

Is Pathologic Heart Rate Recovery a Constant Value during Repeated Exercise Tests?

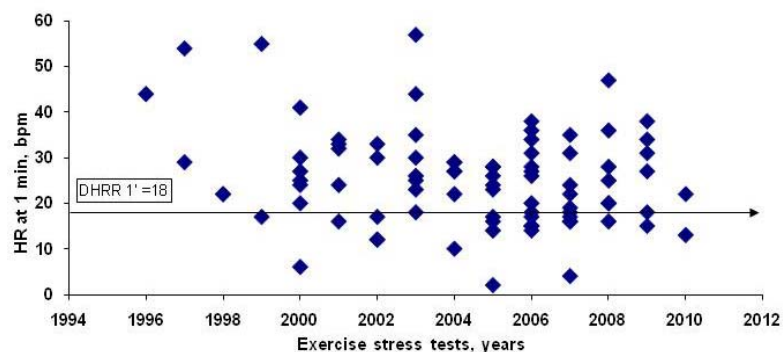
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Background: Heart rate at 1 minute during recovery from a maximal exercise stress test of less than 18 beats per minute is defined as "pathologic" and is associated with poor prognosis.

Aim: To investigate the changes in heart rate recovery (HRR) of several repeated exercise stress tests in normal, apparently healthy individuals. Methods: Subjects (n=44; 6 females) with a mean age of 58.5±9.6, body weight 83.7±12.9 kg, height 175.2 ±7.7 cm, and body mass index (BMI) of 27.1±3.4 kg/m², underwent standard exercise stress test as a routine checkup at the Institute for Medical Screening, Sheba Medical Center. Recovery HR was documented while the patients were in sitting position at 1 minute and categorized as "normal" if >18 b/min (group 1); "abnormal" if <18 b/min (group 2); or "normal/abnormal" if <>18 b/min (group 3). Each subject underwent an average of 5.2±1.4 tests within 17 years follow-up (1993 to 2010).

Results: Subjects in group 2 & 3 were slightly older (63.2±12.7 and 63.0±8.7 years compared with 55.4±8.5 years for group 1) but with similar body weight, BMI, resting HR, and systolic and diastolic blood pressure. Peak exercise values (absolute and as percentage of age predicted) were similar, as well as maximal METs achieved at peak exercise. One hundred and thirty seven (of 232) exercise stress tests had normal HRR (36.4±10.8 b/min), 10/232 had pathological HRR (13.3±4.0 b/min), and 91/232 had normal/abnormal HRR (25.3±10.6 b/min). In 39.2% of tests, HRR was changed between normal to pathological value during repeated exercise stress tests within the same subject (figure).



Conclusion: Our data demonstrate that HRR is not a constant value and may fluctuate between tests. Therefore the interpretation of HRR based on a single exercise stress test is fault.