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TEACHING METHODOLOGY FOR ROWING ELEMENTS IN ACADEMIC ROWING

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ABOUT ARTICLE

Key words: For each parameter, a model matching, the anthropomorphic and movement characteristics, of the athletes had to be developed.

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Abstract: As a result of the development of a set of exercises aimed at timely identification and correction of problems arising during the improvement of technical training and negative factors encountered in the incorrect performance of technical elements at the stage of long-term training, the quality of the sounding technique has been significantly improved by bringing the sounding movements to the level of reflex automation.

Relevance. In academic rowing, it was necessary to select parameters that each athlete should receive feedback on when learning rowing elements. Additionally, for each parameter, a model matching the anthropomorphic and movement characteristics of the athletes had to be developed. This selection process was conducted during the first training sessions, which simultaneously addressed the task of teaching rowers in the experimental group to manage their movements based on data about their physical characteristics. In the initial training, each rower was offered to monitor only one graphical parameter (velocity of the legs, torso, or arms along the rowing handle) without a model graph in the background. The selection of the parameter was made in favor of the indicator that was furthest behind the model in terms of velocity and spatial displacement for that particular athlete.

Purpose of the research. The aim was to develop proposals and recommendations for teaching methodologies related to rowing elements in academic rowing.

Research objectives: 1. The study and analysis of the technical training of academic rowers. 2. Development of technical elements for effective rowing for rowers. 3. Implementation of the developed complex of exercises into the training of academic rowers.

Results of the research and discussion. When performing the tasks in the experimental group, the rowers significantly altered their rowing pace and attempted to control the graphical display on the monitor of the Concept2 ergometer through known rowing movements. At this stage, it was observed that visual concentration caused significant mental strain. During the second session, in addition to the velocity graph of a particular segment, a desired model shape of the graph was provided in the background for each rower in the experimental group. The task for the participants was to adjust their movements to achieve the best match with the displayed graphs. At this stage, the inability of most rowers to sustain the required performance characteristics throughout the entire training session became evident.

The complexity and novelty of this exercise, which involved feedback, were reflected in two key observations. First, some rowers began to lose coordination in their movements, disrupting intramuscular coordination. This, in turn, led to excessive muscle tension and technical breakdowns.

Second, the repetitive nature of the graph's monotony caused some rowers to lose focus on visual control. To address these issues, pedagogical methods were employed. By visually comparing the graphs displayed on the monitor with the rowers' movements, the possible causes of discrepancies between actual and required rowing characteristics were identified. Following this, the athletes received instructions in the form of verbal commands commonly used in rowing technique improvement (e.g., "Don't grab with your arms!", "Pull back with your core!", "Drive through your elbows!", etc.).

Additionally, a demonstrative method was employed, allowing the rower to observe the external differences between correct and incorrect rowing exercises during training. They were able to compare these observations with the segment velocity graphs. Every two weeks (approximately every fourth technical training session), individual technical improvement sessions were conducted with the athletes. These sessions focused on analyzing typical errors for the rower, finding ways to correct them (with the direct involvement of both the athlete and the coach), and developing an optimal, individualized movement structure. Solving this final task required modifying the interdependence models of segment velocities.

Throughout the study, model adjustments for each rower in the experimental group were continuously optimized. Since the initial model graphs were simplified representations of the relationships between segment velocities and handle displacement, based on phase-velocity characteristics of the model values, they required prior refinement. The graphical representations indicating the rowing parameters were individually adjusted for each athlete to provide adequate and precise movement objectives. Both the peak velocities of the segments and the shapes of the acceleration, deceleration, and plateau phases underwent modifications.

The majority of rowers in the experimental group were able to match their movements to the models during low-intensity workloads but struggled to maintain this during increased workloads and fatigue. Under such conditions, rowers were required to strive for the closest possible adherence to the model. Additionally, in four rowers, we identified a limiting factor—insufficient local strength endurance of the spinal extensor muscles—which significantly reduced the backward movement speed of the torso during rowing. This observation allowed us to formulate specific recommendations for strength training. In particular, the rowers were advised to perform hyperextension exercises (flexion/extension of the torso from a position with anterior support at the pelvis and posterior support at the heels) on horizontal or inclined surfaces.

To reduce the dependency of rowers on conscious control of their movements using feedback, the task of comparing and correcting techniques was replaced with exercises focused on repeating the technique without additional aids. In other words, the aim of our study was not only to enable rowers to correct their technique but also to teach them to control it at a new qualitative level without the need for immediate feedback. Therefore, if a rower in the experimental group began to easily reproduce the proposed phase-velocity structure, the monitor was removed from their field of view. However, the operator conducting the study continued to monitor the indicators.

If the rower began to make repeated errors, they were given verbal commands to self-correct. If such instructions were insufficient to correct the error, the monitor was returned to their field of view. This experimental process started during the 6th-9th sessions and continued until the end of the training program. Both the initial and final technical evaluations were conducted without visual control of the velocity graphs in both groups.

In the control group, rowers performed the same tasks as those in the experimental group. However, they worked on technique using ergometers that were not equipped with feedback devices. Initial evaluations of the rowers' techniques served as the baseline data for improvement.

However, the methods were limited to standard explanations and demonstrations, which are commonly used in technical training.

Conclusion. In the control group, a significant decrease in technical stability was observed for most athletes during fatigue. When technical errors were linked to a lack of local endurance components, adjustments were made to their strength training and specific endurance exercise programs.

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