



Heart rate recovery after constant-load exercise tests is decreased in proportion to the importance (severity and diffusion) of exercise-induced lower-limb ischaemia

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BACKGROUND: Conditions that may influence heart rate recovery at 1 min of recovery from exercise (HRR1: end-exercise heart rate minus heart rate 1 min after exercise) are not fully understood. We hypothesized that the 'importance' (both local severity and regional diffusion) of peripheral skeletal muscle ischaemia is associated with low HRR1. DESIGN AND METHODS: In 529 patients with suspected or confirmed peripheral vascular disease not receiving beta-blockers (61.4 +/- 11.3 years old), we retrospectively studied the relationship of HRR1 to exercise-induced changes in transcutaneous oxygen DROP index (limb changes minus chest changes from rest). The sum of DROP indices observed on both calves and both buttocks (DROPtot) provides the unique opportunity to estimate both the severity and the diffusion of exercise-induced ischaemia on the right and left side simultaneously. It was used during a constant-load treadmill test (3.2 km h(-1) ; 10% grade) to classify patients in quartiles, the fourth quartile representing the more 'important' ischaemias. RESULTS: There was an inverse relationship between quartiles of DROPtot and HRR1, even after adjustment for heart rate reserve (Delta HR: end-exercise minus resting heart rate), age (60 years), gender, body mass index, treadmill maximal walking distance and ankle brachial index: adjusted R = 0.629; P<0.0001. CONCLUSIONS: During constant-load treadmill testing, DROPtot, an index of the 'importance' of exercise-induced lower-limb ischaemia, correlates with HRR1. Whether HRR1 is improved in proportion of DROPtot improvement in patients undergoing surgery or rehabilitation for peripheral artery disease is a fascinating issue for future studies.

Résumé en anglais

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