Effects of a 3-week inpatient multidisciplinary body weight reduction program on body composition and physical capabilities in adolescents and adults with obesity.

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Background: The aim of the present study was to examine the short-term changes in body composition and physical capabilities in subjects with obesity during a multidisciplinary inpatient body weight reduction program (BWRP).

Methods: One hundred thirty-nine adolescents (56 boys and 83 girls; BMI: 37.1 ± 6.5 kg/m^2; Fat Mass, FM: 45.3 ± 7.2%) and 71 adults (27 males and 44 females; BMI: 44 ± 4.7 kg/m^2; FM: 51.4 ± 4.7%) followed a 3-week inpatient BWRP consisting of regular physical activity, moderate energy restriction, nutritional education and psychological counseling. Before (T0) and after the end of the BWRP (T21), body composition was assessed with an impedancemeter, lower limb muscle power with Margaria Stair Climbing Test (SCT), lower limb functionality with Short Physical Performance Battery (SPPB), and the capacity of performing activity of daily living (ADL) with Physical Performance Test (PPT).

Results: At T21, obese adolescents showed a 4% reduction in body mass (BM) ($p < 0.001$), associated with a FM reduction in boys (- 10%) and girls (- 6%) ($p < 0.001$) and with a 3% reduction in fat-free mass (FFM) recorded only in boys ($p = 0.013$). Obese adults showed a 5% BM reduction ($p < 0.001$), associated with a 2% FFM and 9% FM reduction ($p < 0.001$) in males, and 7% FM reduction in females ($p < 0.001$). Regarding physical capabilities, at T21 in obese adolescents, PPT score increased by 4% ($p < 0.001$), SCT decreased by - 5% (boys) and - 7% (girls) ($p < 0.001$), while SPPB score did not change significantly. In obese adults at T21, PPT score increased by 9% ($p < 0.001$), SCT decreased by - 16% ($p < 0.001$) only in females, and SPPB score increased by 7% (males) and 10% (females) ($p < 0.01$).

Conclusion: In conclusion, moderate energy restriction and regular physical activity determine a 4-5% BM reduction during a 3-week inpatient BWRP, improve physical capabilities and induce beneficial changes in body composition in adolescents and adults with obesity.