PubMed Results:

Benefits of High-Intensity Strength Training

JAMA. 1990 Jun 13;263(22):3029-34

High-intensity strength training in nonagenarians. Effects on skeletal muscle.

Fiatarone MA, Marks EC, Ryan ND, Meredith CN, Lipsitz LA, Evans WJ.

US Department of Agriculture Human Nutrition Research Center on Aging, Tufts University, Boston, MA 02111.

We conclude that high-resistance weight training leads to significant gains in muscle strength, size, and functional mobility among frail residents of nursing homes up to 96 years of age.

N Engl J Med. 1994 Jun 23;330(25):1769-75

Exercise training and nutritional supplementation for physical frailty in very elderly people.

Fiatarone MA, O'Neill EF, Ryan ND, Clements KM, Solares GR, Nelson ME, Roberts SB, Kehayias JJ, Lipsitz LA, Evans WJ.

Hebrew Rehabilitation Center for Aged, Roslindale, Mass.

CONCLUSIONS. High-intensity resistance exercise training is a feasible and effective means of counteracting muscle weakness and physical frailty in very elderly people. In contrast, multi-nutrient supplementation without concomitant exercise does not reduce muscle weakness or physical frailty.

JAMA. 1994 Dec 28;272(24):1909-14

Effects of high-intensity strength training on multiple risk factors for osteoporotic fractures. A randomized controlled trial.

Nelson ME, Fiatarone MA, Morganti CM, Trice I, Greenberg RA, Evans WJ.

USDA Human Nutrition Research Center on Aging, Tufts University, Boston, MA 02111.

CONCLUSIONS--High-intensity strength training exercises are an effective and feasible means to preserve bone density while improving muscle mass, strength, and balance in postmenopausal women.

Med Sci Sports Exerc. 2010 Jan;42(1):23-34

Effect of progressive resistance training on muscle performance after chronic stroke.

Lee MJ, Kilbreath SL, Singh MF, Zeman B, Davis GM.

1Faculty of Health Sciences, The University of Sydney, Sydney, AUSTRALIA; 2Faculty of Medicine, The University of Sydney, Sydney, AUSTRALIA; 3Hebrew SeniorLife and Jean Mayer USDA Human Nutrition Center on Aging at Tufts University, Boston, MA; and 4Coorabel Adult Rehabilitation Services, Royal Rehabilitation Centre, Sydney, AUSTRALIA.

CONCLUSION: We have shown for the first time in a direct comparison study that high-intensity PRT, but not cycling or sham exercise, can improve muscle strength, peak power, and muscle endurance in both affected and unaffected lower limbs after chronic stroke by a significant and clinically meaningful amount. Although strength gains plateaued earlier than anticipated, adherence to the intended continuous high-intensity progressive overload protocol was largely achieved (average load of 84% +/- 4% of one repetition maximum).

J Gerontol A Biol Sci Med Sci. 1997 Jan;52(1):M27-35

A randomized controlled trial of progressive resistance training in depressed elders.

Singh NA, Clements KM, Fiatarone MA.

Division on Aging, Harvard Medical School, Massachusetts, USA.

CONCLUSIONS: PRT is an effective antidepressant in depressed elders, while also improving strength, morale, and quality of life.

Arthritis Rheum. 2009 Dec 15;61(12):1726-34

Effects of high-intensity resistance training in patients with rheumatoid arthritis: A randomized controlled trial.

Lemmey AB, Marcora SM, Chester K, Wilson S, Casanova F, Maddison PJ.

Bangor University, Bangor, UK.

CONCLUSION: In an RCT, 24 weeks of PRT proved safe and effective in restoring lean mass and function in patients with RA. Muscle hypertrophy coincided with significant elevations of attenuated muscle IGF levels, revealing a possible contributory mechanism for rheumatoid cachexia. PRT should feature in disease management.

J Nutr Health Aging. 2000;4(3):140-2

Sarcopenia: a major modifiable cause of frailty in the elderly.

Roubenoff R. NEPS Laboratory, USDA HNRCA, 711 Washington Street, Boston, MA 02111, USA.

Sarcopenia can be reversed with high-intensity progressive resistance exercise, which can probably also slow its development. A major challenge in preventing an epidemic of sarcopenia-induced frailty in the future is developing public health interventions that deliver an anabolic stimulus to the muscle of elderly adults on a mass scale.

Br J Sports Med. 2009 Jan;43(1):25-7. Epub 2008 Nov 19

Exercise and cognition in older adults: is there a role for resistance training programmes?

Liu-Ambrose T, Donaldson MG. Centre for Hip Health and Mobility, Vancouver Coastal Health Research Institute, University of British Columbia, Vancouver, BC, Canada..

Resistance training may prevent cognitive decline among seniors via mechanisms involving insulin-like growth factor I and homocysteine. A side benefit of resistance training, albeit a very important one, is its established role in reducing morbidity among seniors. Resistance training specifically moderates the development of sarcopenia. The multifactorial deleterious sequelae of sarcopenia include increased falls and fracture risk as well as physical disability. Thus, clinicians should consider encouraging their clients to undertake both aerobic-based exercise training and resistance training not only for "physical health" but also because of the almost certain benefits for "brain health".

Can J Appl Physiol. 2001 Feb;26(1):123-41

The effects of strength training (high intensity resistance training {HIRT}) on sarcopenia.

Porter MM. Faculty of Physical Education and Recreation Studies, University of Manitoba, Winnipeg, MB, R3T 0E4, Canada.

In order to lessen the effects of sarcopenia, HIRT should continue over the long term in older adults, to improve functional performance and health.

Diabetes Care. 2002 Oct;25(10):1729-36

High-intensity resistance training improves glycemic control in older patients with type 2 diabetes.

Dunstan DW, Daly RM, Owen N, Jolley D, De Courten M, Shaw J, Zimmet P.

International Diabetes Institute, Melbourne, Australia.

CONCLUSIONS: High-intensity progressive resistance training, in combination with moderate weight loss, was effective in improving glycemic control in older patients with type 2 diabetes. Additional benefits of improved muscular strength and LBM identify high-intensity resistance training as a feasible and effective component in the management program for older patients with type 2 diabetes.

Clin Rheumatol. 2009 Jun;28(6):663-71. Epub 2009 Feb 27

Long-term follow-up of a high-intensity exercise program in patients with rheumatoid arthritis.

de Jong Z, Munneke M, Kroon HM, van Schaardenburg D, Dijkmans BA, Hazes JM, Vliet Vlieland TP. Department of Rheumatology, C1-R, Leiden University Medical Center, Post-box 9600, 2300 RC, Leiden, The Netherlands.

In conclusion, the majority of the patients who participated in the 24-month high-intensity exercise program continued exercising in the ensuing 18 months. In contrast to those who did not continue exercising, they were able to preserve their gains in muscle strength without increased disease activity or progression of radiological damage.

Respir Med. 2004 Oct;98(10):1000-7

Heavy resistance training increases muscle size, strength and physical function in elderly male COPD-patients--a pilot study.

Kongsgaard M, Backer V, Jørgensen K, Kjaer M, Beyer N. Institute of Sports Medicine, Bispebjerg Hospital, Bispebjerg Bakke 23, Copenhagen, Denmark.

In conclusion, 12 weeks of heavy resistance training twice a week resulted in significant improvements in muscle size, knee extension strength, leg extension power, functional performance and self-reported health in elderly male COPD patients.

Br J Sports Med. 2009 Feb;43(2):114-9. Epub 2008 Jul 15

Initiating and maintaining resistance training in older adults: a social cognitive theory-based approach.

Winett RA. Centre for Research in Health Behavior, Virginia Tech, 620 N. Main Street, 24061 Blacksburg, USA.

Numerous research studies performed in "lab-gyms" with supervised training have demonstrated that simple, brief (20-30 min) resistance training protocols performed 2-3/week following the American College of Sports Medicine's guidelines positively affect risk factors associated with heart disease, cancers, diabetes, sarcopenia and other disabilities. For more than a decade, resistance training has been recommended for adults, particularly older adults, as a prime preventive intervention, and increasing the prevalence of resistance training is an objective of Healthy People 2010.

Ann Intern Med. 1996 Mar 15;124(6):568-72

Weight training improves walking endurance in healthy elderly persons.

Ades PA, Ballor DL, Ashikaga T, Utton JL, Nair KS. University of Vermont College of Medicine, Burlington, Vermont, USA.

CONCLUSIONS: Resistance training for 3 months improves both leg strength and walking endurance in healthy, community-dwelling elderly persons. This finding is relevant to older persons at risk for disability, because walking endurance and leg strength are important components of physical functioning.