

EFFECTS OF ACUTE EXERCISE AND PERIODISED TRAINING PERFORMED IN DIFFERENT ENVIRONMENTS ON OXIDATIVE STATUS PARAMETERS IN PATIENTS WITH TYPE 2 DIABETES

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Introduction. The effect of exercise on oxidative status in patients with type 2 diabetes has been evaluated, however the results are contradictory pointing to a rather complex relationship to link exercise and the type 2 diabetes. In addition, an individualized protocol, specifically the periodized exercise, performed in different environments yet remains poorly studied. **Aims:** Our purpose was to elucidate the acute and chronic effects of aerobic periodized training performed in aquatic and land environments on oxidative status parameters in patients with type 2 diabetes. **Material and methods.** Twenty-one diabetes patients were randomized and submitted to exercise in water or dry land environments by 12 weeks of periodized training consisting of four mesocycles. The intensities were determined by individual second ventilatory threshold, obtained through maximal effort test, performed in their specific training environment. Blood samples were collected before and after both first and last exercise sessions. We evaluated the reactive species content (evaluated by the DCF test), lipid peroxidation (assessed by 8-isoprostane levels and water-soluble fluorescent substance formation) and the antioxidant enzyme activities (CAT, GPX, SOD). The total reactive antioxidant potential (TRAP) was measured in both plasma and erythrocytes samples. **Results and Conclusion.** The periodized exercise in both environments reduced acutely, after first and last session, the reactive species content and 8-isoprostane levels, suggesting that benefits on oxidative parameters can occur in both sedentary and trained patients with type 2 diabetes. Exercise reduced

antioxidant enzyme activities, without any effect on TRAP levels, we could suppose that lesser antioxidant activity may mask increased unidentified antioxidant content. Another finding that emerged from our study was the similar effect of periodised exercise performed in water and dry land environments. Our results disagree the hypothesis that acute exercise increases free radical levels and improves the antioxidant system in type 2 diabetes.

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