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Use of creatine in the elderly and evidence for effects on cognitive function in young and old.

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Source

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Abstract

The ingestion of the dietary supplement creatine (about 20 g/day for 5 days or about 2 g/day for 30 days) results in increased skeletal muscle creatine and phosphocreatine. Subsequently, the performance of high-intensity exercise tasks, which rely heavily on the creatine-phosphocreatine energy system, is enhanced. The well documented benefits of creatine supplementation in young adults, including increased lean body mass, increased strength, and enhanced fatigue resistance are particularly important to older adults. With aging and reduced physical activity, there are decreases in muscle creatine, muscle mass, bone density, and strength. However, there is evidence that creatine ingestion may reverse these changes, and subsequently improve activities of daily living. Several groups have demonstrated that in older adults, short-term high-dose creatine supplementation, independent of exercise training, increases body mass, enhances fatigue resistance, increases muscle strength, and improves the performance of activities of daily living. Similarly, in older adults, concurrent creatine supplementation and resistance training increase lean body mass, enhance fatigue resistance, increase muscle strength, and improve performance of activities of daily living to a greater extent than resistance training alone. Additionally, creatine supplementation plus resistance training results in a greater increase in bone mineral density than resistance training alone. Higher brain creatine is associated with improved neuropsychological performance, and recently, creatine supplementation has been shown to increase brain creatine and phosphocreatine. Subsequent studies have demonstrated that cognitive processing, that is either experimentally (following sleep deprivation) or naturally (due to aging) impaired, can be improved with creatine supplementation. Creatine is an inexpensive and safe dietary supplement that has both peripheral and central effects. The benefits afforded to older adults

through creatine ingestion are substantial, can improve quality of life, and ultimately may reduce the disease burden associated with sarcopenia and cognitive dysfunction.