2-C-2 Effects of weight reduction on muscle strength in obese men

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[Purpose] The purpose of this study was to examine changes in muscle strength resulting from lifestyle modification consisting of diet modification and exercise.

[Method] 30 middle-aged Japanese men (BMI 29.7±2.8 kg/m², 49.9±8.7yr) concurrently attended a 12-wk diet modification class 1 d/wk and a 12-wk exercise class 3 d/wk. Body weight, muscle strength (Biodex System 3: Biodex Medical Systems, Shirley, NY), and various blood parameters were measured before and after the 12-wk period.

[Result] Average body weight following the 12-week intervention declined 12.3±4.9 kg. Static maximum muscle strength among participants who lost <10% of initial weight improved 10.9% and dynamic maximum muscle strength improved 0.8%. Among participants who lost ≥10% of initial weight, static maximum muscle strength decreased 3.5% and dynamic maximum muscle strength decreased 2.1%.

[Discussion] Because muscle strength changes in both groups were not statistically different (P > 0.05), it can be concluded that muscle strength was maintained on the whole. It is expected that if body weight reduction exceeds ≥15%, muscle strength could decrease due to losses in muscle mass. A critical threshold for maintenance of strength during weight reduction may be 15-20% of initial weight for obese individuals. Maintaining a diet sufficient in macronutrients and micronutrients is important especially for individuals attempting to lose weight.

2-C-4 Mitigating effect of branched-chain amino acid supplements on muscle soreness and muscle damage after marathon races

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[Purpose] Acute muscle soreness (AMS) is frequently observed in long distance running events such as marathon races. Although the effectiveness of branched-chain amino acids (BCAA) ingestion on delayed onset muscle soreness (DOMS) induced experimentally by exercise is well established, its effectiveness on AMS induced by long distance running is not known. Against this background, this study investigated, in a randomized, placebo-controlled, and double-blind manner supplemented by fieldwork, the inhibitive effect of BCAA ingestion on non-professional full-marathon runners. Methods: Subjects were 36 non-professional runners participating in a full-marathon race. They received either 3.2g of BCAA or placebo 3 times a day, from the day previous the event to 3 days after the event. Systemic fatigue and soreness in seven muscle regions were evaluated using a numeric rating scale (NRS) as well as the employment of a serum muscle damage marker (creatine kinase; CK, aldolase, glutamic-oxalocetic transaminase; GOT, lactate dehydrogenase; LDH) before, immediately after, and 1 to 4 days after the event. Results: AMS occurred in all examined regions immediately after the marathon but BCAA ingestion was observed to significantly decrease muscle soreness in the anterior thigh and buttock areas. BCAA ingestion significantly inhibited the serum CK and GOT concentrations induced by the marathon. Discussion: This study revealed the