TACSM Abstract

Effect of Plasma Donation on Responses to Exhaustive Severe Intensity Cycle Ergometer Exercise

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ABSTRACT

PURPOSE: The purpose of this study was to investigate the time course of the effects of plasma donation on responses to severe intensity exercise. **METHODS:** Four women (mean ± SD: age, 27 ± 7 years; height, 163 ± 13 cm; weight, 62.9 ± 12.0 kg) and six men (age, 25 ± 2 years; height, 180 ± 6 cm; weight, 87.3 ± 6.2 kg) perform exhaustive cycle ergometer tests under control conditions, and then 2 h, 2 days, and 7 days following plasma donation. **RESULTS:** Times to exhaustion at baseline and 2 h, 2 days, and 7 days following plasmapheresis were 262 ± 41, 229 ± 59, 259 ± 67, and 267 ± 60 s, respectively; performance time was reduced (p = .052) 2 h after donation. Hemoglobin concentrations ([Hb]) before each test were 139 ± 19, 161 ± 13, 147 ± 15, and 144 ± 10 $g \cdot L^{-1}$; [Hb] was increased 2 h after donation. Maximal oxygen consumption ($VO_{2\ max}$) values were 38 ± 5, 37 ± 4, 38 ± 4, and 38 ± 5 $mL \cdot kg^{-1} \cdot min^{-1}$; $VO_{2\ max}$ was not affected by donation. The time constants of the primary phase of the 2-component $VO_{2\ max}$ response in the exhaustive severe intensity exercise were 27 ± 6, 29 ± 8, 29 ± 8, and 26 ± 7 s; the kinetics of the VO_2 response were unaffected by plasma donation. **CONCLUSION:** The effects of plasma donation are short lived; no effects persists for two days. This information may be of value to athletes and others who might balance the altruism of plasma donation with personal concerns about performance.