study

To investigate the need to include aerobic classes (cross training and elements of basic aerobics) in the physical education curriculum with a sports orientation (table tennis) to increase the general and special endurance of students.

## 5. Research Material and Methods

The research was carried out based on Kharkiv National University of Economics and Kharkiv National Technical University of Agriculture named after Petro Vasylenko. A survey of 166 first-year students (77 boys and 89 girls) was conducted. The following methods were used to solve the research tasks: analysis of scientific and methodological literature and sources of information on the Internet, pedagogical observations, and questionnaires, methods of mathematical statistics, discussion and generalization of research results.

**Table 1.** Attitude of students to the assessment of physical qualities and their own level of physical fitness

№	Question content and answer options	All students (%)	Boy's (%)	Girl's (%)
1	2	3	4	5
<b>1.</b>	<b>The most important physical qualities (priority)</b>			
	endurance	41,8	36,4	47,2
	power	14,9	26,0	3,8
	agility	13,7	10,4	16,0
	flexibility	12,2	5,2	19,1
	coordination	9,8	10,3	10,5
	speed	7,6	11,7	3,4
<b>2.</b>	<b>Assessment of own level of physical fitness (highest score)</b>			
	power	22,3	31,2	13,5
	coordination	19,5	11,7	27,0
	speed	16,1	22,1	10,1
	flexibility	15,3	10,4	20,2
	agility	14,9	14,2	15,7
	endurance	11,9	10,4	13,5

girls), strength – 14.9% (26.0% boys and 3.8% girls), agility – 13.7% (10.4% of boys and 16.0% of girls), flexibility – 12.2% (5.2% of boys and 19.1% of girls), coordination – 9.8% (10.3% of boys and 10.5% of girls) and speed – 7.6% (11.7% of boys and 3.4% of girls). And their own level of physical fitness was assessed as follows: strength – 22.3% (31.2% of boys and 13.5% of girls), coordination – 19.5% (11.7% of boys and 27.0% of girls), speed – 16.1% (22.1% boys and 10.1% girls), flexibility – 15.3% (10.4% boys and 20.2% girls), dexterity – 14.9% (14.2% of boys and 15.7% of girls) and endurance – 11.9% (10.4% of boys and 13.5% of girls) [5].

The given facts show that students understand the important impact of endurance and its significance in solving the tasks of preparing for work, and they realize that this physical quality is the most poorly developed in most of them.

Aerobic processes of energy supply play a significant role in the formation of physical health of students. To

## 6. Presenting Main Material

It was established that 37% of students have health abnormalities; more than 20% are under dispensary supervision, the number of special medical groups is constantly increasing from 5.36% in the first year to 10.46% in the second year [6], and all this indicates the need to find new ways to improve the physical, mental and moral condition of student youth. According to the results of V. Grynko questionnaire, students understand the importance of their own physical development and the development of certain physical qualities: endurance – 41.8% (36.4% boys and 47.7%

correct the aerobic productivity of the body, a variety of physical exercises of a mainly cyclical nature can be used, in particular running, although cycling, swimming, and types of aerobics - all these activities are also aerobic and are aimed at increasing endurance [8]. The quality of running training depends on the frequency of classes, the training method, as well as on the balanced ratio of intensity and duration of the load. At the same time, it is also necessary to take into account muscle activity, which increases the performance of the cardiovascular system and is the basis of a physical exercise program. All types of muscle activity are aimed at increasing the efficiency of the cardiovascular, respiratory and metabolic systems of the body. However, at the same time, one should not forget about the functional readiness of the body to perform it, that is, the initial level of physical condition. From this, it becomes clear why an increase in endurance indicators is registered under the influence of running loads, which contribute to an increase in maximum oxygen consumption.

According to the estimates of some specialists, in recent years, types of recreational gymnastics have gained particular popularity among student youth. Taking into account the preferences of student youth, with the aim of improving and correcting the physical education program, N. Bolyak developed an author's program using aerobics, shaping, and rhythmic gymnastics [3]. To date, one of the most effective modern types of gymnastics for improving the parameters of the cardiovascular and respiratory systems, combating hypodynamia, and increasing the level of endurance and work capacity of students is aerobics. In the book by Dr. K. Cooper [1], the possibility of aerobic exercise is scientifically proven to strengthen and increase the level of physical fitness, in particular, endurance. In the 60s of the XX century. K. Cooper proposed the term "aerobics" to refer to physical exercises performed based on the aerobic mechanism of energy supply. Aerobics according to K. Cooper is the systematic use of long-term, moderate-intensity physical exercises that work a large group of muscles (about 2/3 of the muscle mass of the body) and are long-lasting (15-40 min. without a break and more), but most importantly, they are provided with energy due to aerobic processes.

All modern aerobic fitness programs are based on classical or basic aerobics. The peculiarity of performing these exercises is force fixation of muscles and control of all movements. When performing movements, you should follow the correct technique, which is generally expressed in the requirement to exclude "overextension", "overstrain".

Aerobic gymnastics has many positive aspects. Classes are held in an atmosphere of heightened emotionality, in a group, with music, thanks to which the monotony inherent in long-term exercise is reduced. In addition to the stimulator of a positive emotional background, the musical accompaniment plays the role of a leader, setting the rhythm and pace of the entire workload. The music soundtrack is composed according to the "non-stop" principle, because in the practice of aerobics, methods of continuous training are used, that is, the flow of exercises, without pauses.

And so, the main task of sports-oriented physical education programs is to improve sportsmanship, while not enough attention is paid to strengthening the cardiovascular, respiratory, and metabolic systems of students, increasing the level of physical, mental, and moral condition, eliminating functional abnormalities of the body, and improving health attention, at best general physical training at the end of the training

session, which does not give a positive result. However, the solution to these problems is possible only if aerobic classes (cross training and elements of basic aerobics) are included in the physical education curriculum of universities with a sports focus (table tennis).

Therefore, we propose: to develop an experimental program of physical education with a sports orientation (table tennis) with the inclusion of aerobic classes (cross training and elements of basic aerobics) to increase the general and special endurance of students, and to conduct scientific research in this direction.

In general, aerobic activities also cause positive physiological changes: a decrease in blood pressure in people with low hypertension; physical activity aimed at increasing endurance can reduce both diastolic and systolic pressure by 10 mm Hg. Art. in a person with an average level of primary hypertension; physical activity aimed at increasing endurance increases the content of high-density lipoproteins and reduces the concentration of triglycerides; physical exercises contribute to the reduction of fat in the body and the increase of muscle mass, which is quite important for reducing the level of glucose in the blood and regulating the sugar content; physical activity improves the contractile property of the heart, increases its efficiency, improves coronary and collateral circulation; physical training leads to an increase in the number of capillaries, as well as the volume of plasma. Because of these changes, blood circulation, strength and volume of cardiac output and satisfaction of the body's oxygen needs improve [8]. Based on this, the inclusion of aerobic classes in the physical education curriculum with a sports focus is simply necessary.

## 7. Conclusion

From the above material, we can observe the following:

- students consider endurance to be a priority over other physical qualities, which makes our research in the field of endurance relevant;
- aerobic classes have a positive effect on the level of general and special endurance.

## Further Research

Based on this, further research is planned to be carried out in the direction of increasing the level of general and special endurance of students by developing



and implementing a program with a complex of aerobic exercises into the educational process of the university.

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