

# Functional status of rowers on kayaks in the process of preliminary selection

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**Purpose:** *conduct a comprehensive study of the functional status of athletes specializing in rowing, for the subsequent determination of the prospects in this sport.*

**Material & Methods:** *students of various sports schools in the age group of 13–14 years were examined, young men – 23 people, girls – 28 people, a total of 51 athletes'. Individual indicators were determined by the method of measuring the effect of the training action developed by us, and visual-motor and auditory-motor reactions, the level of musculo-articular sensitivity and coordination of movements, the power of forced inspiration and exhalation were measured.*

**Results:** *the conducted studies characterize the functional state and functional capabilities of the body of athletes. The optimal structure of sports activities contributes to their improvement, which, based on the laws of development of physical qualities, in this age period, can not significantly affect the level of sports results, but it has a great impact on the emergence of a corresponding functional basis and maximum realization of individual abilities. Features of the reaction of the body of athletes are a manifestation of effective individual adaptation to intense and complex stimuli of training and competitive activity.*

**Conclusions:** *proposed tests for measuring the effect of the training action, electromyoreflexometry, pneumotachometry and reverse dynamometry are quite informative in sports practice and allow you to determine and evaluate the individual prerequisites for sports achievements, to identify the individual characteristics of the athlete's body, the possibility of correcting them and managing the training process.*

**Keywords:** *rowing on kayaks, functional state, measurement of the effect of the training action, electromyoreflexometry, pneumotachometry, reversible dynamometry.*

## Introduction

The system of training of athletes is determined by the complexity, dynamism, multiplicity, constant increase in the number of essential elements that determine the qualitative and quantitative characteristics of a specially organized process of education, training, development, enhance the functional capabilities of an athlete [1; 2].

At the preliminary stage of many years of training, it is revealed that a student chooses to practice a certain kind of sport, taking into account his morphofunctional and psychophysiological features. One of the main points that determine future sporting success is age, in rowing on kayaks – 13–16 years old is considered the most favorable for the start of regular training [3; 4].

The functional state of the athlete's body is characterized as a system of coordinated sustainable functioning of integrative physiological mechanisms that ensure the constancy of various physiological constants, as well as the adaptation of all body systems to intense physical and psycho-emotional specific effects. The functional state is a dynamic concept, constantly changing under the influence of internal and external factors, including intense physical and psycho-emotional stress [4; 5].

Each physical quality is based on certain functional capabili-

ties of the organism, which are based on specific functional processes and physiological mechanisms for their improvement. Functional preparedness, functional capabilities are determined by the state and capabilities of the vegetative components of the response to stress, the improvement of energy supply mechanisms, aerobic performance, which is an integral indicator of the functions of the respiratory system, which characterizes oxidative processes [6–8].

The physiological basis of the steady state of the body of athletes is determined by the level of development of the functions necessary for this type of sports activity, their combination and interdependence, specificity for each sport and even for a particular specialization in a particular sport (role, distance, etc.) that characterize the effectiveness competitive activity [9; 10].

Functional training in sports increases the functionality that allows, without harm to health, to transfer increased amounts of training and competitive loads, while achieving high sportsmanship. According to the structure of functional preparedness of athletes in a particular sport, it is necessary to purposefully develop relevant, limiting and determining, in this sport, components, physiological mechanisms and functional properties [2; 5].

Functional training is a systematic, multifactorial process of managing the individual biological reserves of the human body

using various means and methods of physical, technical, tactical and psychological preparation. The basis of increasing the functional capabilities are the development processes of the organism adaptation to physical loads and the mobilization of functional reserves [3; 9].

**Purpose of the study:** conduct a comprehensive study of the functional status of athletes specializing in rowing, for the subsequent determination of the prospects in this sport.

## Material and Methods of the research

Surveyed students of sports schools and the Higher School of Physical Education, specializing in rowing. Individual indicators were determined in the age group: 13–14 years old, young men – 23 people, girls – 28 people, in total – 51 athletes.

The study of the functional state included a test measuring the effect of a training action (META), created on the basis of a tapping test, which allows determining the complex of kinematic characteristics of movements in an autonomous mode. This technique allows you to study the pace of movements and their accuracy by the sum of points gained, as well as the accuracy of a single movement. The study of movements performed with maximum speed and accuracy was considered in different conditions, successively in three time periods: for 15 s, 60 s and 15 s. Such a statement of the problem provided an objective determination of the pace and accuracy of movements in various conditions: with an optimal functional state in the first period of time, in the process of long work in the second, after a long and maximum pace of work movements in the third period. A detailed methodology for studying the effect of a coaching action has been published in Slobozhans'kij naukovo-sportivnij visnik, 2015, No. 4 (48), pp. 19-25 [11].

Determination of latent periods of visual-motor and auditory-motor reactions was carried out using an electromyoreflex-

ometer (EMR) using a standard technique that reflects the characteristics of receptor perception, the nervous and muscular systems.

The level of muscular-articular sensitivity and coordination of movements, as well as the diagnostic capabilities of the principle of repeated reproduction of a given load were studied by the method of reverse dynamometry ( $DM_{rev}$ ), which was modified and adapted for the purposes of our study.

Measurement of the power of forced inspiration and expiration was carried out using a pneumotachometer (PT). Estimated air velocity in  $l\ s^{-1}$  with the maximum fixed inspiration and expiration.

The results of observations were processed by methods of variation statistics.

## Results of the research

The results of a survey of 13–14-year-old boy's trainings on rowing are presented in Table 1.

In the first period of the test of measuring the effect of the training action, the following average results were: pace –  $31 \pm 1,24$  hits, sum of points –  $251 \pm 8,96$ , accuracy of one hit –  $8,09 \pm 0,157$  points; maximum indicators: pace – 36 hits, total points – 278, accuracy – 7,72 points; minimum indicators: pace – 23 hits, total points – 175, accuracy – 7,61 points.

In the second period, the following averages were noted: the pace –  $33,25 \pm 1,382$  hits, the sum of points –  $253,75 \pm 9,77$ , the accuracy –  $7,63 \pm 0,250$  points; maximum: pace – 39 hits, total points – 295, accuracy – 7,56 points; minimum: pace – 24,5 hits, total points – 192,5, accuracy – 7,85 points.

In the third period – average indicators: pace –  $34 \pm 1,53$  hits, total points –  $258 \pm 10,39$ , accuracy –  $7,59 \pm 0,163$  points; maxi-

**Table 1**  
Survey results (rowing, boys 13–14 years old)

		Indicators	$M \pm m$	$M_{max}$	$M_{min}$	$\sigma$	C
Effect of a training action	First period	Pace (number of hits)	$31 \pm 1,24$	36	23	4,11	13,23
		Total points	$251 \pm 8,96$	278	175	29,65	11,81
		Accuracy (points)	$8,09 \pm 0,157$	7,72	7,61	0,52	6,51
	Second period	Pace (number of hits)	$133 \pm 5,53$ ( $33,25 \pm 1,382$ )*	156 (39)	98 (24,5)	18,30	13,76
		Total points	$1015 \pm 39,08$ ( $253,75 \pm 9,771$ )	1180 (295)	770 (192,5)	129,34	12,74
		Accuracy (points)	$7,63 \pm 0,250$	7,56	7,85	0,84	11,17
	Third period	Pace (number of hits)	$34 \pm 1,53$	41	25	5,05	14,85
		Total points	$258 \pm 10,39$	310	201	34,38	13,33
		Accuracy (points)	$7,59 \pm 0,163$	7,56	8,04	0,54	7,07
	Total	Pace (number of hits)	$198 \pm 2,57$ ( $33 \pm 0,428$ )	233 (38,8)	146 (24,3)	8,52	4,30
		Total points	$1524 \pm 51,08$ ( $254 \pm 8,513$ )	1768 (294,6)	1146 (191)	169,09	11,13
		Accuracy (points)	$7,69 \pm 0,14$	7,58	7,84	0,46	5,99
Test	EMR (s)	Sound	$0,182 \pm 0,0078$	0,249	0,167	0,0258	14,2
		Light	$0,216 \pm 0,015$	0,269	0,158	0,035	16,2
	PT ( $l \cdot s^{-1}$ )	Inhale	$5,66 \pm 0,199$	6,5	4,4	0,66	11,7
		Exhale	$5,26 \pm 0,15$	6,1	4,5	0,51	9,51
	DM rev. (kg)		$1,03 \pm 0,162$	2,0	0,3	0,536	52,0

**Remark.** \* – in parentheses are the data reduced to a single time indicator of 15 s, in particular,  $133 \pm 5,33$  ( $33,25 \pm 1,382$ ).

imum indicators: pace – 41 hits, total points hits 310, accuracy hits 7,56 points, minimum: tempo hits 25 hits, total points hits 201, accuracy – 8,04 points.

The total values for the three periods of the test of measuring the effect of the training action were as follows: averages – a pace of  $33 \pm 0,428$  hits, the accuracy of all movements or the sum of points –  $254 \pm 8,513$ , the accuracy of one movement –  $7,69 \pm 0,14$  points; maximum: pace – 38,8 hits, total points – 294,6, accuracy – 7,58 points; minimum: pace – 24,3 points, total points – 191, accuracy – 7,84 points.

Athletes maintained a high rate of movement, which in the second period was more than the first by 2,25 hits (7,26%), the amount of points increased by 2,75 (1,09%), the accuracy decreased by 0,46 points (6,03%).

In the third period, compared to the first period, the rate increased by 3 hits (9,68%), the accuracy of all movements increased by 7 points (2,79%), the accuracy of one strike decreased by 0,5 points (6,59%); compared to the second, they increased: the pace – by 0,75 strikes (2,26%), the sum of points – by 4,25 (1,67%), the accuracy was almost unchanged, decreased by 0,04 points (0,53%).

Accuracy of movements in the first period on the maximum and minimum values was less than the average, respectively, by 0,37 points (4,79%) and 0,48 points (6,31%); in the second period, with the maximum rates and the sum of points, the accuracy was less than the average by 0,07 points (0,93%), that is, it did not change, with the minimum – the accuracy was noted more than the average values by 0,22 points (2,88%); in the third period, according to the maximum results, the accuracy of one strike was virtually the same with the average value, the difference was 0,03 points (0,39%), the minimum – more than the average by 0,45 points (5,93%).

By the sum of the results of three periods when compar-

ing, the maximum indicator was more than the average for the pace – by 5,8 hits (17,56%), the sum of points – by 40,6 (15,98%), and the accuracy was less by 0,11 points (1,45%); minimum indicator: less than the average pace by 8,7 strikes (35,81%), total points – by 63 (32,98%), accuracy – more by 0,15 points (1,95%).

Athletes aged 13–14 years showed a high starting speed, the ability to maintain distance speed, good speed endurance.

Sensoriomotor reactions were determined for a sound stimulus and were on average  $0,182 \pm 0,0078$  s, the best result was 0,167 s, less than the average by 0,015 s (8,98%), the worst – 0,249 s, more than the average – by 0,067 s (36,81%); on the light stimulus, the average value is  $0,216 \pm 0,015$  s, the best result is 0,158 s, which is less than the average by 0,058 s (36,71%), the worst is 0,269 s, more than the average by 0,053 s (24,54%).

The results of pneumotachometry were observed – an average of  $5,66 \pm 0,199$  l s<sup>-1</sup> on inspiration, the maximum – 6,5 l s<sup>-1</sup> more than the average on 0,84 l s<sup>-1</sup> (14,84%), the minimum – 4,4 l s<sup>-1</sup>, less than the average by 1,26 l s<sup>-1</sup> (28,64%); on an exhalation –  $5,26 \pm 0,15$  l s<sup>-1</sup>, the maximum – 6,1 l s<sup>-1</sup> more than the average on 0,84 l s<sup>-1</sup> (15,97%), the minimum – 4,5 l s<sup>-1</sup>, less than average at 0,76 l s<sup>-1</sup> (16,89%).

The indicator of reverse dynamometry determined the error in the execution of a given muscular effort of 20 kg, which was on average  $1,03 \pm 0,162$  kg, maximum 2 kg (10%), minimum 0,3 kg (1,5%).

Features of the reaction of the body of athletes are a manifestation of effective individual adaptation to intense and complex stimuli of training and competitive activity.

The results of testing the functional state of athletes aged 13–14 are presented in Table 2.

**Table 2**  
**Survey results (rowing, girls 13–14 years old)**

		Indicators	M±m	M <sub>max</sub>	M <sub>min</sub>	σ	C
Effect of a training action	First period	Pace (number of hits)	28±1,24	32	23	3,86	2,78
		Total points	227±1,47	248	179	21,2	3,15
		Accuracy (points)	8,11±0,34	7,75	7,78	0,77	9,42
	Second period	Pace (number of hits)	122±6,92 (30,5±1,73)	142 (35,5)	106 (26,5)	15,4	13,9
		Total points	947±37,72 (236,8±9,43)	1103 (275,8)	734 (183,5)	158,4	16,7
		Accuracy (points)	7,76±0,96	7,77	6,92	0,215	2,75
	Third period	Pace (number of hits)	32,2±1,92	38	28	4,29	13,3
		Total points	241±11,5	269	209	25,8	10,7
		Accuracy (points)	7,48±0,33	7,08	7,46	0,73	9,73
Total	Pace (number of hits)	182,2±10,14 (30,37±1,69)	212 (35,33)	157 (26,17)	31,4	21,27	
	Total points	1415±10,62 (235,8±1,77)	1620 (270)	1122 (187)	237,8	16,85	
Test	EMR (s)	Sound	0,227±0,022	0,286	0,170	0,049	21,93
		Light	0,270±0,016	0,312	0,231	0,035	12,87
	pT (l·s <sup>-1</sup> )	Inhale	4,1±0,326	4,7	3,0	0,73	17,8
		Exhale	4,6±0,249	5,3	4,0	0,56	12,13
	DM rev. (kg)		2,24±0,33	3,3	1,6	0,73	32,57

**Remark.** \* – in parentheses are the data reduced to a single time indicator of 15 s, in particular, 122±6,92 (30,5±1,73).

In the first period of the test, the measurement of the effect of the training effect averages were as follows: the pace of  $28 \pm 1,24$  beats, maximum – 32 hits, minimum – 23 hits; the sum is  $227 \pm 1,47$  points, the maximum is 248 points, the minimum is 179 points, the accuracy is 8,11 points; at the maximum rate and the amount of points – accuracy of 7,75 points, minimum – 7,78 points, respectively, an increase in the rate of 5 hits (21,74%) and 1,8 hits (5,66%), the sum of 30 points (16,76%) and 25,5 points (13,89%), accuracy decreased by 0,32 points (4,29%) and increased by 0,54 points (7,81%).

In the second period of the test, the average values were noted at the level of: a pace of  $30,5 \pm 1,73$  hits, a sum of  $236,8 \pm 9,43$  points, an accuracy of  $7,76 \pm 0,96$  points; maximum rate of 35,5 strikes, the amount of 275,8 points, accuracy of 7,77 points; the minimum is a pace of 26,5 hits, a sum of 183,5 points, an accuracy of 6,92 points.

In the third period, the average indices – a pace of  $32,2 \pm 1,92$  hits, a sum of  $241 \pm 11,5$  points, an accuracy of  $7,48 \pm 0,33$  points; with a maximum pace of 38 hits, the amount of 269 points, accuracy of 7,08 points; the minimum pace of 28 hits, the amount of 209 points, the accuracy of 7,46 points.

The sum of the three periods averages – the pace of  $30,37 \pm 1,69$  hits, the amount of  $235,8 \pm 1,77$  points, the accuracy of  $7,77 \pm 0,211$  points; with a maximum pace of 35,33 hits, a sum of 270 points, an accuracy of 7,64 points; with a minimum pace of 26,17 hits, the sum is 187 points, the accuracy is 7,15 points.

When comparing the results of the study of the second period with the first in average, the pace was higher by 2,5 hits (8,93%), the amount was 9,8 points more (4,32%), accuracy was 0,35 points less (4,51%); at the maximum – the pace was determined by more than 3,5 hits (10,94%), the sum was by 27,8 points (11,21%), the accuracy was by 0,02% (0,26%), the minimum – the pace was increased by 3,5 hits (15,22%), the sum is 4,5 points (2,51%), the accuracy is lower by 0.86 points (12,43%).

In the third period, compared to the first and second periods, the average rate increased by 4,2 hits (15,00%) and 1,7 hits (5,57%), on average, the amount increased by 14 points (6,17%) and 4,2 points (1,77%), accuracy decreased by 0,63 points (8,42%) and 0,28 points (3,74%); at the maximum rate, the increase was 6 hits (18,75%) and 2,5 hits (7,04%), a sum of 21 points (8,47%) and a decrease of 6,8 points (2,53%), accuracy decreased by 0,67 points (9,46%) and 0.69 points (9,75%); with a minimum pace – an increase of 5 hits (21,74%) and 1,8 hits (5,66%), a sum of 30 points (16,76%) and 25,5 points (13,89%), the accuracy decreased by 0,32 points (4,29%) and increased by 0,54 points (7,81%).

By the sum of three periods and average indices, the pace was higher than in the first period by 2,37 hits (8,46%), less than in the second and third, respectively, by 0,13 hits (0,43%) and 1,83 hits (6,03%); the amount is more than in the first period by 8,8 points (3,88%), less than in the second and third by 1 point (0,42%) and 5,2 points (2,21%), accuracy is less than the first – by 0,34 points (4,38%), more than in the second and third periods by 0,01 points (0,13%) and 0.29 points (3,88%). In terms of maximum values, the pace and the sum of points is higher than in the first period by 3,33 hits (10,41%) and 22 points (8,87%), actually the same pace with the second pe-

riod and less than the sum by 5,8 points (2,15%), reduction of pace in relation to the third period by 2,67 hits (7,56%), the sum of points is the same, accuracy is less than in the first and second by 0,11 points (1,44%) and 0,13 points (1,71%), higher than the third by 0,56 points (7,91%). In terms of minimum indicators, the pace and the sum of points is higher than in the first period by 3,17 hits (13,78%) and by 8 points (4,47%), with the second period practically the same, less than in the third one by 1,83 hits (6,99%) and the amount of 22 points (11,76%), accuracy less than in the first and third periods by 0,63 points (8,81%) and 0,31 points (4,34 %), more than in the second by 0,23 points (3,32%).

The deviation from the average values of the maximum values, respectively, was larger: in the first period – in terms of 4 hits (14,29%) and the sum of 21 points (9,25%); in the second period – the pace of 5 hits (16,39%) and the amount of 39 points (16,47%); in the third period – the pace of 5,8 hits (18,01%) and the sum of 28 points (11,62%); cumulatively over three periods – the pace of 4,96 hits (16,33%) and the amount of 34,2 points (14,51%); the minimum ones are less than the average results in the first period in pace by 5 hits (21,74%) and the sum of 48 points (26,82%), in the second period in pace by 4 hits (15,09%) and the sum of 53,3 points (29,05%), in the third period by pace at 4,2 hits (15,00%) and the amount of 32 points (15,31%), in total – at the pace of 4.2 hits (16,05%) and the sum of 48,8 points (26,09%). Accuracy of one movement with maximum and minimum rates of pace and the sum of points gained were noted respectively: in the first period it was less than the average – by 0,36 points (4,65%) and by 0,33 points (4,24%); in the second period – more by 0,01 points (0,13%) and less by 0,84 points (12,14%); in the third period – less by 0,4 points (5,65%) and 0,02 points (0,27%); three periods less by 0,13 points (1,70%) and 0,62 points (8,67%).

The difference from the average values in the sum of the maximum and minimum indicators for pace was observed in the first period – 36,03%, in the second – 31,48%, in the third – 33,01%, in total – 32,38%; on the sum of points is identical – 36,07%; 45,52%; 26,43%; 40,60%, according to the accuracy of one movement, respectively – 8,89%; 12,27%; 5,92%; 10,39%. With a high pace and sum of points, the accuracy of one movement is less than the average results, but not significantly, with minimal indicators – the accuracy of movements was determined practically at the level, as with a large pace and sum of points.

The reaction rate for athletes 13–14 years old, specializing in rowing on sound and light stimuli, was determined on average  $0,227 \pm 0,022$  s, the best result was 0,170 s, lower than the average speed – by 0,057 s (33,53%), the worst 0.286 s, more than the average – by 0,059 s (25,99%); on the light stimulus, the average index is  $0,270 \pm 0,016$  s, the best – 0,231 s, less than the average – by 0,039 s (16,88%), the worst – 0,312 s, more than the average – by 0,042 s (15,56%). Deviations from the average value amounted to a sound signal – in the amount of 59,52% and light – 32,44%; according to the difference between the maximum and minimum values for sound – 7,54%, on light – 1,32%.

Inspiratory airflow rate –  $4,1 \pm 0,326$  l s<sup>-1</sup>, maximum – 4,7 l s<sup>-1</sup>, higher than the average by 0,6 l s<sup>-1</sup> (14,63%), minimum – 3,0 l s<sup>-1</sup>, less than the average – by 1,1 l s<sup>-1</sup> (36,67%); on the exhale –  $4,6 \pm 0,249$  l s<sup>-1</sup>, maximum 5,3 l s<sup>-1</sup>, more than the average – by 0,7 l s<sup>-1</sup> (15,22%), minimum 4,0 l s<sup>-1</sup>, less than the



average by  $0,6 \text{ l s}^{-1}$  (15,00%), the total deviation from the average value – on the inhale 51,30% and exhalation of 30,22% and the difference between the maximum and minimum values – on the inhale 22,04% and exhale 0,22%.

The error in the performance of the muscular effort was observed on average  $2,24 \pm 0,33 \text{ kg}$  (14,93%), the minimum – 1,6 kg, less than the average by 0,64 kg (10,67%), the maximum – 3,3 kg, more than the average by 1,06 kg (22,00%); the deviation from the average was 32,67%, the difference between the maximum and minimum errors in the reverse dynamometry test – 11,33%.

In determining the functional state of athletes, it is necessary to conduct a comprehensive analysis of the level of development of various physical qualities, coordination abilities, properties of higher nervous activity, the state of the respiratory system, etc., which allow you to purposefully choose sports specialization. Insufficient optimal combination of some factors can be compensated by others, but only some indicators that determine the prerequisites for practicing this sport, which probably cannot be compensated for at all, are of prime importance.

## Conclusions / Discussion

Functional preparedness of athletes is a basic, complex, multicomponent property of the organism, the essence of which is the level of improvement of physiological mechanisms, their willingness to provide at the moment the manifestation of all the necessary sports qualities that determine the muscle performance of a specific motor act.

The study of the mechanisms of functional preparedness, the qualities and properties of its characterizing makes it possible to carry out diagnostics of the level of special preparedness of an athlete, to identify weak and strong links. This, in turn, will be the basis of an objective control system for the actual individualization of the training process and the definition of the functional limit for its intensification, which will help in solving a number of problems of modern sports training – increasing the speed and quality of management of the adaptation process, objectification of sports selection, orientation and specialization athletes.

Studying the structure of athletes' preparedness, the relationship of individual factors causing an effective competitive activity, identifying the contradictory relationships between the individual components of athletic abilities in various sports are the basis for optimizing the athletes' individual improvement, the system of sports selection and planning the training process.

For a qualitative determination of physical abilities and sports

orientation, it is necessary to study the individual characteristics of trainees, especially at the stage of preliminary selection at 13–14 years, since at this age it is possible to identify shortcomings in physical and functional psychophysiological and promptly correct them with appropriate psychophysiological and training effects.

Improvement of all components of the training activity, taking into account the age characteristics of athletes, as well as the patterns of development of motor skills, probably do not significantly affect the level of athletic performance, but they have a great impact on the body and the emergence of a corresponding functional basis, especially in the early age periods of maximum realization of individual abilities.

It is necessary to systematically form knowledge based on modern ideas of the scientific and methodological basis for the development of physical abilities, diagnostics and management of the functional state of athletes to achieve the highest sports result.

The proposed tests – measurement of the effect of the training action, electromyoreflexometry, pneumotachometry, and reverse dynamometry – are sufficiently informative, which makes it possible to determine and evaluate the individual prerequisites for sporting achievements.

The change in the number of movements during the first period of time marks the high mobility of the nervous processes, the second – balance, the third – strength and summarily – the state of the nervous system as a whole, which allows the coach to objectively evaluate the physiological processes occurring in the body and purposefully manage the training and competitive activity.

Sensomotor reactions characterize one of the most important indicators of higher nervous activity - the mobility of nervous processes. Measuring the amount of air during inhalation and exhalation allows you to indirectly determine the ability of the respiratory muscles to work hard, which during regular sports activities can increase significantly. The study of muscular-articular sensitivity and coordination of movements shows the possibility of developing the skill of reproducing a given physical activity.

The studied parameters of the functional state can identify the individual characteristics of the athlete's body, the possibility of their correction and control of the training process.

**Prospects for further research.** Comprehensive examinations of the psychophysiological and functional characteristics of the body of athletes-rowers will allow the creation of methods for assessing the prospect of athletes in their chosen sport.

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