

Creatine Associated with Resistance Training Increases Muscle Mass in the Elderly

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Abstract : Sarcopenia, a syndrome characterized by progressive and generalized loss of skeletal muscle mass and strength, currently affects over 50 million people and increases the risk of adverse outcomes such as physical disability, poor quality of life and death. The aim of this study was to examine the efficacy of creatine supplementation associated with resistance training on muscle mass in the elderly. A 12-week, double blind, randomized, parallel group, placebo controlled trial was conducted. Participants were randomly allocated into one of the following groups: placebo with resistance training (PL+RT, n=14) and creatine supplementation with resistance training (CR + RT, n=13). The subjects from CR+RT group received 5 g/day of creatine monohydrate and the subjects from the PL+RT group were given the same dose of maltodextrin. Participants were instructed to ingest the supplement on non-training days immediately after lunch and on training days immediately after resistance training sessions dissolved in a beverage comprising 100 g of maltodextrin lemon flavored. Participants of both groups undertook a supervised exercise training program for 12 weeks (3 times per week). The subjects were assessed at baseline and after 12 weeks. The primary outcome was muscle mass, assessed by dual energy X-ray absorptiometry (DXA). The secondary outcome included diagnose participants with one of the three stages of sarcopenia (presarcopenia, sarcopenia and severe sarcopenia) by skeletal muscle mass index (SMI), handgrip strength and gait speed. CR+RT group had a significant increase in SMI and muscle ($p<0.0001$), a significant decrease in android and gynoid fat ($p = 0.028$ and $p=0.035$, respectively) and a tendency of decreasing in body fat ($p=0.053$) after the intervention. PL+RT only had a significant increase in SMI ($p=0.007$). The main finding of this clinical trial indicated that creatine supplementation combined with resistance training was capable of increasing muscle mass in our elderly cohort ($p=0.02$). In addition, the number of subjects diagnosed with one of the three stages of sarcopenia at baseline decreased in the creatine supplemented group in comparison with the placebo group (CR+RT, n=-3; PL+RT, n=0). In summary, 12 weeks of creatine supplementation associated with resistance training resulted in increases in muscle mass. This is the first research with elderly of both sexes that show the same increase in muscle mass with a minor quantity of creatine supplementation in a short period. Future long-term research should investigate the effects of these interventions in sarcopenic elderly.

Keywords : creatine, dietetic supplement, elderly, resistance training

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