

High-Intensity interval training (HIIT) improves obstructive sleep apnea

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Obstructive sleep apnea (OSA) is a significant health concern in primary care medicine. Uncontrolled sleep apnea increases the risk of hypertension, cardiovascular disease, stroke, arrhythmias, as well as work-related and driving related accidents. This study aimed at investigating whether 12 weeks of High Intensity Interval Training (HIIT) reduced the apnea-hypopnea index (AHI) in obese patients with moderate to severe OSA.

Previous studies have shown the benefits of HIIT exercise over moderate exercise in improving comorbidities in high risk cardio metabolic populations. Since OSA is a disease with several high-risk comorbidities HIIT could potentially be a treatment for OSA and cardiovascular comorbidities.

This prospective study followed 30 patients (average BMI > 37, average age >50 yrs, average AHI > 41 events/hr) randomized 1:1 with controls for 12 weeks of supervised HIIT (4x4min intervals of running/walking at 90-95% MHR on treadmill 2x/week). All patients continued to use the CPAP throughout the intervention.

The results of this study were significant. In the HIIT group, the AHI was reduced by 7.5 +/- 11.6 events/hour ($p < 0.05$). As well the self-reported sleepiness scale (daytime fatigue) improved by 2.7 points on average and the VO₂ max improved by 1.8 points (all results $p < 0.05$). In the control group, all the above results were unchanged in the 12-week period.

The physiological mechanism of HIIT training and improved OSA is unclear. The patients who underwent HIIT over 12 weeks did not have a change in body weight but a small reduction in percent body fat (-2%). Reduced body fat in the head/neck region could improve airflow. Other mechanisms that have been proposed are changes in venous flow reducing nighttime airway edema, as well as changes to and reductions of the leptin pathway associated with obesity. These mechanisms need to be further explored.

Although there was no change in body weight over 12 weeks, HIIT was shown to improve AHI and self-reported daytime sleepiness. Further head-to-head studies need to be done to compare moderate exercise vs HIIT with the aim to improve OSA and potential comorbidities. Physical activity by itself may be the most important aspect to improve sleep quality in those with sleep apnea. Exercise done in a safe manner should be part of your management plan for your patients with obstructive sleep apnea.

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