Effect of a 3-week body mass reduction program on body composition, muscle function and motor performance in pubertal obese boys and girls

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The aim of this study was to investigate the effects of a multidisciplinary body mass reduction (BMR) program on body composition, muscle function and motor performance in 50 obese [mean body mass index (BMI): 35.9±5.8 kg/m²] boys and girls aged 12-17 yr (Tanner stage III, IV and V). The hospital-based BMR program combined an energy-restricted diet (1400-1600 kcal), nutritional education, psychological counselling and moderate physical activity (45-60 min/session; 5 sessions/week; 60-80% of the maximal heart rate) during a 3-week period. Fat mass, fat-free mass, maximal power during jumping and stair climbing as well as maximal strength of the upper and lower limb muscles were quantified before and after the treatment. Body mass and fat mass significantly decreased following the BMR program, respectively –5.1 and –7.8% (p<0.001), while percent fat-free mass increased 2.3% (p<0.001). The treatment significantly increased both stair climbing and jumping power, respectively 8.2 and 8.9% (p<0.05), and the same was true for maximal strength of the upper and lower limb muscles (p<0.001). For the first time, it was demonstrated that a BMR program entailing diet and physical exercise significantly improved body
composition, muscle function and motor performance in obese boys and girls aged 12-17 yr, while gender and pubertal stages had no influence on BMR program-induced changes.