Randomized Trial of Progressive Resistance Training to Counteract the Myopathy of Chronic Heart Failure

Pu CT, Johnson MT, Forman DE, Hausdorff JM, Roubenoff R, Foldvari M, Fielding RA, Singh MA. Nutrition, Exercise Physiology, and Sarcopenia Laboratory, Jean Mayer US Department of Agriculture, Human Nutrition Research Center on Aging, Tufts University, Boston 02111

BACKGROUND:
Chronic heart failure (CHF) is characterized by a skeletal muscle myopathy. The clinical hallmark of CHF is exercise intolerance, manifested as fatigue and difficulty breathing during increasingly minimal activities, and has not been optimally addressed by current treatment paradigms or aerobic exercise.

OBJECTIVE:
To determine the effectiveness of progressive resistance training (PRT) at counteracting the myopathy of CHF, sixteen older women with CHF were compared with 80 age-matched peers without CHF and randomized to progressive resistance training or control stretching exercises for 10 weeks. Women with CHF had significantly lower muscle strength but comparable aerobic capacity to women without CHF.

RESULTS:
Exercise training was well tolerated and resulted in no changes in resting cardiac indexes in CHF patients. Strength improved by an average of 43.4 +/- 8.8% in resistance trainers vs. –1.7 +/- 2.8% in controls and muscle endurance improved by 299 +/- 66% vs. 1 +/- 3%. The 6-minute walk distance improved by 49 +/- 14m for resistance trainers verses –3 +/- 19m for controls. Higher scores in the 6-minute walk were directly related to increases in type 1 fiber area and citrate synthase activity in skeletal muscle.

SUMMARY:
High-intensity progressive resistance training improves impaired skeletal muscle characteristics and overall exercise performance in older women with CHF. These gains are largely explained by changes in skeletal muscle and not resting cardiac adaptations. By increasing exercise tolerance, PRT has the potential to significantly improve the quality of life of those with CHF.

KEISER PIECES USED:
Seated leg press, chest press, knee extension, triceps and knee flexion

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