DEPENDENCE OF AEROBIC PERFORMANCE OF ATHLETES ON POLYMORPHISM OF GENES

Abstract. The adaptation of an athlete to systematic physical exercise has been shown to be determined by a combination of great many genes. The aim of our study was to investigate the dependence of the aerobic capacity parameters in sport on the set of gene polymorphisms. Cardio-respiratory system (CRS) adaptation reactions to exercise of 72 endurance athletes were assessed using the gas analysis. The analysis of the obtained results has shown both single and combined effect of the gene polymorphisms on the aerobic capacity. The impact of 6 polymorphisms on the aerobic performance level was analyzed: T–786→C polymorphism of the promoter of eNOS gene as well as ACE I/D polymorphism, Pro/Ala polymorphism of PPARG gene, G/C polymorphism of PPARA gene, Pro582Ser polymorphism of HIF1α gene, and Ala203Pro polymorphism of PPARC1B. It was found that a single impact on the Hrmax providing ACE I/D polymorphism. Individual influence of ACE gene accounts for 2% of this index dissipation. Results showed that there is a dependence between the amount the maximum volume of consumed oxygen (VO2max) from the set of gene polymorphisms. Cumulative impact of these polymorphisms in the combination with the individual parameters (gender; qualification; kind of sport) stipulates 71% of dispersion of VO2max value.