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INFLUENCE OF THE SUPPORT AND UNSUPPORTED STROKE PHASE ON THE SPEED OF THE BOAT IN KAYAKING

In this article, various characteristics of the stroke in rowing in kayaks are studied. The main parameters that have a positive and negative effect on the speed of the boat are identified. Information about the training activity and its influence on the internal processes of the athlete's body contributes to the creation of the widest model of rowers' preparedness, which makes it possible to more accurately monitor the current sports form and predict the achievement of the maximum sports result.

The current stage in the development of rowing is characterized by a high level of sports results, the emergence of new equipment, a change in Olympic distances and increased competition in the international arena. The most important condition for improving the skills of athletes is the development and application of new technologies in the system of their training, based on modern scientific approaches. In this regard, a thorough study of all parts of the training process is coming to the fore in the training system in order to find hidden reserves that can improve sports results.

In this regard, one of the important components of training is the determination of model indicators of all areas of activity of athletes, which serves as the basis for predicting the development and formation of sports form, as well as sports results [4].

The most informative and accessible indicators of competitive activity in kayaking are stroke power, rowing pace, total stroke time, distance traveled, boat speed and distance travel time. The change in these parameters at a distance is a consequence of the load received by the body, and they appear due to changes in both the indicators of the cardiovascular system [3; 6] and the activity of the muscular system [1; 7].

The speed of the kayak on the course is the main parameter. By the speed of the boat and its change in each cycle of rowing movements, it is possible to assess the activity of the rower and the level of his preparedness. For its analysis, a number of parameters are used: power, stroke rate, time of the support, non-support phase, etc. [2; 5].

The purpose of the study was to study the features of the relationship between various stroke parameters.

Methodology and organization of the study. The study was conducted during a yearly cycle in the research laboratory of physical culture and sports of the educational institution "Gomel State University named after Francysk Skaryna" within the framework of the state research program "Convergence – 2020".

The study involved athletes aged 15 to 17 years who have the sports qualification "Candidate for Master of Sports". On the rowing ergometer, a dosed load was set depending on the weight and the passage of a distance of 1000 meters was modeled. The frequency of testing was determined by the tasks of the stages, testing was carried out on average once every three weeks.

As a result of this study, it became possible to track the dynamics of changes throughout the entire distance of the following parameters:

Speed – speed of covering a distance (m/s).

Total time of stroke – duration of one stroke (s).

Time of stroke support phase – duration of a paddle presence in water given one stroke (s).

Time of stroke airborne phase – duration of a paddle presence in the air given one stroke (s).

Length of boat run in one stroke – distance covered by a boat in one stroke (m).

Figure 1 shows the change in the total time of a stroke throughout a distance of 1,000 meters. As you know, a stroke from one side consists of support and airborne phases. This parameter characterizes the duration of one stroke, i.e. support and airborne phases together.

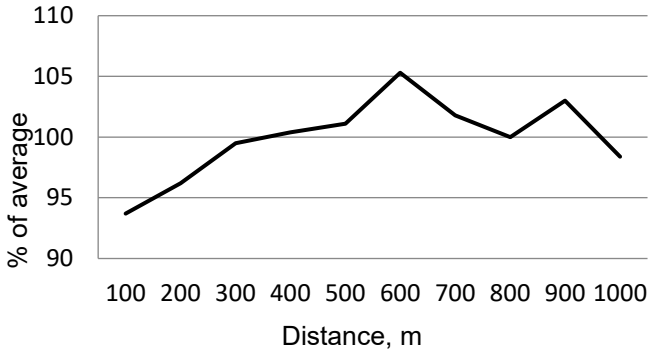

Figure 1 – Change of total time of stroke at a distance of 1,000 m

Total time of a stroke and pace are two interdependent parameters, since the pace characterizes the number of strokes over time, while the total time of the stroke is the time of these very strokes. This is clearly seen in Figure 2.

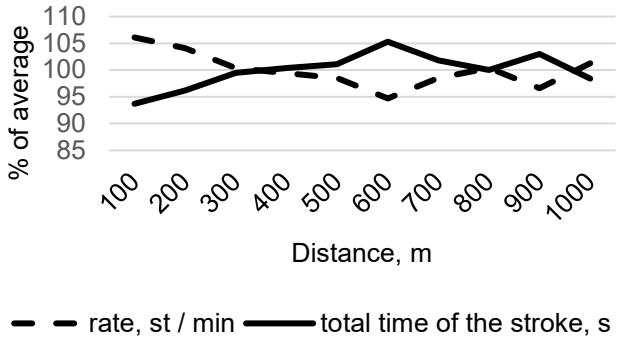

Figure 2 – Change of pace and total time of stroke at a distance of 1,000 m

Parameters of the support and airborne phases were studied for a more detailed presentation of the total time of a stroke.

Time of stroke support phase (Figure 3) is non-constant throughout a distance and varies considerably. The largest changes occur at sectors of 200–300 meters, where the increase in the time of stroke support phase reaches more than 6%, and at 600–700 meters, where its decrease reaches 8.6% of the average value at the distance.

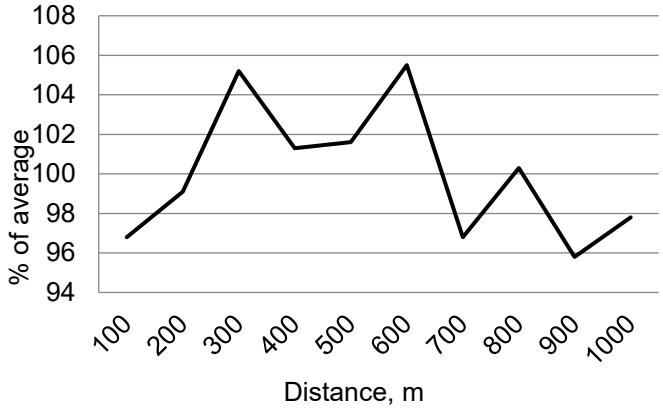

Figure 3 – Change of stroke support phase time at a distance of 1,000 m

Time of stroke airborne phase (Figure 4) is without significant fluctuations from the very start and gradually increases to a sector of 700 meters. This characterizes the dynamics of the change in power throughout the distance.

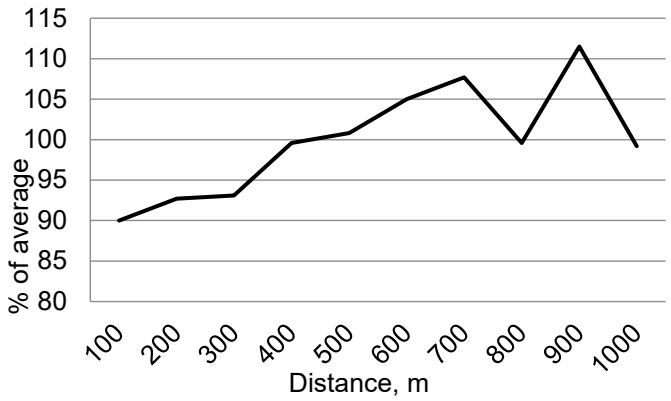

Figure 4 – Change of stroke airborne phase time at a distance of 1,000 m

The revealed kinematic characteristics of kayaking stroke allowed determining the model characteristics of the movement.

Based on the analysis, the most informative are sectors of 300 - 400 and 700 - 800 meters of a distance.

The drop in pace causes the increase in the total time of stroke, and because of the reduction in power, the time of the support phase decreases. These two factors result in the significant increase of the airborne phase time.

Along with the total time of stroke, the total length of run in one stroke increases too, and the length of run during the support phase decreases, which leads to a considerable increase in the length of the boat run during the airborne phase.

Throughout a distance the accumulated fatigue affects the trajectory of the movement of the body units and the relationship between the kayaking kinematic parameters against each other.

The carried our researches have allowed determining several recommendations:

To improve the training process management, it is necessary to identify the model characteristics of kayaking techniques at different distances.

Using the interrelation of different kinematic indicators of a stroke will help to find a rational structure of movements during a competitive race.

Ability of a paddler in each stroke cycle to alternate the tension of muscles during the support phase with their relaxation in the airborne phase is very important for the preservation of his/her performance throughout a distance. The increase of rest time in the stroke airborne phase leads to later fatigue.

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CHANGING THE BOAT RENTAL LENGTH AND ITS EFFECT ON SPEED IN KAYAKING

The article is devoted to the study of various stroke parameters in kayaking. The distance covered by the kayak in the supporting and unsupported stroke phases is analyzed. The length of the rental of the boat and its influence on the speed in kayaking are investigated.

The training process in kayaking should be of a highly specialized nature and strictly combined with competitive activities. The main competitive distances in kayaking are 200, 500, and 1000 m, and the time for passing these distances is from 30 seconds to 4 minutes. In this time range, there are various factors that limit the achievement of a high sports result [5]. The knowledge of these factors, which mainly determines the quality of the training process, depends on the breadth of the information received of a different nature: pedagogical, biomedical, kinematic, biodynamic.

Thus, the effectiveness of the training process is determined by the quantitative and qualitative parameters of the athletes' loading activity. Information about the training activity and its influence on the internal processes of the athlete's body contributes to the creation of the widest model of young rowers' preparedness, which makes it possible to more accurately monitor the current sports form and predict the achievement of the maximum sports result. The most interesting are the performance indicators of athletes (speed, pace, power, etc.) when passing both the entire distance and its sectors. Change in these indicators throughout a distance is a consequence of the load the body receives. Parameters of the cardiovascular system [4; 7] and muscle activity [1; 8] can serve as the basis for these changes. The state of various body systems of athletes is determined by different types of preparedness of the rower: technical, functional, psychological, physical, tactical. The level of development of various types of readiness is characterized by the parameters of competitive activity: the speed of the boat, the pace of rowing, the power of the stroke [6].

The aim of the study was to study the influence of the length of the rental of the boat on its speed in kayaking.