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### Examination of Vascular Function Changes with Exercise in Overweight Men With and Without Sleep Apnea

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Obstructive sleep apnea (OSA) is associated with increased cardiovascular morbidity in middle aged men due, in part, to impaired vascular function. Exercise confers cardioprotection by improving vascular health. Whether this beneficial effect is attenuated in overweight men with untreated OSA is not known. **PURPOSE:** Compare the effects of exercise training on brachial artery flow mediated dilation (BAFMD) between overweight men with and without OSA. **METHODS:** At baseline, all participants underwent overnight polysomnography (PSG) to determine the presence and severity of OSA, as defined by apnea-hypopnea index (AHI). Body fat was measured using dual energy X-ray absorptiometry. Brachial artery diameters and BAFMD were assessed using high resolution ultrasonography before and upon completion of a 6 week (3 sessions/wk; 1 hr/session) exercise training program. **RESULTS:** Five men with moderate to severe OSA (+OSA) and five men with no to mild OSA (-OSA) completed the study. By design, AHI of the +OSA group was higher compared to the -OSA group ( $34 \pm 6$  events/hr vs.  $8 \pm 2$  events/hr,  $p < 0.01$ ). While no baseline differences were observed between the groups in age ( $49 \pm 6$  yrs vs.  $46 \pm 9$  yrs,  $p = 0.58$ ), BMI ( $36.1 \pm 6.2$  kg/m<sup>2</sup> vs.  $32.6 \pm 3.8$  kg/m<sup>2</sup>,  $p = 0.32$ ) or resting arterial diameter ( $3.96 \pm 0.67$  mm vs.  $4.43 \pm 0.72$  mm,  $p = 0.31$ ), total body fat was higher in the +OSA group ( $41 \pm 3$  % vs.  $36 \pm 3$  %,  $p < 0.01$ ). No difference in the change in BAFMD following exercise training was observed between the groups ( $-1.21 \pm 3.04$  % vs.  $1.12 \pm 2.59$  %,  $p = 0.23$ ). Yet, across the sample, improvements in BAFMD were inversely related to baseline % body fat ( $r = -0.64$ ,  $p = 0.04$ ), but not AHI ( $r = -0.54$ ,  $p = 0.12$ ). **CONCLUSION:** The degree of obesity, not OSA severity may predict the level of improvement in vascular function with exercise training.

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