

**MECHANISMS OF INTEGRATED TRAINING FOR KAYAK AND CANOE
ATHLETES**

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**МЕХАНИЗМЫ ИНТЕГРАЛЬНОЙ ПОДГОТОВКИ СПОРТСМЕНОВ ПО ГРЕБЛЕ
НА БАЙДАРКАХ И КАНОЭ**

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**BAYDARKA VA KANOECHI SPORTCHILARNI INTEGRAL TAYYORLASH
MEXANIZMLARI**

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Kalit so'zlar: yuqori malakali baydarka va kanoechilar, mashg'ulot jarayonlarini optimallashtirish, texnik tayyorgarlik, integral tayyorlash, biomexanik ko'rsatkichlari.

Relevance. The integrative approach to training highly qualified kayakers and canoeists is a complex multi-stage process based on the seamless and systematic integration of athletes' physical, technical, tactical, and psychological training components. To achieve high results in this sport, it is crucial not only to develop each component separately but also to ensure their mutual harmony and compatibility. From this perspective, methods of analyzing, effectively planning, and monitoring the training process hold a special place in modern sports science and practice. These methods serve to accurately assess athletes' potential, forecast competitive results, optimize the balance between exertion and rest, as well as improve athlete selection and guidance systems. Recent scientific research has demonstrated that developing scientifically grounded training models based on individual characteristics can enhance athletes' competitiveness and stabilize their success in competitions.

In his research, S.V. Verlin analyzes the competitive performance of highly skilled kayakers over a 500 m distance, emphasizing the importance of modeling the relationship between boat speed and biomechanical indicators of rowing technique. According to his conclusions, biomechanical models serve as a foundation for improving the efficiency of athletes' movements and correcting

technical errors. The use of modeling methods helps develop strategies aimed at determining the optimal parameters of rowing. He notes that this approach is crucial in enhancing competition results. This study addresses the issues of optimizing technical preparation within the integrated training of kayakers and canoeists.

According to Z.N. Azimov's work, analyzing and planning coordination abilities in the initial training of young kayakers and canoeists is crucial for developing technical skills. Developing models of specialized exercises enhances motor skills. Using physical analysis methods, Azimov proposes strategies for young athletes and acknowledges the long-term impact of coordination training. The research focuses on developing coordination abilities at the initial stage. Azimov's methods strengthen motor foundations, address training contradictions, and provide scientific guidelines.

According to M. Begon's observations, the analysis and planning of limb movements in kayaking increases the effectiveness of rowing. Movement analysis optimizes energy consumption. Begon develops strategies for developing movements using simulation and mathematical methods and emphasizes their impact on competition results. The research is aimed at optimizing motion. Begon's methods increase efficiency, solve methodological problems, and offer scientifically based approaches.

According to S.V. Verlin, the analysis and planning of the theoretical and methodological foundations of kayaking and canoeing serves to systematically combine physical, technical, and tactical training. Using experimental and mathematical methods, he developed strategies for optimizing the competitive activity of athletes. Verlin's approach allows increasing the effectiveness of athletes' movements, eliminating technical errors, and improving tactical decision-making through scientific analysis of training processes. He emphasizes the impact of integral analysis on competition results, noting that it plays an important role in personalizing training programs and ensuring team synchronization.

In our opinion, methods of analysis and planning in the integrated training of highly qualified kayakers and canoeists are important in balancing the physical, technical, tactical, and psychological preparedness of athletes. The analysis of the above literature clearly shows the effectiveness of scientifically based approaches in this process. For example, the works of S.V. Verlin, aimed at combining theoretical and methodological foundations, serve the systematic optimization of training processes. This confirms the need for a systematic approach, taking into account the individual characteristics of athletes, which serves as an important basis for solving the organizational and methodological problems of integral training. Integral training of kayakers and canoeists requires a systematic combination of physical, technical, tactical, and psychological training. Methods of analysis and planning allow for in-depth study of athletes' competitive activity, prediction of achievements, and optimization of training processes.

According to W.G. Kersting, three-dimensional analysis and planning of water rowing technique is of great importance in the comprehensive training of kayakers and canoeists. He focuses on the effectiveness of technical movements as one of the physical qualities of athletes. Using video recording and telemetry technologies, Kersting determines the movement parameters of rowing and develops strategies for correcting technical errors. This approach directly affects the development of physical qualities, in particular, the accuracy and synchronicity of movements. He emphasizes the role of these techniques in improving competition results. The practical significance of the research lies in the fact that this study is aimed at optimizing physical qualities, in particular, technical training. Kersting methods develop motor skills, eliminate methodological

problems in training, and increase the physical performance of athletes through real-time monitoring. An integrated scientific approach with modern technologies serves to improve competitive achievements.

As Z.N. Azimov notes in his work, the analysis and planning of coordination abilities in 11-12 year old canoeists is of great importance in initial training. The development of models of special exercises is the main factor in the formation of motor skills of young athletes. Azimov proposes strategies for developing coordination abilities using modular technologies and emphasizes the impact of this approach on long-term competition results. The research is aimed at the development of coordination in initial training. Azimov's methods strengthen motor foundations, eliminate training conflicts, and improve the technical preparedness of young athletes with the help of modern monitoring tools. Scientifically based guidelines lay the foundation for competitive achievements.

N.Petrone's research emphasizes the importance of analyzing and planning the rowing movements of Olympic kayakers in integrated training of kayakers and canoeists, in particular, in indoor conditions. This research focuses on movement efficiency and energy saving as one of the physical qualities. Petrone, using simulation and mathematical methods, conducted a deep analysis of the motor characteristics of rowing and developed strategies for optimizing the training process. His approach helps to reduce energy consumption and increase technical efficiency by accurately analyzing the movements of athletes, which directly affects the results of competitions. Petrone emphasizes the advantages of using modern technologies, in particular simulation tools, in the study of rowing movements of Olympic kayakers in enclosed spaces.

Analysis and planning of the biomechanical effectiveness of kayaking and canoeing techniques is of great importance in integral preparation. Biomechanical models improve technical training by determining the optimal parameters of rowing. Kvashuk analyzes the actions of athletes using methods of mathematical analysis, emphasizing that he has developed strategies for correcting technical errors and that this approach increases the effectiveness of competitions. The research is aimed at optimizing technical training.

CONCLUSION.

Analysis of the studied scientific sources shows that in the process of integrated training of highly qualified kayakers and canoeists, modeling and in-depth analysis of competitive activity are of great importance. This approach allows for an objective assessment of the athletes' preparedness level, the formation of training programs, taking into account individual capabilities, and increasing effectiveness in competitions. In particular, Heck substantiates the need to develop anaerobic abilities, and Kersting substantiates ways to improve movement techniques through three-dimensional biomechanical analysis. Demonstrates the coordination abilities of the athlete as an integral part of integrative training, Petrone analyzes the practical benefits of simulation training in a closed environment, and Kvashuk highlights the biomechanical effectiveness of rowing movements. These studies serve as a solid theoretical and practical basis for solving methodological problems related to integral training. The results of each author confirm that a systematic approach based on modeling the training process, taking into account the individual-physiological and psychological characteristics of athletes, is an integral part of modern sports training.

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