
Aerobic and Resistance Training in Coronary Disease: Single versus Multiple Sets

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Setting the scene:

The purpose of this study was to compare resistance training (RT) (one set vs. three sets) combined with aerobic training (AT) versus AT alone in persons with coronary artery disease.

What did they do?

72 patients were randomized to (AT, AT/RT1 and AT/RT3) A symptom-limited graded exercise test on a cycle ergometer was performed by all patients. Subjects from all three groups participated in the AT program, which included 30 to 60 min of walking and/or jogging. The initial walking prescription was set at a distance of approximately 1.6 km and an intensity equivalent to 60% of VO₂peak. Prescriptions were progressed every 2 wk, Subjects randomized to AT/RT1 or AT/RT3 attended 6 RT exercise training sessions during their scheduled weekly classes within a period of 24 wk; three consecutive weekly RT classes at weeks 6, 7 and 8 and follow-up sessions at weeks 12, 16, and 22. Exercises included three specific to the lower body (2 with dumbbells one with exercise Therabands), 5 upper body (dumbbells) and two trunk-stabilizing exercises (patient's body weight). Each exercise was designed to target a single muscle group only once during a single circuit. All patients performed the bent over dumbbell row, half squat, alternating right and left arm bicep curl, heel raises, standing lateral raise, leg curl, supine lateral raise, curl up abdominal exercise, triceps extension, and four point alternate arm and leg lift. Subjects were initially prescribed a weight load equivalent to 60% of 1 repetition maximum (1RM) or the exercise band that was one band color below the 1RM. Patients were advised to gradually progress from 10 to 15 repetitions and then to increase resistance by 5 kg or one band level and reduce repetitions to 10. After subsequent testing procedures at weeks 16 and 22 the weight load was progressed to 70% to 75% of 1RM.

Takeaway message:

Combined AT and RT are well tolerated in patients with CAD and yields more pronounced physiological adaptations than AT alone. Although RT prescription beyond one set may be associated with lower adherence to the number of sets prescribed, it may further augment parameters that affect VO₂peak, VAT, lower body endurance, and muscle mass in a cardiac population. The combination of RT and AT yields greater improvements in cardiovascular endpoints of exercise performance, skeletal muscle function, and body composition compared to AT alone, in spite of a 28% reduction in the actual AT training stimulus. These data strongly support a combined training intervention in CAD patients, and supports the use of multiple-set RT for patients desiring an increased RT stimulus.