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Development of the aerobic fitness in elite young orienteers

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The aim of the study was to estimate the age-dependent changes in the indices of the aerobic fitness of young male and female elite orienteers aged 16 to 26 and 15 to 29 years, respectively. Two methods of the analysis of the results were employed. In the first method, the results were obtained from the subjects examined three to seven times at one-year intervals. The changes in the values of the studied indices were calculated for each pair of the consecutive years. The results were analysed in six age groups each of which consisted of eight to 13 female and ten to 18 male. Mean values of the individual annual changes in the indices were calculated depending on the age of the examined subjects. In the second method, the orienteers were divided into four age groups each consisting of ten males and six females who, during the period from 1990 to 2000, exhibited the highest maximal oxygen uptake; in this case, the differences between the means obtained for each group were analysed. The test exercise consisted of running until exhaustion on a mechanical treadmill with the workload being increased by 2 km per hour every five minutes. During the exercise, the following indices were recorded: speed of the run (V), heart rate (HR), pulmonary ventilation (VE), oxygen uptake (VO<sub>2</sub>), and lactate concentration (LA) in the arterialised blood. Both the maximal (max) and at the lactate threshold (OBLA) values of the examined indices were estimated. In addition, the economy of running (RE) was calculated. It was found that the subjects' body mass increased or tended to increase until the age of 23 years. The 16-17-year-old males demonstrated elevation of the absolute values of VO<sub>2</sub>max, and the values of VOBLA increased or tended to increase in the males aged 16-19 years. In the 16-18-year-old boys and the 15-17-year-old girls improving in the RE was detected. No significant alterations in the values of the remaining indices could be demonstrated. The obtained results indicate that in male and female athletes representing such a typical endurance sport as orienteering, elevation of the values of the aerobic fitness indices with increasing age of the subjects is relatively early suppressed.

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