

Mild hyperbaric oxygen for the early improvement of mood disturbance induced by high-intensity exercise

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Abstract

Background: Excessive training stress can result in decreased performance and deep fatigue due to hormonal changes. There are few available data on recovery methods for mood disturbance, especially fatigue, after high-intensity training. This study, therefore, aimed to examine the effects of mild hyperbaric oxygen at 1.3 atmospheres absolute with 31% oxygen on mood disturbance induced by high-intensity exercises.

Methods: Ten healthy adult men participated in and completed 2 trials: the control (CON) trial and the mild hyperbaric oxygen (MHO) trial. In a randomized crossover design, each subject cycled for 60 min at the physical work capacity at 75% of their maximal heart rate and were subsequently exposed to the CON and MHO conditions for 60 min as the recovery period.

Results: During the 20 to 40 min recovery time points, the average change ratio of heart rates was lower in the MHO trial than in CON ($P < 0.05$). We observed that the fatigue-inertia, tension-anxiety, and total mood disturbance Profile of Mood States (POMS) scores decreased 60 min post-exercise in the MHO trial, but no differences of these scores were observed in the CON trial. There were no differences in oxidative stress, derived-reactive oxygen metabolites, and biological antioxidant potential between both trials. These results suggest that impaired mood states induced by high-intensity exercise can be improved early by MHO without any changes in oxidative stress. This improvement may be associated with decreased heart rate secondary to MHO exposure after the high intensity exercise.

Conclusions: We conclude that MHO can improve mood disturbances, especially in the fatigue-inertia and tension-anxiety domains, after high-intensity exercise. This study suggest that MHO is potentially an effective recovery method for mood states after high-intensity training.