

Abstract
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PHYSIOLOGICAL RESPONSES TO COUNTERWEIGHTED SINGLE-LEG
CYCLING IN AN ELDERLY POPULATION (63 pp.)

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INTRODUCTION: Single-leg cycling allows for a greater muscle specific exercise capacity and therefore provides a greater stimulus for metabolic and vascular adaptations when compared to standard double-leg cycling. **PURPOSE:** The purpose of this investigation was to compare the metabolic, cardiovascular, and peripheral responses of single-leg cycling with a counterweight to double-leg cycling in a healthy elderly adult male population. **METHODS:** Eleven healthy males (age 66 ± 8 years) performed two cycling conditions consisting of double-leg cycling (DL) and single-leg cycling with a 97N counterweight attached to the unoccupied crank arm (CW). For each condition, participants performed cycling trials (60rpm) at three different work rates (25, 50, 75 W) for 4 minutes each. Oxygen consumption (VO_2), respiratory exchange ratio (RER), heart rate (HR), mean arterial pressure (MAP), femoral blood flow, rating of perceived exertion (RPE), and liking scores were recorded. **RESULTS:** HR was similar between DL and CW conditions at all three intensities. VO_2 was similar between DL and CW at

25W and 50W, however, at 75W VO_2 was greater during the CW condition compared to DL ($p= 0.037$). Femoral artery blood flow was significantly greater during CW cycling for the 50W and 75W work rates ($p= 0.01$, and $p<0.001$). RPE and liking were similar between both conditions ($p= 0.065$, $p= 0.060$). **CONCLUSION:** At least at low and moderate intensities, counterweighted single-leg cycling provides a greater peripheral stress for the same cardiovascular demand as double-leg cycling in a healthy elderly adult male population. Furthermore, enjoyment of single-leg cycling was similar to double-leg. Thus, single-leg cycling with a counterweight may be a feasible exercise modality for a diseased population (i.e. peripheral vascular disease/cardiovascular disease).