Abstract Group: 1.2. Rehabilitation and Chronic Care

Keyword 1: Rehabilitation Keyword 2: Ventilation/NIV Keyword 3: Sleep disorders

Title: Improvement in exercise capacity in obese obstructive sleep apnea (OSA): Respective impact of ventilatory support during exercise and respiratory muscle training in a randomized controlled trial

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Body: Background: Obesity and OSA are interconnected conditions both leading to reduced exercise tolerance. Nocturnal continue positive airway pressure (CPAP) treatment alone fails to alter physical activity. We investigated the respective effect of three modalities of exercise training programs on exercise tolerance in obese OSA. Methods: 38 Obese CPAP-treated OSA (age= 53±3 years; BMI= 38±3 kg/m²) were randomly assigned to a 3-month exercise training program (Ergocycle -ERGO- vs. Ergocycle supported by non-invasive ventilation -ERGONIV- vs. Ergocycle + respiratory muscle training -ERGOSPIRO) after a 6-week control period. Exercise tolerance was assessed by 6-minute walking distance (6MWD) and maximal incremental exercise test on cycloergometer. Results: 6MWD increased after training as compared with control and baseline in patients grouped as a whole (585 ± 92 vs. 562 ± 91 and 538 ± 102 m, respectively, p = 0.0004). Peak oxygen consumption improved after training with higher improvement in ERGONIV (+0.3±0.7 L/min), as compared to ERGO (+0.1±0.6 L/min) and ERGOSPIRO (+0.2±0.9 L/min) respectively (p = 0.004). Maximal ventilation at end of incremental test significantly increased in ERGOSPIRO (+17±34 l/min) as compared with ERGO (-2±19 L/min) and ERGONIV (-2±26 L/min) (p = 0.01). Conclusion: Exercise training improved functional and exercise capacity in obese OSA patients treated by CPAP. Improvement in maximal aerobic capacity was higher when ventilatory assistance or respiratory muscle training ergocycle was associated to ergocycle although walking distance was similarly improved between groups.