TACSM Abstract

The Impact of Physiologic Reductions In Blood Pressure Upon Oxygen Uptake During Moderate Intensity Leg Cycling

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ABSTRACT

INTRODUCTION: Control of oxygen uptake (VO2) during the rest-to-exercise transition is thought to be dominated by intracellular processes rather than oxygen delivery. However, large changes in arterial pressure (i.e., supraphysiologic) have been shown to alter VO_2 and its kinetics. Importantly, no studies have investigated the consequence of physiologic alterations in blood pressure on VO_2 and its kinetics during exercise in humans. **PURPOSE:** The aim of this preliminary study was to assess the effect of modest reductions in MAP achieved via neck suction upon Vo_2 across the rest-exercise transition, to test the hypothesis that physiologic reductions in arterial pressure during moderate intensity, steady-state exercise will not alter VO_2. **METHODS:** Five subjects completed four exercise trials of 6 minute leg cycling at the workloads 50% of VO_{2max}. Each workload was completed with and without carotid baroreceptor loading (i.e., Neck Suction: blood pressure lowering stimulation) with a 20 minute resting period between trials. Heart rate, mean arterial pressure (MAP), and VO_2 at the mouth, were continuously measured while upper arm blood pressure was taken every minute. **RESULTS:** MAP tended to be reduced during the Neck Suction condition (delta MAP: Control 13.0±8.7 vs Neck Suction 6.3±6.3 mm Hg, P=0.079). However, there was no main effect for exercise condition on VO_2 (Control 13.25±1.70 vs Neck Suction 13.17±1.72 ml/kg/min, P=0.61). In addition, the on-transient mean response time was not different between groups (Control 46.7±27.2 vs Neck Suction 40.9±16.2 s). **CONCLUSIONS:** These preliminary findings indicate that oxygen uptake or its kinetics during moderate intensity leg cycling are not affected by modest reductions in blood pressure.