RATIO OF PROCESSES OF AEROBIC AND ANAEROBIC METABOLISM IN MUSCLE LOAD OF MOUNTAIN-SKIERS
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Introduction
Elite mountain-skiers experience the combined effect of motor and high-altitude hypoxia. Goal of the study was to examine the ratio of aerobic and anaerobic metabolism at special muscle load of mountain-skiers.

Methods
The study was conducted in mountainous conditions (2,900 m and 2,300 m above the sea level). Thirty eight athletes were tested for maximum oxygen consumption (VO2max) and maximum oxygen debt, and blood lactate concentration. Oxygen consumption was tested on the routes of slalom, giant slalom continuously from the start to the finish, as well as on the first and second halves of these distances. Restoration surplus of O2 consumption after the finish was monitored for 40 minutes.

Results
Reduction of aerobic capacity occurred in first 7-10 days after moving to mountain. Between 14 and 18 days, VO2max indicator increased up to 92-94% of the flat country levels. And afterwards its fluctuations were mostly caused by the effect of training conditions rather than the altitude. In the end of preparation period VO2max was on the level of 57.261617;1.5 ml/kgmin^-1. Oxygen consumption in the first half of the giant slalom was about 60% of the indicator of the second half. During the first 30 seconds of descent the level of aerobic oxidation jumped up to 50% VO2max, and then up to 70%. At the finish, in the first 20 seconds after slalom and giant slalom, oxygen consumption corresponded to the distance level of consumption. Level of oxygen debt at training of slalom and giant slalom distances reached 8.561617;0.19 l, and 9.361617;0.4 l during the competitions. At practicing slalom, the oxygen demand reached in average 9.7 l, and 14.3 l on the distance of giant slalom. In case the oxygen demand in giant slalom was equal to 88% of maximum metabolic rate (MMR), the share of aerobic oxidation reached 63-65%, and that of anaerobic one equaled to 35-37% (at equal ratio of lactate and non-lactate components). At increasing of oxygen demand up to 1.2 units of MMR, share of oxygen consumption in energy supply dropped down to 49%, while the oxygen debt increased up to 51% (lactate component – 36%; non-lactate one – 15%). In slalom, at oxygen demand of 1.4 units of MMR, aerobic source of energy production made 39% and anaerobic 61% (36% – glycolysis; and 25% – non-lactate component). At increasing of oxygen demand up to 1.8-2.1 MMR, share of aerobic oxidation dropped to 27-31%, while that of anaerobic component reached 69-73% (48-49% – lactate; and 21-24% – non-lactate fractions). Maximum aerobic capacities were utilized by 72-85% at training and up to 93% during the competitions. Maximum level of blood lactate at training was 15.6, and during the competitions 16.9 mmol/l.

Conclusion
There were identified the ratios of aerobic and anaerobic metabolism at muscle load of mountain-skiers which may serve as indicators of biochemical adaptation of athletes to special physical loads

Keywords: Altitude Training, Ski-Mountaineering, Anaerobic Threshold