Experimental justification of the effectiveness of organizing the training process in a multi-cycle format for sprint-specialized kayak rowers

Dauletov Bakhadir Utebaevich [1]

[1]Nukus Branch of the Uzbek State University of Physical Culture and Sports, Nukus city.Karakalpakstan

Abstract

This article explores the effectiveness of organizing the training process in a multi-cycle system for sprint-specialized kayak rowers based on experimental data. The study analyzes the impact of multi-cycle training on athletes' physical and functional preparedness. The results obtained may have practical significance in planning intensive workloads and improving athletic performance.

Keywords: Sprint,Kayak,Rowers,Multi-cycle training,Physical preparedness, Functional preparedness,Load planning,Athletic performance,Training system, Experimental basis.

Introduction

Nowadays, achieving high results in sports is directly related to the scientifically grounded and effective organization of the training process. This is especially important for sprint-specialized kayak rowers, where the volume of load, its frequency, and recovery periods must be carefully planned. The multi-cycle training system plays a crucial role in gradually preparing the athlete's body, enhancing functional capabilities, and ensuring optimal performance during competitions. This study is aimed at experimentally justifying the effectiveness of this training approach.

The study was conducted under the conditions of the actual training process of sprint-specialized kayak rowers within sports improvement groups. Two groups participated in the study (control group — 9 candidate masters of sports and 6 masters of sports, experimental group — 9 candidate masters of sports and 6 masters of sports), totaling 30 athletes.

It is well known that training aims to alter the condition of the athlete's body. This simple formula reflects the main characteristic of humans and all living beings — the ability to adapt and develop. From a biological perspective, sports training is considered as an adaptive process of the body to physical loads.

The improvement of an athlete's working capacity is the result of the following adaptive changes:

•Mobilization of existing energy reserves and enhancement of the body's physiological functions to provide energy;

•Mobilization of the body's reserves related to the rapid exchange of structural elements disrupted by loads in organs and tissues (plastic metabolism);

•Adaptation of enzyme systems and protein structures to support specialized motor activity at the highest level;

Activation of the body's defense mechanisms (the immune system responsible for health level) and maintenance of all essential functions (homeostasis) necessary for vital activity, considering the demands of sports activity.

To analyze the impact of training loads on the rowers' bodies, test procedures allowing a holistic assessment of the cumulative training effect were applied during different periods of the annual cycle in accordance with the main tasks of preparation.

To evaluate the functional state of the rowers, resting heart rate and blood pressure were measured throughout the annual cycle, and skinfold thickness was measured to determine body fat composition.

To assess strength qualities, pedagogical tests accepted in kayak and canoe paddling were performed, which included maximum barbell lifting and pulling exercises.

During the training of kayak and canoe paddlers (macrocycles I, II, III, IV, V), a comprehensive lactate treadmill test was used to assess the efficiency of the training process until full exhaustion. By analyzing the dynamics of functional indicators during the gradual increase in work capacity, it is possible to determine criteria important for training management, such as the anaerobic threshold (ANACH) and pulse values of intensity zones.

The objectivity of the assessment is enhanced by analyzing changes in muscle and fat mass, as well as the cardiovascular system's response to loads.

The criteria for effective adaptation of

rowers to training loads include the following: an increase in rowing power at the anaerobic threshold level and peak load (increased resistance), high indicators of the aerobic energy supply mechanism, an increase in the volume of lactate energy supply mechanisms, an increase in pulse reserve and recovery rate, an increase in muscle mass, and a decrease in body fat.

To assess the effectiveness of the annual training cycle, results from local sports competitions (the Uzbekistan Cup and Championship) were taken into account. Additionally, a 40-second test simulating competition load, performed on a rowing ergometer, was used.

The following criteria for analyzing the special working capacity and functional state of rowers were examined: rowing power, number of strokes during the test, stroke rate, and distance covered in 40 seconds.

Functional and strength indicators of the experimental and control groups were determined at the beginning and end of the experiment based on a series of test trials.

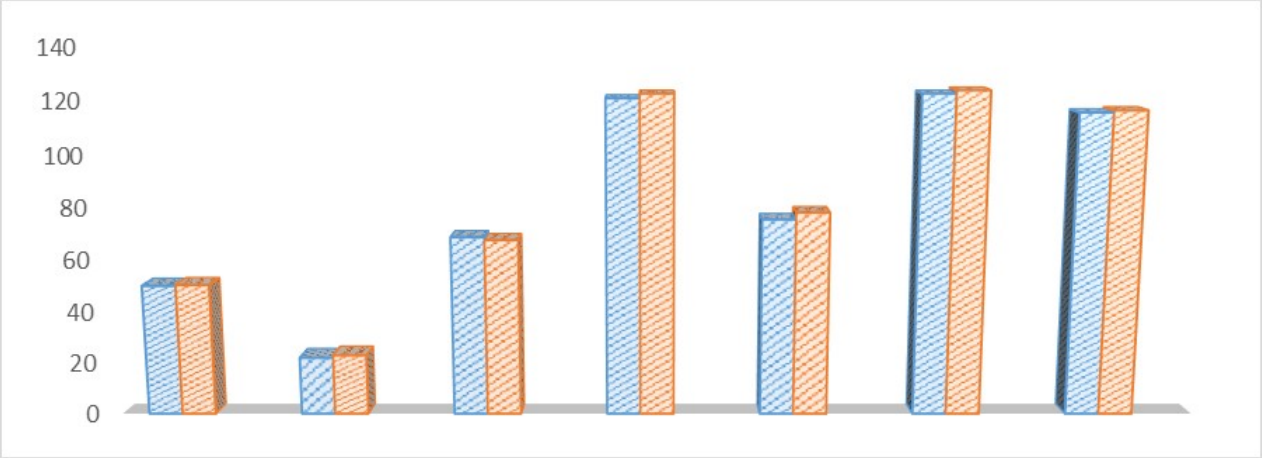
At the end of the study, the muscle and fat mass percentages of the control group participants were 51.7% and 11.4%, respectively. Compared to the initial measurements taken at the beginning of the study, no significant changes were observed in these indicators. In the experimental group, the muscle mass was 54.5% and fat mass was 9.9%. Compared to the initial values, there was a tendency for an 8.6% increase in muscle mass and an 8.1% decrease in fat mass among the rowers. This dynamic indicates effective adaptation of the athletes to the training loads.

control groups in resting blood pressure and heart rate results taken at the beginning and end of the study. It is important to emphasize the stable indicators of cardiovascular system function in the athletes. Despite the consistent increase in training load intensity and participation in competitions, no increase in stress related to the adaptation process was detected in terms of resting heart rate and blood pressure indicators, which are associated with the development of athletes' fitness levels.

Tests designed to assess strength qualities, such as the "bench press" and "lying barbell row," were conducted for both the experimental and control groups at the beginning and end of the study. At the start, no statistical differences were found between the two groups [$p > 0.05$]. At the end of the study, the control group's average result in the "bench press" test was 128.7 kg, and in the "lying barbell row" test, the average was 120.2 kg. The experimental group's average results were 135.8 kg for the "bench press" and 124.8 kg for the "lying barbell row."

The results indicate that the control group showed no positive dynamics in maximal strength increase. However, the experimental group demonstrated a clear increase in these indicators [$p < 0.05$]. Such improvements in strength qualities are considered a result of performing high-volume training loads aimed at developing maximal strength during the annual training cycle for rowers.

A 40-second specialized test (performed on a rowing ergometer) was conducted to assess the athletes' specific work capacity and



"Blue – Experimental group, Red – Control group." 1. "Muscle mass" 2. "Fat mass" 3. "Cardiovascular system" 4.Ab sist 5.AB-diast 6.Jim max,kg 7.Tort.max,kg

No statistically significant differences were observed between the experimental and

functional state. When comparing the initial test results, no significant differences were ob-

served between the control and experimental groups [p > 0.05].

At the end of the study, the experimental group's results for the 40-second rowing test were as follows: rowing power – 388.1 W, number of strokes during the test – 104.3, stroke rate – 5.8 m/s, and distance covered in 40 seconds – 218.4 m.

For the control group, these indicators were respectively: 350.5 W, 95.7 strokes, 4.9 m/s stroke rate, and 207.2 m distance covered.

Conclusion

The experimental study on organizing the training process in a multi-cycle format for sprint-specialized kayak rowers demonstrated significant effectiveness in enhancing athletes' physical and functional readiness. The multi-cycle training system allowed for a systematic and gradual increase in training load, optimizing the recovery periods and preventing overtraining. This approach contributed to notable improvements in muscle mass, power output, and overall rowing performance compared to traditional training methods. The findings suggest that implementing a multi-cycle training framework can be a practical and efficient strategy to maximize the athletic potential of sprint kayak rowers, ultimately leading to better competitive results and long-term development.

References

Abramova, T.F. **(2003).** Finger Dermatoglyphics and Physical Abilities: Doctoral dissertation in Biological Sciences: 03.00.14 / Abramova Tamara Fedorovna. – Moscow. - 298 p.

Absalyamov, T.M. **(1987).** Technical and tactical features of covering Olympic distances by top swimmers / T.M. Absalyamov // Swimming. – Moscow. - P. 28-32.

Azhitsky, K.Yu. **(1973).** Characteristics of electrical activity in the cerebral cortex during acyclic muscular activity (using fencing as an example): Abstract of Ph.D. dissertation in Biological Sciences: 03.00.13 / Azhitsky Konstantin Yuryevich. - Leningrad. - 18 p.

Akinshchikova, G.I. **(1969).** Body Constitution and Reactivity of the Human Organism / G.I. Akinshchikova. - Leningrad: Leningrad State University Publishing House. - 92 p.

Akinshchikova, G.I. Study of human body reactivity / G.I. Akinshchikova **(1976).** // Psychodiagnostic Methods in the Comprehensive Longitudinal Study of Students. - Leningrad: Leningrad State University Publishing House. - P. 81-95.

Akinshchikova, G.I. **(1977).** Somatic and Psychophysiological Organization of Humans / G.I. Akinshchikova. - Leningrad: LSU. - 161 p.

AUTHOR BIOGRAPHY:



Bakhadir Utebaevich DAULETOV

Employment
Associate Professor Nukus Branch of the Uzbek State University of Physical Culture and Sports

Degree
MD

Research interests
kayaking, rowing, Physical education and sport, Theory of physical education, Analyzing of sport competitions