A multi-nutrient supplement reduced markers of inflammation and improved physical performance in active individuals of middle to older age: a randomized, double-blind, placebo-controlled study.

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BACKGROUND: While exercise acts to combat inflammation and aging, the ability to exercise may itself be compromised by inflammation and inflammation's impact on muscle recovery and joint inflammation. A number of nutritional supplements have been shown to reduce inflammation and improve recovery. The purpose of the current investigation was to examine the effect of a multi-nutrient supplement containing branched chain amino acids, taurine, anti-inflammatory plant extracts, and B vitamins on inflammatory status, endothelial function, physical function, and mood in middle-aged individuals.

METHODS: Thirty-one healthy and active men (N = 16, mean age 56 ± 6.0 yrs) and women (N = 15, mean age = 52 ± 7.5 yrs) participated in this investigation. Subjects completed one 28 day cycle of placebo supplementation and one 28 day cycle of multi-nutrient supplementation (separated by a one week washout period) in a balanced, randomized, double-blind, cross-over design. Subjects completed weekly perceptual logs (PROMIS-57, KOOS) and pre- and post-testing around the supplementation period. Testing consisted of brachial artery flow mediated dilation (FMD), blood measures, and physical performance on vertical jump, handgrip strength, and balance (dispersion from center of pressure). Significance for the investigation was \( p \leq 0.05 \).

RESULTS: IL-6 significantly decreased in both men (from 1.2 ± 0.2 to 0.7 ± 0.4 pg·mL\(^{-1}\)) and women (from 1.16 ± 0.04 to 0.7 ± 0.4 pg·mL\(^{-1}\)). Perceived energy also improved for both men (placebo: 1.8 ± 0.7; supplement: 3.7 ± 0.8 AUC) and women (placebo: 1.2 ± 0.7; supplement: 2.8 ± 0.8 AUC). Alpha-1-antichymotrypsin (from 108.9 ± 38.6 to 55.5 ± 22.2 ug·mL\(^{-1}\)), Creatine Kinase (from 96 ± 34 to 67 ± 23 IU·L\(^{-1}\)), general pain, and joint pain decreased in men only, while anxiety and balance (from 0.52 ± 0.13 to 0.45 ± 0.12 cm) improved in women only. Men showed increased performance in vertical jump power (from 2642 ± 244 to 3134 ± 282 W) and grip strength (from 42.1 ± 5.9 to 48.5 ± 4.9 kg).

CONCLUSIONS: A multi-nutrient supplement is effective in improving inflammatory status in both men and women, markers of pain, joint pain, strength, and power in men only, and both anxiety and balance (a risk factor for hip fracture) in women. Therefore, a multi-nutrient supplement may help middle-aged individuals to prolong physical function and maintain a healthy, active lifestyle.

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