ENERGY SUPPLY MECHANISMS IN SKI-SPRINTERS’ MUSCLE WORK

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In view of skiing sprint inclusion into the competition schedule the necessity of a detailed study of methodic aspects in ski-sprinters’ training process has arisen. The base of ski-sprinters training modernization is a physiological substantiation of muscle work in sprint distances. Ski-sprinters’ work is mainly anaerobic. However the aerobic energy supply system also contribute to it. Accordingly ski-sprinters’ results depend on both anaerobic and aerobic efficiency. The goal of our research was to study how the two energy supply systems affect sprint performances.

16 qualified ski-racers participated in the research. We elicited the effect of anaerobic energy supply system by Wingate Test results. The athletes performed 30 s pedalling on the cycloergometer Monarch – 894 E. Power output was registered every 5 s. During first 5 s we recorded maximal power output, in the interval from 0 to 30 s – mean power output, last 5 s – final power. The values were measured absolutely (w) and relative to body weight (w/kg).

To study the effect of aerobic and anaerobic energy supply systems the correlative analysis of Wingate Test results and sprint race performance has been made. The most marked correlation was discovered between the indices of minimal (r= 0.42, p<0.05) and mean (r=0.61, p<0.05) work power. The maximal power indices (r=0.21, p>0.05) have a poor correlation. The most pronounced correlation between sprint race performances and work power was revealed from 10 to 15 s (r=0.66) and from 15 to 20 s (r=0.68).

Analyzing the number of revolutions during cycloergometer pedalling we revealed the highest correlation factor in the same time interval (r=0.51, p<0.05). Thus, the most significant evidences of a successful sprint performance are anaerobic glycolyses level in work muscles and anaerobic endurance.

The research showed that high anaerobic efficiency determined the performance in sprint contests. Wingate Test results in the interval of 10-20 s are the most informative for the evaluation of anaerobic system contribution to the energy supply of ski-sprinters’ muscle work. The revealed regularities must become the basis for modelling the training session structure in a year’s training cycle.

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