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» Journal Abstract

Effects of oxygen application prior to exercise on performance and regeneration

C Özgürbüz, K Jung, N Teerfort

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Maximal oxygen consumption is an important performance criterion in endurance sports. Aerobic production is far more effective than the anaerobic one. Thus, to improve maxVO2 is one of the main aims of athletes involved in endurance oriented sports activities. For this purpose, beside training adaptations, to increase the O2 content of inspired air may be a theoretically effective means to possibly improve performance and regeneration. First semester physical education students (n=46: 19 females, 27 males) randomly performed two incremental bicycle ergometer tests 2-4 days apart, until subjective exhaustion. Ambient air alone was inhaled through a mask for 15 min until 10 min prior to one of the tests, and was enriched by 5 l•min-1 O2 in the other. A low intensity active regeneration of six min immediately followed the tests. VO2, Ve (min ventilation), heart rate, EqO2 (oxygen equivalence), power output, RQ at the anaerobic threshold; VO2, Ve, heart rate, EqO2, power output, RQ, pO2, pCO2, BE (base excess) and blood pH at exhaustion; heart rate, RQ, blood pH, creatine kinase, urea and lactate upon the regeneration period were compared. The statistical analysis of this prospective, randomised and single blind study was done using the Student t- and Kolmogorov-Smirnov tests. No statistically significant differences were found between any of the above-mentioned parameters. Performance and regeneration of the subjects were not statistically affected during the “prior O2 inhalation test” as described. Nevertheless, as minimal differences between elite athletes decide about success in competition, it might be worthwhile to further study the subjects, using different protocols.

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