A 3-week multidisciplinary body weight reduction program improves body composition and lower limb power output in 3,778 severely obese children and adolescents.

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The aim of the present study was to investigate the effects of a 3-week in-hospital body weight reduction program (BWRP), entailing moderate energy restriction, physical activity, psychological counseling and nutritional education, on body composition and lower limb muscle power (LLP) output in obese children and adolescents. Three thousand seven hundred seventy-eight obese [BMI: 36.2 ± 5.9 $kg \cdot m^{-}2$; fat mass (FM): 42.7 ± 4.0%] children and adolescents (2,318 girls and 1,460 boys, aged 8-18 year) participated in this study. Before (T0) and after the end of the BWRP (21^{st} day, T21), body composition was assessed by an impedancemeter and LLP by the Margaria stair climbing test. Body mass (BM) and FM significantly decreased in girls (-4.8 and -7.1%, $p < 0.001$) and in boys (-5.5 and -9.3%, $p < 0.001$) after 3-week BWRP, while fat-free mass (FFM) did not change significantly in both genders. LLP expressed in absolute values (W) significantly increased in girls (by mean 6.4% from age 13 to 18 year, $P < 0.001$) and in boys (by mean 7.2% from age 12 to 18 year, $P < 0.001$). LLP normalized to BM ($W \cdot kg^{-}1BM$) significantly increased in girls (by mean 11.3%, $P < 0.001$) and boys (by mean 12.6%, $P < 0.001$) from age 9 to 18 year. As well, LLP normalized to FFM ($W \cdot kg^{-}1FFM$) significantly increased in girls (by mean 9.1% from age 9 to 18 year, $P < 0.001$) and in boys (by mean 10.1% from age 10 to 18 year, $P < 0.001$). In conclusion, 3-week BWRP induces a significant decrease in FM and maintenance in FFM in obese children and adolescents, these effects being also associated with a significant increase of LLP both in absolute terms and when normalized to the BM or FFM.