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# FEATURES OF USE ROWING POOL

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## ABSTRACT

The choice of effective training regimes, varying the size of the paddle blade, the active use of pedagogical control means, and the inducement of the athlete to conscious self-control can already significantly increase the effectiveness of training in the rowing pool.

**Keywords**: rowing pool, paddle blade, imitation of a stroke, stroke power, effectiveness of training

## INTRODUCTION

The experience of using rowing pools in the training of rowing athletes has been going on for several decades. During this period, the attitude to the rowing pool as a means of organizing the training process underwent significant changes. The advent of rowing pools was seen as a cardinal solution to the problem of winter training. However, as they spread, information began to accumulate about the possible negative consequences of training in the pool, which manifested themselves mainly in the distortion of rowing technique. The idea was expressed (I. Polyakov et al.) That rowing in the pool violates the coordination skills acquired on the water, since the work is carried out in qualitatively different conditions.

During this period, necessary for the practice of research, the specific features of the technique of movements when rowing in the pool with oars of various modifications were carried out. So, Yu. A. Zhigalov in rowing and MG Petrov in canoeing showed the differences in the dynamic and temporal characteristics of movements when using oars with different blade areas. It turned out that reducing the blade to 35% of the standard and giving it a T-shape allows you to approach the parameters of movement technique in open water. Similar data were obtained by Bulgarian scientists T. Tonev and P. Tsvetkov, who studied rowing techniques in the pool of canoeists and canoeists. In their opinion, the blade size should be reduced to 27.5% of the standard.

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To bring the working conditions in the pool closer to natural, they began to create carousel-type pools. The data of objective registration confirmed the similarity of the technical characteristics of work in a roundabout pool, rowing on water (GM Krasnopevtsev, Yu. V. Ganzhenko, VG Ryzhov). However, this engineering solution could not rid the athlete's technique of movements from inevitable distortions: forced asymmetry of strokes when moving in a circle.

## MATERIALS AND METHODS

With the accumulation of objective data on the technique of movements in the rowing pool and the generalization of practical experience, it became clear that such training has a number of specific features, and therefore, in the opinion of many experts, it cannot replace training work in open water.

A critical attitude to work in the pool stimulated the search for opportunities for year-round training on the water using non-freezing southern waters in winter. As a result, the rowing pool has recently come to be seen mainly as a means of training relatively low-skilled athletes. At the same time, as a rule, athletes are assigned relatively narrow local tasks: correcting obvious defects, working out individual elements, etc. Meanwhile, with the rational organization of training and the use of modern technical means, the possibilities for solving problems of training athletes can be significantly expanded.

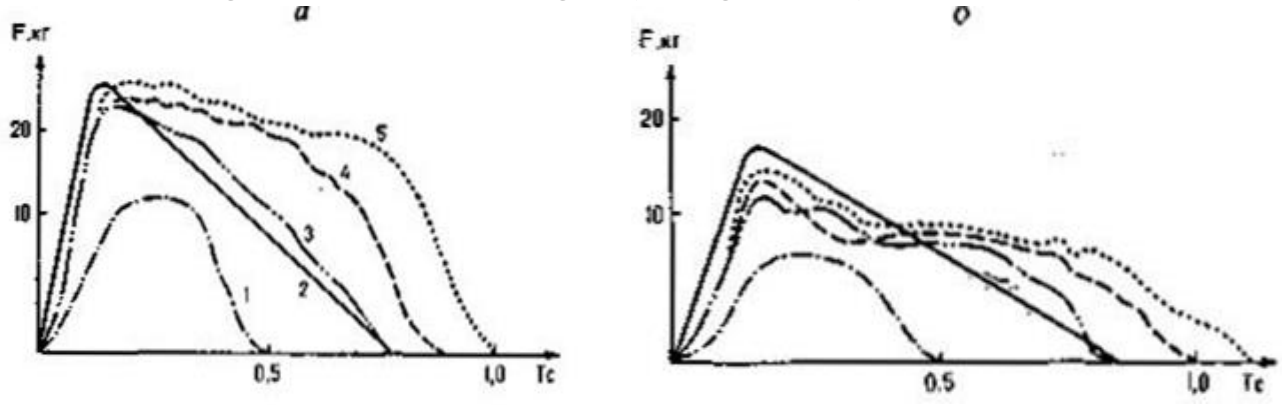
It can be considered that the basis for the expansion of the trainer's methodological arsenal should be new objective data on the technique of movement when rowing in the pool and the degree of the athlete's realization of the potential of his motor abilities. Taking this into account, when carrying out our own in-depth research, we tried to answer 2 questions: what features of the dynamic construction of the stroke are characteristic of rowing with different blade areas? What size of the paddle blade provides the most complete realization of the rower's speed-power potential?

## RESULTS AND DISCUSSION

Research in the pool was carried out with the involvement of canoeists of various qualifications. The subjects were offered a short-term fulfillment of the task with maximum mobilization, using oars with a T-shaped blade with an area of 15, 30, 45 and 60% of the standard. With the help of a tensometric wire system, the dynamic (force applied to the paddle blade, force impulse) and temporal characteristics of movements (stroke cycle time, reference time, time of force rise to maximum) were

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recorded; external signs of movements were recorded with the help of a video recorder, the amplitude of the stroke was determined, and the linear speed of the paddle was calculated. In addition, in all subjects, the maximum isometric force was measured when simulating a stroke in the position of full immersion of the blade, as well as the maximum speed of the paddle movement that an athlete could develop while simulating a stroke without weights (through the air).




Picture. 1. Variants of dynamic construction of the stroke:a - a qualified rower-canoeist; b - low qualification rower-canoeist: U - blade 15%; 2 - standard; 3 - blade 30%; 4 - blade 45%; 5 - blade 60%

The speed of unencumbered movement was determined by the ISVI photoelectronic system, which included photographic gates, a conversion and digital display unit.

The answer to the first question is given by a graphical analysis of the impulses of power recorded in athletes of different qualifications when rowing with oars with different blade areas. The optimal dynamic construction of the stroke was determined earlier on the basis of mathematical and mechanical modeling and in-depth biomechanical research *.

For a qualified canoeist (Figure 1, a), the greatest approximation to the optimal pattern is provided when working with a 30% oar. However, for a low-skill rower (Figure 1, b), when working with a similar oar, the differences between the real impulse and the reference one are much stronger.

Thus, when working in a rowing pool, the greatest deviations from the optimal dynamic pattern are characteristic of athletes who use this tool most widely. The conclusion follows from this: firstly, qualified athletes can perform speed-strength exercises in a rowing pool in a significantly greater volume and with less fears about undesirable consequences; secondly, in the training of less qualified rowers, the control and self-control of technique should be strengthened by all means available to them. The power and power indicators of the stroke help answer the second question.

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**The ratio of the values of force, speed and power of the stroke when simulating it on land and working in a rowing pool**

| Indicator | Stroke imitation on land,% | Blade size in% of standard | | | |
|---|---|---|---|---|---|
| | | 15 | 30 | 45 | 60 |
| Maximum strength | 100 | 37,3 | 47,5 | 48,0 | 50,0 |
| Stroke speed | 100 | 17,0 | 12,1 | 9,7 | 8,5 |
| Stroke power | — | 95,0 | 100 | 83,0 | 73,0 |

As you would expect, maximum stroke force is achieved with the largest blade area, and maximum speed with the smallest blade size. However, it is very important that the maximum power capabilities are realized with the largest blade by 50%, while the maximum speed capabilities with the lightest stroke are only 17%. It is obvious that in the complex of speed-strength abilities of a rower the strength component is of much greater importance than the speed component.

From the point of view of realizing the speed-power potential, the most valuable information is the power characteristics. They turned out to be the highest in all subjects when using a paddle with a 30% blade area. Consequently, when striving to increase the rower's power abilities, the use of an increased blade size will be justified, but such an exercise will make sense only if it is performed with maximum mobilization. At the same time, when working on a technique or increasing speed-power abilities, the most effective will be provided by the use of an oar with a 30% area.

Turning to the issue of technical improvement, the prospect of a wider use of technical means of urgent information about the parameters of movement in the rowing pool seems to be clear and reasonable. Note that the first attempts to program the technical parameters of rowing and their instrumental control were made in the rowing pool (S.P.Sarychev; R.I. Ermishkin; V.S. Farfel, V.A. Galkov, E.I. Penyaev,, etc.). It is obvious that the conditions of the rowing pool represent practically unlimited possibilities of saturation of the educational-training process with technical means of control and programming of the most important characteristics of movement. The most valuable and concentrated information about the dynamic construction of the stroke is provided by devices that provide objectification of the efforts applied by the athlete.

In an experiment carried out on two groups of canoeists, the effectiveness of the simulator was determined, which displayed on the monitor screen the shape of the

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impulse of the force applied to the paddle blade *. At the beginning and at the end of the experiment, a 2-minute test was carried out, simulating the passage of a 500-meter distance with the registration of the parameters of working activity at the start, after 1 minute and at the finish. The rowers of the experimental group carried out exercises with the simulator, achieving the correspondence of the real impulse to the reference one. The reference pulse contour, deposited on a transparent film, was superimposed on the monitor screen. The initial power parameters of the pulse were set based on the average data recorded in the test. The time parameters were set based on the expert judgment of the optimal amplitude. With a stable performance of the program, the level of maximum strength increased by 15 - 20% and the rowers worked in a new, strictly dosed mode. Exercises with the simulator were performed by each athlete for 20-30 minutes 4 times a day. In order to consolidate the rational skill, a uniform exercise regime was used. The quantitative assessment of the correspondence of the real pulse to the optimal one was determined on a computer using a specially developed program. The value of this indicator is the less, the closer the impulse is to the optimal value. Figure. 2 shows the moment of work with the simulator.

In the control group, the dosage of the load and the correction of motor skills were carried out without the use of technical means.

The results of the experiment are presented in the table. 2, show that operation in a strictly programmed mode provides a rational restructuring of the dynamic structure of the stroke (the correspondence of the impulse to the optimum increased by 26%) and, at the same time, leads to a significant increase in power (+1.5 kgm / s), and due to better retention of the force during the test.

## CONCLUSION

Thus, the choice of effective training modes, varying the size of the paddle blade, the active use of pedagogical control means, and the inducement of the athlete to conscious self-control can already significantly increase the effectiveness of training in the rowing pool. means of urgent information and programming of movements.

**Dynamics of parameters of working activity**

| Testees | | Maximum force, kg | | | | Power, kgm / s | Pase str./min | Compliance with the optimum | |
|---|---|---|---|---|---|---|---|---|---|
| | | Start | 1 | Finish | Ave | | | abc | m |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | min | | rage | | | | |
| Experiment.group | Начальное | 19,2 | 17,6 | 17,2 | 18,0 | 23,1 | 48,8 | 1,521 | 100 |
| | Конечное | 20,0 | 18,9 | 18,7 | 19,2 | 24,1 | 49,6 | 1,125 | 74 |
| | Разница | +0,8 | +1,3 | +1,5 | +1,2 | +1,5 | +0,8 | –0,396 | –26 |
| The control group | Начальное | 18,2 | 17,1 | 16,3 | 17,2 | 21,4 | 48,5 | 1,273 | 100 |
| | Конечное | 19,0 | 17,3 | 16,7 | 17,7 | 22,2 | 50,0 | 1,322 | 104 |
| | Разница | +0,8 | +0,3 | +0,3 | +0,5 | +0,8 | +1,5 | +0,049 | +4 |

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