

Creatine supplementation enhances isometric strength and body composition improvements following strength exercise training in older adults.

Brose A, Parise G, Tarnopolsky MA.

Source

Department of Kinesiology, McMaster University, Ontario, Canada.

Abstract

We sought to determine whether creatine monohydrate (CrM) supplementation would enhance the increases in strength and fat-free mass that develop during resistance exercise training in older adults. Twenty-eight healthy men and women over the age of 65 years participated in a whole-body resistance exercise program 3 days per week for 14 weeks. The study participants were randomly allocated, in a double-blind fashion, to receive either CrM (5 g/d + 2 g of dextrose; n = 14) or placebo (7 g of dextrose; n = 14). The primary outcome measurements included the following: total body mass, fat-free mass, one-repetition maximum strength for each body part, isometric knee extension, handgrip, and dorsiflexion strength, chair stand performance, 30-m walk test, 14-stair climb performance, muscle fiber type and area, and intramuscular total creatine. Fourteen weeks of resistance exercise training resulted in significant increases in all measurements of strength and functional tasks and muscle fiber area for both groups ($p < .05$). CrM supplementation resulted in significantly greater increases in fat-free mass and total body mass, as compared with placebo ($p < .05$). The CrM group also showed a greater increase in isometric knee extension strength in men and women, as compared with placebo ($p < .05$), and also greater gains in isometric dorsiflexion strength ($p < .05$), but in men only. There was a significant increase in intramuscular total creatine in the CrM group ($p < .05$). Finally, there were no significant side effects of treatment or exercise training. This study confirms that supervised heavy resistance exercise training can safely increase muscle strength and functional capacity in older adults. The addition of CrM supplementation to the exercise stimulus enhanced the increase in total and fat-free mass, and gains in several indices of isometric muscle strength.