Enhanced erythrocyte antioxidant status following an 8-week aerobic exercise training program in heavy drinkers

Athanasios Z. Jamurtas¹ Kalliopi Georgakouli¹, Eirini Manthou¹, Panagiotis Geogoulias², Chariklia K. Deli¹ Yiannis Koutedakis¹, Yannis Theodorakis¹, Ioannis G. Fatouros¹

¹Department of Physical Education and Sports Science, University of Thessaly, Trikala, Greece; ²Department of Nuclear Medicine, Larissa University Hospital, Larissa 41110, Greece

Abstract
Alcohol-induced oxidative stress is involved in the development and progression of various pathological conditions and diseases whereas exercise training has been shown to improve redox status, thus attenuating oxidative stress-associated disease processes. PURPOSE: to evaluate the effect of an exercise training program on blood redox status in heavy drinkers. METHODS: Eleven sedentary, heavy drinking men participated in an intervention where they completed an 8-week supervised aerobic training program of moderate intensity. Blood samples were collected before, during (week 4) and after intervention and analyzed for total antioxidant capacity (TAC), thiobarbituric acid reactive substances (TBARS), protein carbonyls (PC), uric acid (UA), bilirubin, reduced glutathione (GSH) and catalase activity. RESULTS: Catalase activity increased (p<0.05) after 8 weeks (340.7±13.3 U mg/Hb) of intervention compared to week 4 (299.5±18.7 U mg/Hb). GSH increased (p<0.05) after 8 weeks of intervention (1.22±0.16 μmol/g Hb) compared to the control condition (1.11 ± 0.17 μmol/g Hb) and to week 4 (1.11 ± 0.15 μmol/g Hb). TAC, UA, bilirubin, TBARS and PC did not significantly change at any time point. CONCLUSION: An 8-week aerobic training program enhanced erythrocyte antioxidant status in heavy drinkers, indicating that aerobic training may attenuate pathological processes caused by alcohol-induced oxidative stress.