

Effect of Self-Regulated Exercise Intensity on Endothelial Function in Men with Coronary Artery Disease

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Background: Physiologically based exercise prescriptions normally involve identifying an intensity range that elicits a predetermined VO₂ or heart rate. In many instances prescribed exercise that exceeds an individual's preferred level of intensity may establish a negative attitude toward physical activity. Longitudinal studies report that participants tend to deviate from physiologically based prescribed levels of intensity in favour of their apparently preferred levels. Self-regulated exercise intensity may increase enjoyment and promote adherence by allowing individuals successfully complete an activity within their perceptual preference range and without undue physiological strain. The purpose of this study is to examine the effect of self-regulated exercise intensity on endothelial function (a validated surrogate measure of early atherosclerosis) in men with coronary artery disease.

Methods: Eight men with coronary artery disease (65.7 ± 4.5 yr, VO₂max 18.6 ± 4.1 ml/kg/min, BMI 29.7±3.3 kg/m²) underwent 20 min of treadmill walking at a self-regulated intensity. Endothelial dependent dilation of the brachial artery was assessed before and 1 h following the acute bout of exercise. Vessel diameter was determined using high resolution vascular ultrasonography (SonoSite, MicroMaxx) from flow mediated dilation (FMD) following 5 min of forearm occlusion. Endothelial independent vasodilation was measured at min 3, min 4 and min 5 following the administration of glyceryl trinitrate (0.4 mg).

Results: The subjects self-selected an average treadmill walking speed of 5.3 km/h and a grade of 0.7%. This intensity equated to 65.7% VO₂max, and an RPE-O of 12.0. Compared to baseline, FMD was significantly increased (1 min (4.6 v 10.7%) and 3 min (6.2 v 11.0) post occlusion) at 60 min following the acute bout of self regulated exercise. There was no change in endothelial independent dilation in response to the acute bout of exercise.

Conclusion:

These results indicate a beneficial effect of self-regulated exercise on endothelial dependent vascular function in men with coronary artery disease.

The study was supported with a grant from Science Foundation Ireland (P07625 - SFI 07/CE/I1147)