

Effects of Strength Training on Cardiovascular Responses During a Submaximal Walk and a Weight-Loaded Walking Test in Older Females [Original Article]

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Abstract

Purpose: The purpose of this study was to examine the effects of a total body strength training program on oxygen uptake ($\dot{V}O_2$), heart rate (HR), systolic blood pressure (SBP), and rate pressure product (RPP) during a submaximal walk and a weight-loaded walking test in healthy women 60-77 years old.

Methods: The submaximal walk (2 mph and 3.5% grade) took place during stage 3 of a graded exercise test. The weight-loaded walking task consisted of treadmill walking at 2 mph while carrying a box weighing 40% of maximum isometric elbow flexion strength. The women strength trained three times per week for approximately 1 hour per session for 16 weeks.

Results: Paired *t* tests determined that strength increased by 57% on six isotonic strength tests (one repetition maximum) and by 29% on two isometric strength tests. A repeated measures analysis of variance (ANOVA) was used to determine the pre- to post-differences between and within the two tests ($\alpha = 0.05$). There was no change in $\dot{V}O_2$ but HR, SBP, and RPP decreased significantly during the submaximal walk and the weight-loaded walking test. However, average HR (135 to 120 bpm) and RPP (23.3×103 to 19.3×103) decreased more during the weight-loaded walking test than during the submaximal walk (HR: 108 to 104 bpm; RPP 18.3×103 to 17.0×103).

Conclusions: In conclusion, the reduced HR, SBP, and RPP indicates that strength training may reduce cardiovascular stress during daily tasks in healthy older women. lcm walking

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