Three weeks of respiratory muscle endurance training improve the O_2 cost of walking and exercise tolerance in obese adolescents.

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Obese adolescents (OB) have an increased O_2 cost of exercise, attributable in part to an increased O_2 cost of breathing. In a previous work a short (3-week) program of respiratory muscle endurance training (RMET) slightly reduced in OB the O_2 cost of high-intensity cycling and improved exercise tolerance. We hypothesized that during treadmill walking the effects of RMET would be more pronounced than those observed during cycling. Sixteen OB (age 16.0 ± 0.8 years; body mass [BM] 127.7 ± 14.2 kg; body mass index 40.7 ± 4.0 kg/m^2) underwent to 3-week RMET (n = 8) superimposed to a multidisciplinary BM reduction program, or (CTRL, n = 8) only to the latter. Heart rate (HR) and pulmonary O_2 uptake (VO_2) were measured during incremental exercise and 12-min constant work rate (CWR) walking at 60% (moderate-intensity, MOD) and 120% (heavy-intensity, HEAVY) of the gas exchange threshold (GET). The O_2 cost of walking (aerobic energy expenditure per unit of covered distance) was calculated as VO_2/velocity. BM decreased (~4–5 kg) both in CTRL and in RMET. _V O_2peak and GET were not affected by both interventions; the time to exhaustion increased following RMET. During MOD and HEAVY RMET decreased VO_2, the O_2 cost of walking (MOD: 0.130 ± 0.033 mL/kg/m [before] vs. 0.109 ± 0.027 [after], P = 0.03; HEAVY: 0.196 ± 0.031 [before] vs. 0.180 ± 0.025 [after], P = 0.02), HR and rates of perceived exertion; no significant changes were observed in CTRL. In OB a short RMET program lowered the O_2 cost of MOD and HEAVY walking and improved exercise tolerance. RMET could represent a useful adjunct in the control of obesity.