Exercise Testing in Asymptomatic Women—Are we Looking in the Right Place?

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Exercise stress testing has long been a standard for life insurance testing for high-dollar policies. The validity of stress testing on women has been called into question on numerous occasions with doubt raised as to the reliability of the test as a predictor of atherosclerotic heart disease or cardiovascular death. This study examines whether this concern has merit.

The study was conducted on 2994 asymptomatic North American women, age 30 to 80, who underwent near-maximal Bruce protocol treadmill stress testing as part of the Lipid Research Clinics Prevalence Study from 1972–1976. There were a total of 427 deaths during the 20 years of follow-up with 147 due to cardiovascular causes. Examination of the treadmill stress testing data revealed several key points.

First, there was a clear association between exercise tolerance and death from cardiovascular disease. The age-adjusted hazard ratio for cardiovascular death for every 1 MET decrease in exercise capacity was 1.20 (95% CI, 1.18–1.30).

Second, there was another clear association between heart rate recovery (HRR) and cardiovascular death. For every 10/minute decrement in heart rate recovery, the age-adjusted ratio was 1.36 (95% CI, 1.19–1.55).

Third, there was no association between cardiovascular death and ST segment depression of either 1 mm or 2 mm of depression (horizontal or downsloping measured at 0.08 seconds after the J point).

Further, the study broke these groups into 3 segments: those with normal (greater than the median) results for METS and HRR, those with lower than median results in one of the 2 categories, and those with results lower in both HRR and METS. Cardiovascular mortality rates in these 3 groups respectively were 3.5, 13.3, and 44.5 deaths per 10,000 person-years of follow-up.

In summary, the long held use of treadmill stress testing in women as a predictor for cardiovascular disease or death shows considerable prognostic value when used as a measure of overall cardiovascular fitness. Determination of METS achieved and heart rate re-
covery correlate well with increased risk for later cardiovascular events. However, the traditional measure of ST segment depression showed no correlation with later cardiovascular events. This would suggest that new parameters should be developed to access the risk of results from treadmill stress testing in women.