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Exercise and nutritional interventions for improving aging muscle health.

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Source

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Abstract

Skeletal muscle mass declines with age (i.e., sarcopenia) resulting in muscle weakness and functional limitations. Sarcopenia has been associated with physiological changes in muscle morphology, protein and hormonal kinetics, insulin resistance, inflammation, and oxidative stress. The purpose of this review is to highlight how exercise and nutritional intervention strategies may benefit aging muscle. It is well known that resistance exercise training increases muscle strength and size and evidence also suggests that resistance training can increase mitochondrial content and decrease oxidative stress in older adults. Recent findings suggest that fast-velocity resistance exercise may be an effective intervention for older adults to enhance muscle power and functional capacity. Aerobic exercise training may also benefit aging skeletal muscle by enhancing mitochondrial bioenergetics, improving insulin sensitivity, and/or decreasing oxidative stress. In addition to exercise, creatine monohydrate, milk-based proteins, and essential fatty acids all have biological effects which could enhance some of the physiological adaptations from exercise training in older adults. Additional research is needed to determine whether skeletal muscle adaptations to increased activity in older adults are further enhanced with effective nutritional interventions and whether this is due to enhanced muscle protein synthesis, improved mitochondrial function, and/or a reduced inflammatory response.