Respiratory muscle interval training improves exercise capacity in obese adolescents during a 3-week in-hospital multidisciplinary body weight reduction program.

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The purpose of this study was to determine whether a novel approach of interval training targeted to the respiratory muscles (RMIT; normocapnic hyperpnea with resistance) in addition to a multidisciplinary in-hospital body weight reduction program (BWRP) was able to improve the integrative response to exercise in young patients with obesity. Nine male patients (17.9 ± 4.9 (x ± SD) years; 113.8 ± 16.3 kg) underwent 12 sessions of RMIT and eight age-and sex-matched patients underwent 12 sessions of a sham protocol (CTRL) during the same 3-week BWRP. Before and after the interventions the patients performed an incremental and a heavy-intensity constant work-rate (CWR>GET) cycling exercise to voluntary exhaustion. Body mass decreased by ~4.0 kg after both RMIT (p = 0.0001) and CTRL (p = 0.0002). Peak pulmonary O2 uptake (VO_2) increased after RMIT (p = 0.02) and CTRL (p = 0.0007). During CWR>GET at ISO-time, VO_2 (p = 0.0007), pulmonary ventilation (p = 0.01), heart rate (p = 0.02), perceived respiratory discomfort (RPER; p = 0.03) and leg effort (p = 0.0003) decreased after RMIT; only RPER (p = 0.03) decreased after CTRL. Time to exhaustion increased after RMIT (p = 0.0003) but not after CTRL. In young patients with obesity, RMIT inserted in a 3-week BWRP reduced the cardiorespiratory burden, the metabolic cost, the perceived effort, and improved exercise tolerance during heavy-intensity cycling.