The energy cost of cycling and aerobic performance of obese adolescent girls.

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Journal of Endocrinological Investigation 32: 647-652, 2009.

In order to assess the energy cost of cycling and aerobic capacity in juvenile obesity, responses to cycle ergometer exercise were studied in 10 pubertal obese (OB) [body mass index (BMI) SD score (SDS): 3.40±0.58 SD] adolescent girls (age: 16.0±1.2 yr) and in 10 normal-weight (NW, BMI SDS: –0.30±0.54) girls of the same age (15.1±1.9). To this aim, gas exchange, heart rate (HR), and energy expenditure (EE) were studied during graded cycle ergometer test at 40, 60, 80, 100, and 120 W. The energy cost of cycling was higher in OB, being oxygen uptake (VO2) higher (about 20%) in OB than in NW girls at all workloads (p<0.01-0.001). Estimated maximal VO2 and VO2 at anaerobic threshold were significantly (p<0.05) higher in OB girls [although lower per unit body mass (p<0.01) and similar for unit fat-free mass], and explained the higher oxygen pulse and lower HR for any EE observed during submaximal exercise in OB. While net mechanical efficiency (ME) was significantly lower in OB (p<0.01), delta ME was similar in both groups, indicating no substantial derangement of muscle intrinsic efficiency. It is concluded that, despite a higher cost of cycling, OB girls can rely on a larger aerobic capacity which makes them able to sustain this kind of exercise within a wide range of work loads, with relevant implications when planning protocols of physical activity in the context of interventions for the reduction of juvenile obesity.