The potential to reverse age related skeletal muscle atrophy and sarcopenia improving quality of life utilising medical shockwaves.

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Abstract

Age related skeletal muscle atrophy and sarcopenia resulting in the loss of muscle capacity and mass in the elderly negatively impacts physical capacity, daily function, quality of life, and constitutes a growing global healthcare burden. Progressive motor neuron degeneration, increases in fat mass, decreases in lean muscle, bone mass, and cellular environmental aberrances are commonly seen alterations of aging muscle. This leads to impairments in metabolic rate, aerobic capacity, strength, balance, functional capacity, along with emotional and cognitive distress. These impairments and aberrances of the restorative pathways and regenerative capacity of aging muscles require synergistic reversal in order to optimise muscle integrity and optimal functional capacity in the older adult population. Much research has been conducted introducing interventions to induce a positive bio-physical, bio-chemical and bio-molecular response of aging muscle tissue. Yet despite advances in pharmacogenics and stem-cell research, clinical interventions that can either retard or ameliorate this phenomenon remains severely limited and is often economically unviable. Our hypothesis suggests that given what has been elucidated thus far of the mechanisms of action of medical shockwaves on human tissue, it could be a viable economical treatment option to restore regenerative pathways of aging muscle tissue, optimising and prolonging its health, strength and functional capacity in the older adult population.

Keywords: Muscle atrophy; Sarcopenia; Collagen; Satellite cells; TGF-β1; IGF; p38α/β inhibition; Myogenic regenerative factors (Growth factors); Medical shockwaves.
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Reference


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