

Topic Area: Vulnerable Groups and their Nutritional Needs

Abstract Title

Effect of creatine supplementation dosing strategies on aging muscle performance
J Chami¹, University of Regina, Regina, SK, D Candow¹; ¹University of Regina, Regina SK

Abstract

Introduction: Creatine supplementation has shown promise for increasing muscle strength, endurance and tasks of functionality during aging. Previous studies indicate low-dosage supplementation (0.1g/kg) for >6 weeks and high-dosage (0.3g/kg) for 5-7 days can increase intramuscular creatine which may subsequently benefit aging muscle performance. Proteins involved in sensing changes in osmolarity and signal transduction have been upregulated, along with proteins involved in satellite cell proliferation and differentiation in response to 10 days of creatine supplementation, independent of exercise.

Objective: Compare different creatine dosages independent of exercise on aging muscle performance and functionality.

Methods: Using a double-blind, repeated measures design, participants were randomized to: Creatine-High (n = 11; 0.3 g/kg/day of creatine + 0.1 g/kg/day of maltodextrin), Creatine-Low (n = 9; 0.1 g/kg/day of creatine + 0.3 g/kg/day of maltodextrin) or Placebo (n = 11; 0.4 g/kg/day of maltodextrin) for 10 days. The Dependant Variables measured at baseline and after supplementation were muscle strength (1-RM leg, chest press, and hand grip), muscle endurance (leg, chest press; maximum repetitions at 80% and 70% baseline 1- RM), and tasks of functionality (walking speed, balance).

Results: There was a significant increase over time for leg press strength (p = 0.000), chest press strength (p = 0.001), leg press endurance (p = 0.001) and chest press endurance (p = 0.001), with no differences between groups. There were no changes over time between groups for right-hand grip strength (p = 0.571), left-hand grip strength (p = 0.386), walking speed (p = 0.226) or falls (p = 0.414).

Conclusion: short-term creatine supplementation, independent of dosage, has no effect on aging muscle performance.

Significance to the field of Dietetics: Provide important information for the development of dietary and nutritional supplementation protocols for aging muscle health to prevent a loss of functional capacity and improve overall quality of life.