

## Study of the possibilities of using a 6-minute rowing on a Concept2 ergometer to assess the level of endurance in students

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**Purpose:** to study the possibilities of using 6-minute rowing on a Concept2 ergometer in physical education of students with determining the distance that students overcome and develop a scale for assessing the level of endurance.

**Material & Methods:** students of the Pyotr Mogila Black Sea State University (Mykolaiv) ( $n=200$ ) participated in the study, among them 125 students from Ukraine ( $n=69$  young men;  $n=56$  girls) and 75 students from India ( $n=48$  boys;  $n=27$  girls). Testing was carried out on Concept2 rowing ergometers at the water sports complex. Methods used: analysis of scientific sources, analogy method, pedagogical testing, anthropometric measurements and methods of mathematical statistics.

**Results:** use of a 6-minute walking test was examined to determine functionality; the use of rowing ergometers to determine the time for which students can cover a distance of 1000 m, 500 m. We proposed the use of Concept2 ergometers to assess the level of endurance of students, we developed a 5-point scale: we determined the length of the distance that students covered in 6 minutes of rowing on an ergometer. The differences in the physical development of students from Ukraine and India are determined.

**Conclusions:** the possibility of using rowing ergometers in the system of physical education of students is confirmed. The correlation between body weight and the length of the distance that students covered in 6 minutes on a rowing ergometer was revealed. Attention is drawn to the differences in the distance length indicators (m), which students of India ( $1210,50 \pm 113,40$ ) and Ukraine overcame ( $1391,32 \pm 113,69$ ).

**Keywords:** student, 6-minute test, rowing, Concept2 ergometer, body mass index, endurance, physical education.

### Introduction

Today, computerization, a sedentary lifestyle of young people, an insufficient level of effectiveness of physical education lead to a deterioration in the physical health of students. The effectiveness of the physical education system in higher education institutions is limited by many factors: a decrease in hours for compulsory classes in the discipline «Physical Education», a low level of motivation for students to engage in physical activity, «post-crediting» discipline (outside of student loans), simplification of student assessment in the classroom physical exercises, uniformity and formality of the nature of classes, low level of development of the material base of educational institutions and other factors.

The results of monitoring the physical fitness of students indicate a decrease in the level of physical qualities. The effectiveness of student learning depends on the level of physical performance. Underdevelopment of endurance leads to fatigue, rejection of new material in specialized training sessions. The importance of endurance, the improvement of assessment standards, attracted the attention of scientists. According to the resolution of the Cabinet of Ministers of Ukraine (December 9, 2015 No. 1045), in order to determine and improve the level of physical fitness of the population of Ukraine, the Order of the Ministry of Education and Science of Ukraine approved tests and standards for individuals whose annual physical fitness assessments are carried out on a voluntary basis. The test, which determines the level of endurance, running at medium and long distances (2000 m, 3000 m, 12-

minute run) is carried out on the treadmill of the stadium or on any flat terrain. The test result is the time to overcome the distance to the nearest tenth of a second (Order of the Ministry of Education and Science of Ukraine, 2018). The aforementioned test is considered difficult for students, both teachers and test participants note.

As you know, the assessment standards should reflect the individual and age-related characteristics of the body, contribute to increasing motivation to achieve a high level of physical health. Scientists note that running at a distance of 2000–3000 m is the ultimate test, difficult for modern students. The introduction of the standard “without taking into account time” is proposed, which envisages the end of the distance without a specific temporary result and will allow students with low endurance to receive grades (V.A. Senkevich, A.A. Averbakh, 2018). Studying the dynamics of improving physical abilities, as you know, it is necessary to carry out various types of control, apply tests that would be safer, reliable and varied. As noted in the monograph by V.M. Sergienko (2015), the question of the features of monitoring and evaluating the development of endurance in the course of practical exercises in physical education is insufficiently studied (V.M. Sergienko, 2015, p. 40).

Thus, there are contradictions between the need to increase the level of endurance, improving the system for assessing the development of physical qualities and the current state of development of tests and types of control.

In connection with the foregoing, solving the problem of assessing the level of development of endurance, developing new tests and types of control, introducing them into the

educational process is an urgent task. Thus, there is a need for research to improve the control system, the introduction of new motor tests, which were characterized by reliability, safety, accessibility for students.

In physical education, the Cooper test (12-minute run) is used to assess endurance. According to the results of control tests, it was found that the initial level of indicators of general endurance in girls is 1.55 conv. units, and for boys – 1.95 conv. units, which corresponds to 1 point (V.M. Sergienko, 2015, p. 40). In some Universities, to assess endurance, they use running for 3000 m, 1000 m. It has been established that about 70% of the time of the main part of the lesson is appropriate for developing endurance, the rest of the time to cultivate other qualities (N.V. Ignatenko, 2015). As a result of studies, it was found that the level of endurance with the test running at 1000 m is deteriorating: comparing the results of 17-year-old and 20-year-old students, the decrease is characterized by 3.37%. For students (young men), a test was run for 2000 m: a low level of development is observed in 9% of the 17-year-old boys studied (V.M. Sergienko, 2015, p. 72). We studied the possibilities of using correlation analysis in order to establish the relationship between the results of traditional testing and indices, which allowed us to take into account individual characteristics in the physical education of students. In most groups, to assess the students' speed-power abilities, we replaced the "long jump from the spot" on the calculation of the speed-power index. The endurance index indicators depended on body length and running speed at a distance of 2000-3000 m and in the opposite, on body weight (I. Bondarenko, 2008).

In order to optimize the educational process of physical education of university students, it is recommended to use comprehensive monitoring, which would include tests to determine the functional state, and tests to assess the level of development of physical qualities (I. Samokish, 2017).

Distance measurement is overcome for a certain period of time was first described in the early 1960s. It was determined that a test with 6 minutes of walking, by the definition of the distance that a person walks in 6 minutes, is a reliable and reliable indicator of aerobic fitness of a person (Patrick J. VanBeveren, Dale Avers, 2012). It was noted that a load of 6 minutes walking can be used for people of all ages of different preparedness to assess the effectiveness of rehabilitation measures (N.V. Trushenko, 2018). Also, a 6-minute test with walking is used to study the functional parameters of the respiratory system in patients with chronic lung disease (N. Peregudov, A. Kosyakov, 2019). Recently, a 6-minute test has been used to assess functional performance in chronic cardiopulmonary diseases, strokes in the population of African countries (O.A. Ajiboye, C.N. Anigbogu, 2014). French scientists analyzed several modifications of the walking tests: 2 minutes, 5 minutes, 9 minutes and 12 minutes. The greatest effectiveness of the 6-minute test was found out. The predicted formula for adults without health disorders has been created:

$$6mWT = 218 + (5,14 \times \text{height in cm}) - (5,32 \times \text{age in years}) - (1,80 \times \text{weight in kg}) + (51,31 \times \text{gender}^*),$$

gender: 1 for men 0 for women (J.-M. Casillas, A. Hannequin 2013). In 2014, in the process of research, it was found that the average values of the 6-minute walking distance, which were measured in the study participants from Nigeria (517.6–72.2 m), were lower than this indicator was observed in groups of Americans (647.3±91,04 m;  $p < 0.001$ ), Brazilians (616,6±23,1 m,  $p < 0,001$ ) and Tunisians (830.3±84.1) m,  $p < 0.001$ ), and were higher, than men of Arab origin

(472,3±21,1,  $p < 0,001$ ). Close relationships of the distance were observed with body length ( $r_{xy} = 0,470$ ), age ( $r_{xy} = -0,375$ ) and BMI ( $r_{xy} = -0,356$ ) (Olufunke A. Ajiboye, Chikodi N. Anigbogu, 2014). In other studies, the 6-minute test (6MWT) was used to evaluate the functionalities of Hong Kong's Chinese elderly. Each participant performed two 6-minute walk tests (6 MWT). The average value of the test was 563±62 m and was significantly associated with age ( $r = -0,62$ ) and body length ( $r = 0,39$ ) and did not depend on the level of motor activity, the length of the lower extremities (Shirley P. C. Ngai, Alice Y. M. Jones, 2014).

Analyzing scientific sources, it can be noted that 6-minute walking with determining the distance began to be widely used in the field of rehabilitation and health-improving physical culture to assess functional capabilities, physical performance, assess aerobic capabilities and endurance of various segments of the population. Some sources indicate that the test involves a submaximal load to improve functionality. We drew attention to the possibility of using a 6-minute rowing on an ergometer to assess the level of endurance in students.

**Purpose of the study:** to explore the possibilities of using a 6-minute rowing on a Concept2 ergometer in physical education of students with determining the distance length and creating, according to the results of its passage, a 5-point scale for assessing students' endurance level.

*Objectives of the study:*

1. To determine the indicators of physical development, the length of the 6-minute rowing distance on the Concept2 ergometer of Ukrainian students and students from India who are studying at the Petro Mogila Black Sea National University.

2. Find out the degree of correlation between indicators of 6-minute rowing on a Concept2 ergometer and indicators of students' physical development.

3. Develop a 5-point scale for assessing the results of 6-minute rowing on a Concept2 ergometer for students.

**The connection of research with scientific programs, plans, topics.** The Decree of the President of Ukraine On the National Strategy for Improving Motional Activity in Ukraine for the period until 2025 "Motive activity - a healthy lifestyle - a healthy nation" (02/09/2016 No. 42/2016) notes that in Ukraine there has been a positive trend towards the increase in the number of people using different types and forms of recreational physical activity. Achieving this goal involves solving many problems, one of which is the development of a set of indicators to assess the level of physical health of various population groups (Decree of the President of Ukraine dated 09.02.2016 No. 42/2016). The plan of organizational and practical measures for the implementation of the aforementioned strategy in educational institutions of the Nikolaev region for 2020 provides for the modernization of physical education systems in educational institutions, an increase in weekly motor activity of students, conducting sectional classes in sports (4 hours per week) and optional classes in physical education (2 hours per week) (Order of the Nikolaev regional branch of the Committee for Physical Education and Sports of the Ministry of Education and Science of Ukraine dated January 31, 2020 No. 10). The study was conducted in order to study the possibilities of using a 6-minute rowing on a Concept2 ergometer in physical education of students with determining the length of the distance that students overcome, and developing a 5-point scale for assessing the endurance level of students according to the test results.

## Material and Methods of the research

The study was attended by students of the ChNU named after Pyotr Mohyla ( $n = 200$ ), who study at different faculties and chose a rowing section for physical education, including 69 Ukrainian youth students and 56 girls. Also, Indian students who study at a medical institute took part in the test (boys – 48, girls 27). During the academic year, Concept2 rowing ergometers are used in the lessons of the sports section in rowing. The physical education program of the ChNU named after Peter Mohyla provides for mandatory classes in physical education once a week. Since the beginning of 2019/2020 d. the university introduced the students' choice of sports sections. Testing was carried out on Concept2 ergometers (8 pcs.), Located at the water sports complex of the ChNU named after Pyotr Mogily. All students for health reasons were assigned to the main department.

Methods were used: analysis of scientific sources, analogies, pedagogical testing, anthropometric measurements and methods of mathematical statistics: checking compliance with the normality of the sample (one-chi-square test), determining the mean and standard deviation, comparison criteria, correlation analysis. All data was analyzed using the SPSS package.

## Results of the research

The interest of youth, athletes in rowing ergometer classes is growing in the world, as evidenced by the holding of competitions: European Championships, indoor championships in rowing ergometers. Rowing classes at the Petro Mohyla Black Sea National University in 2019/2020 g. selected about 500 students, among whom are students from India studying at a medical institute.

Every year, a rowing competition is held at the Petro Mohyla Chernihiv National University for students at certain distances of 500 m and 2000 m. Both student athletes attending the rowing section and students with a physical education program take part in these competitions. obligatory rowing classes are planned.

At the end of the first semester (December 2019), we conducted a study to determine the length of the distance that students covered in 6 minutes on the Concept2 ergometer.

Students were offered rowing on an ergometer for 6 minutes, with an intensity of about 90% of the maximum effort.

The study protocols indicated the numbers of ergometers in order to copy data to computer storage media.

All students studied rowing ergometers for about 2 months, mastering the rowing technique. Before performing, students were explained the key aspects of rowing technique on a Concept2 ergometer. In addition to determining the distance that students traveled on the simulator, we examined heart rate before and after exercise, measured body length and weight, took into account age and calculated body mass index (BMI) (Table 1).

It was determined that there is an adequate reaction of the body to a 6-minute load, heart rate fluctuations after a load within  $171.89 \pm 24.52 - 182.92 \pm 22.02$  beats per minute. The body length of students from Ukraine ( $182.51 \pm 6.75$  cm) differs from the indicators that other scientists received ( $176.4 - 178.2$  cm) (A. Sabirov, V. Pantik, 2016). In our opinion, higher rates of body length among students at the Petr Mohyla ChNU are explained by the free choice of motor activity at the university. The rowing section was chosen by students who believe that they have success in physical education, having advantages in body length.

To determine the samples to establish their compliance with the normal distribution law, the one-chi-square chi-square test was used. In the process of data analysis, we determined correlation relationships. It was found that the distance that Ukrainian students (young men) traveled on the ergometer in 6 minutes is significantly affected by body weight ( $r_{xy} = 0.432$ ,  $p < 0.01$ ), respectively, and body mass index, but there is a decrease in the correlation coefficient ( $r_{xy} = 0.309$ ,  $p < 0.01$ ), distance length indicators weakly correlate with body length ( $r_{xy} = 0.274$ ,  $p < 0.05$ ) and age ( $r_{xy} = 0.253$ ,  $p < 0.05$ ). Similar results were obtained in a group of girls: the length of the distance on an ergometer for 6 minutes in Ukrainian students significantly depends on body weight ( $r_{xy} = 0.373$ ,  $p < 0.01$ ), respectively, and on the body mass index ( $r_{xy} = 0.344$ ,  $p < 0, 01$ ), body length indicators are not related to distance length ( $r_{xy} = 0,110$ ,  $p > 0,05$ ).

Studying factors that can affect the distance on an ergometer among young students from India, we did not find statistically significant relationships: body length ( $r_{xy} = 0,209$ ,  $p > 0,05$ ). Among foreign students, the effect of body length on the distance on the ergometer was determined: ( $r_{xy} = 0.482$ ,  $p < 0.05$ ) and statistically unreliable - the effect of body weight on the distance for 6 minutes ( $r_{xy} = 0,290$ ,  $p > 0,05$ ).

**Table 1**  
Indicators of physical development, functional preparedness, results of rowing on an ergometer in 6 minutes for students,  $\bar{X} \pm S$

Indicators	Ukrainian students (various faculty)		Students from India (Medical University)	
	boys, n=69	girls, n=56	boys, n=48	girls, n=27
Age years	19,06±1,37	19,04±1,17	19,92±1,72	19,67±1,27
Dist. length for 6 minutes rowing, m	1391,32±113,69	1163,71±107,32	1210,50±113,40	956,89±210,67
HR before exercise, beats min <sup>-1</sup>	113,16±14,68	107,91±18,29	115,38±16,12	113,15±16,00
HR after exercise, beats min <sup>-1</sup>	178,32±17,02	171,89±24,52	182,92±22,02	179,26±18,20
Height, cm	182,51±6,75	166,19±5,82	175,33±6,51	161,96±5,85
Body weight kg	72,16±12,17	59,71±12,88	64,92±14,26	53,15±9,67
BMI, c. u.	21.66±3,51	21,63±4,62	21,12±4,55	20,21±3,13

**Table 2**

**Example of a 5-point scale for evaluating the results of a 6-minute rowing on an ergometer Concept2 students (m)**

Quality assessment				
low	lower than average	average	higher than average	high
Points				
1	2	3	4	5
from $\bar{X} - 2,5S$ to $\bar{X} - 1,5S$	from $\bar{X} - 1,5S$ to $\bar{X} - 0,5S$	from $\bar{X} - 0,5S$ to $\bar{X} + 0,5S$	from $\bar{X} + 0,5S$ to $\bar{X} + 1,5S$	from $\bar{X} + 1,5S$ to $\bar{X} + 2,5S$
<b>Results of a 6-minute rowing students from Ukraine (youth), n=69</b>				
from 1107,10 m to 1220,79 m	from 1220,79 m to 1334,48 m	from 1334,48 m to 1448,17 m	from 1448,17 m to 1561,86 m	from 1561,86 m to 1675,55 m
<b>The results of a 6-minute rowing students from India (youth), n=48</b>				
from 927,00 m to 1040,40 m	from 1040,40 m to 1153,80 m	from 1153,80 m to 1267,20 m	from 1267,20 m to 1380,60 m	from 1380,60 m to 1494,00 m
<b>Results of a 6-minute rowing students from Ukraine (girls), n=56</b>				
from 895,42 m to 1002,74 m	from 1002,74 m to 1110,06 m	from 1110,06 m to 1217,37 m	from 1217,37 m to 1324,69 m	from 1324,69 m to 1432,01 m

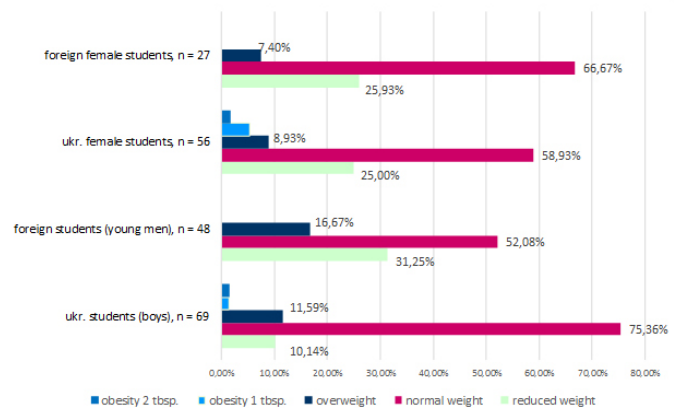
Using the table "Boundaries and norms of a 5-point sigmoid scale for assessing results" in the monograph by V.M. Sergienko (2015), we attempted to develop a 5-point scale for evaluating the results of a 6-minute rowing on a Concept2 ergometer for students. The statistical indicators of the distance over 6 minutes were taken into account: mean and quadratic deviations 1391.32±113.69 (Ukrainian students), 1210,50±113,40 (youth students from India), 1163.71±107.32 (Ukrainian students) (Sergienko, 2015, p. 65).

Comparing the average distance traveled by Ukrainian and Indian students in 6 minutes, it can be noted that there were significant differences between the groups. Statistical significant differences are also observed in terms of physical development (Table 3). In the calculations, the t-test for independent samples and the Mann-Whitney test were used.

Since in the process of correlation analysis a significant dependence of the distance length on body weight was found out, we drew attention to the differences in BMI indices of Ukrainian and Indian students. The largest number of students with normal weight (75.36%) were identified among Ukrainian students (Figure 1).

Analyzing the distribution of students according to the classification of BMI indicators, it is determined that not a single foreign student is obese. Almost every third student and every fourth student from India is characterized by reduced body weight. Among Ukrainian students (n=125), there are about 10% of obese people. Comparing BMI indicators to the results of studies by other scientists, it can be noted

that 52.08% of foreign and 75.36% of Ukrainian students are characterized by body weight within normal limits. Other researchers found normal body weight in 57.9% of students (A. Sabirov, V. Pantik, 2016).



**Fig. 1. The number of students of the Petro Mohyla Chernihiv National University according to the classification of BMI indicators**

### Conclusions / Discussion

Scientists have already made attempts to assess the re-

**Table 3**

**Comparison of average indicators of physical development and the length of the distance that students covered in 6 minutes on an ergometer**

Indicators	Sex	$\bar{X} \pm m$		Criterion t	Significance level p
		Ukrainian students	Students from India		
Length of distance is 6-min. ergometer, m	boys	1391,32±13,69	1210,50±16,36	8,47	0,000
	girls	1163,71±14,34	956,89±40,54	5,93	0,000
Body weight, kg	boys	72,16±1,47	64,92±2,06	2,95	0,004
	girls	59,71±1,72	53,15±1,86	2,34	0,021
Body length, cm	boys	182,51	175,33	675,00*	0,000
	girls	166,19±0,77	161,96±1,12	3,10	0,003

**Remark:** \* -Mann-Whitney criterion.

relationships between anthropometric indicators and the level of endurance of students at various distances using a rowing ergometer. The study, which was conducted among university students (Olsztyn, Poland) ( $n=204$ , youth), allowed us to determine the relationship between somatic parameters and the time required to cover a distance of 500 m on a rowing ergometer. The length and body weight, the length of the lower and upper extremities, BMI significantly affected the time during which students covered a distance of 500 m. Students noted a significant load on both the lower limbs and the trunk and upper limbs (45.5% and 44% respectively) (D. Choszcz, R. Podstawski, S. Konopka, 2012). Similar studies using a distance of 1000 m were conducted in a group of students ( $n = 258$ ) with compulsory physical education classes. Studies have shown correlations between anthropometric parameters and the time required to cover a distance of 1000 m on a rowing ergometer: with increasing mass, the distance traveled increases, contrary to the results of studies conducted with trained athletes. It was found that a group of students whose BMI ranged from 17 to 21 showed the best results in overcoming a distance of 1000 m on a rowing ergometer. Thus, the anthropometric parameters of the girls influenced the result of rowing on an ergometer with overcoming a distance of 1000 m (R. Podstawski., D. Choszcz., 2012).

In 2014, scientists from Poland conducted studies to determine anthropometric indicators, their effect on the time to overcome the distance of 500 m on an ergometer in women aged 19–23 ( $n=196$ ) who did not systematically engage in physical exercises. It was found that the length and body weight, the length of the upper and tender limbs, BMI, and harmony index affect the test result. Scientists have noted the maximum efforts of participants to complete the distance (Podstawski, R., Choszcz, D., 2014).

Thus, with the use of Concept2 ergometers, scientists conducted studies to determine the time of rowing at a distance of 500 m and 1000 m.

It has been determined that the length of the distance covered by students on a rowing ergometer in 6 minutes can be affected by the level of rowing technique. Therefore, it takes time to master the basics of rowing technique on the simulator. The use of tests with walking or running greatly simplifies testing the level of development of endurance in students, does not require additional training. On the other hand, there are growing trends in increasing the level of students' motivation in choosing the types of physical activity associated with exercise machines. It is known that Concept2 is equipped with modern computerized systems, it allows you to control the load, time, distance, power, effort and other parameters.

It should be noted that the results of studies to determine the length of the distance that representatives of various ethnic groups overcome in 6 minutes of walking differ significantly. Scientists noted that the difference in test scores is due to different BMI scores among Asians, including Chinese, Malays, and Indians living in Singapore. Different diets and lifestyles significantly affect BMI and vary between Chinese living in the USA and China (Shirley P. C. Ngai, Alice Y. M. Jones, 2014). Thus, when developing a 5-point scale for evaluating the results of a 6-minute rowing on a Concept2 ergometer, it is necessary to take into account the ethnic characteristics of students and factors of their place of residence.

It should be noted that some scientists conduct a 6-minute walk test only once for all participants in order to exclude the learning effect, and some, on the contrary, recommend to go the distance 2 times with the restoration of the respiratory and cardiovascular system after the first test.

Thus, we have found that the length and body weight

indices of Ukrainian and Indian students studying at the Petro Mohyla National University are statistically significantly different for both girls and boys: the average body weight of Ukrainian students are characterized by the data: 72,16±1,47 kg (boys), 59,71±1,72 kg (girls), students from India – 64,92±2,06 kg (boys), 53,15±1,86 kg (girls), the average body length of Ukrainian students is 182.51 cm (boys), 166.19±0.77 cm (girls), students from India – 175,33 cm (boys), 161,96±1,12 cm (girls). For 6 minutes of rowing on a rowing ergometer, foreign students (boys) showed the result: 1210.50±113,40 m, students from Ukraine – 1391,32±113,69 m; Ukrainian female students – 1163,71±14,34 m, students from India – 956,89±40,54 m.

We confirm the results of studies by other scientists on the effect of body weight on the length of the distance that students overcome on a rowing ergometer. In the indicators of the groups of Ukrainian students, correlation relationships between body weight and distance length were revealed (boys,  $r_{xy}=0.432$ , girls,  $r_{xy}=0.373$ ,  $p<0.01$ ). We partially confirmed the results of scientists from Poland on revealing a correlation between students' body length and distance: the positive correlation is observed among the indicators of a group of students from India ( $r_{xy}=0,482$ ,  $p<0,05$ ) and Ukrainian students (boys) ( $r_{xy}=0,274$ ,  $p<0,05$ ). We have not determined a statistically significant effect of age on the length of the distance that students covered in 6 minutes on a rowing ergometer, except for a group of Ukrainian students (boys) ( $r_{xy}=0,253$ ,  $p<0,05$ ).

We have confirmed the possibility of using rowing ergometers in the system of physical education of students, there is an adequate reaction of the body to a 6-minute load, heart rate fluctuations after a load in the range of 171,89±24,52 to 182,92±22,02 beats per minute.

An attempt was made to develop a 5-point scale for assessing the results of a 6-minute rowing on a Concept2 ergometer of students with subsequent use in the physical education system to determine the level of endurance in the group of Ukrainian students: 1 point is awarded for the length of the distance from 1107,10 m to 1220,79 m; 2 points – from 1220,79 m to 1334,48 m; 3 points – from 1334,48 m to 1448,17 m; 4 points – from 1448,17 m to 1561,86 m, 5 points – from 1561,86 m to 1675,55 m.

**Prospects for further research in this direction are:**

- in the further development of 6- and 12-minute tests using rowing ergometers to assess the level of endurance of people of different age and ethnic groups;
- in the further use of rowing ergometers in the study and assessment of strength abilities in students;
- in the development of databases, with the help of which it will be possible to significantly simplify the analysis of the dynamics of indicators of power abilities, endurance, physical development of students, is connected with the ability to connect ergometers to personal computers for the purpose of analyzing information for a long time (for a year);
- in establishing correlations between distance length indicators for 6 minutes of rowing with other tests that determine the level of endurance, in particular, Cooper's 12-minute test, running for 3000-2000 m;
- in the further use of the 6-minute test with walking (6MWT or 6MWD) in the physical education of students to assess their level of endurance;
- further substantiating the use of 6-minute rowing on an ergometer to assess students' endurance with the involvement of more participants (possibly as a sample – 6 mRD - 6 minute rowing test, 6-minute rowing, by analogy with 6MWT,

6MWD – 6 minute walk test ), attract the attention of scientists from studies on determining the time taken for certain distances (500 m, 1000 m, 2000 m), which are mostly used to

assess the level of preparedness of athletes, to determine the length of the distance for 6 minutes rowing on an ergometer.

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