**Elderly obese women display the greatest improvement in stair climbing performance after a 3-week body mass reduction program**

A. Sartorio, C.L. Lafortuna, F. Agosti, M. Proietti, N.A. Maffiuletti

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Objective: to investigate whether stair climbing performance and body composition are similarly affected by body mass reduction (BMR) program in obese individuals of different gender, age and body mass index (BMI) level.

Design: longitudinal, clinical intervention study entailing energy-restricted diet (5023-7535 kj/day), nutritional education, psychological counselling and moderate physical activity (indoor cycling, outdoor walking, gymnastics routines, five sessions/week) during a 3-week period.

Subjects: a total of 466 male and 807 female subjects categorized as a function of gender, age (<vs ≥50 y) and BMI (< vs ≥40 kg/$m^2$).

Measurements: body mass, stair climbing time power before and after the BMR program. Fat-free mass and fat mass were also evaluated by bioimpedance analysis, in a representative subgroup of 160 patients, to evaluate the relation between fat-free mass and power output.

Results: body mass, fat-free mass and fat mass significantly decreased following the BMR program ($P$<0.001), with male subjects reducing body mass and fat-free mass more than and fat mass less than the female subjects. Stair climbing time decreased ($P$<0.001) and therefore anaerobic power significantly increased 9.7% after the treatment. The greatest improvement in stair climbing performance was observed in obese women aged ≥50 y. Significant inverse correlations were found between initial power or fat-free mass level and respective percent increases (R=-0.35/-0.37, $P$<0.001) and between BMR-induced percent changes in body mass and power (R=-0.13, $P$<0.001).

Conclusion: subjects with the lowest baseline level in stair climbing performance (and probably with the lowest amount of fat-free mass), that is, obese women aged more than 50 y, obtained the largest enhancement after the 3-week BMR program, likely improving overall functional capacities and resulting in greater independence during daily-living activities in such a population.