

Athletes and Electrocardiograms

Abnormal ECG findings were associated with an increased risk for heart disease in a cohort of highly trained athletes.

The death of a young athlete is the kind of tragedy that inspires [poetry](#) and shakes communities. Although such events are rare, there is great interest in identifying individuals at risk and intervening before a fatal event occurs.

Physicians are often challenged to make judgments about risk in individuals who have abnormal 12-lead electrocardiograms but no evidence of structural heart disease. To determine whether an abnormal ECG is a marker of risk in athletically conditioned individuals, investigators analyzed a database of electrocardiographic and echocardiographic findings from 12,550 Italian athletes. The investigators identified 81 athletes with electrocardiographic — but no echocardiographic — abnormalities at initial examination (mean age, 23) and for whom serial follow-up data were available. Inclusion criteria for these cases were marked repolarization abnormalities, defined as inverted T waves in at least three leads. A total of 229 control patients with normal ECGs were matched with case patients by age, sex, and duration of follow-up.

Case patients had participated in a variety of sports (most commonly, soccer and rowing or canoeing). During a mean follow-up of 9 years, 11 athletes with initial electrocardiographic abnormalities developed a cardiovascular disorder (cardiomyopathy in 5, other disorders in 6). One athlete died from an undetected arrhythmogenic right ventricular cardiomyopathy. None of the control patients developed a cardiomyopathy ($P=0.001$); four developed other cardiovascular disorders ($P=0.05$).

Comment: This small but important study suggests that we clinicians should not dismiss an abnormal electrocardiogram in a trained athlete just because the echocardiogram findings are normal. However, the question remains: How best to advise these athletes? They may be at increased risk, but it is not clear if that risk can be modified, and most of the athletes in this study did not develop cardiovascular problems.

— [Harlan M. Krumholz, MD, SM](#)

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Pelliccia A et al. Outcomes in athletes with marked ECG repolarization abnormalities. *N Engl J Med* 2008 Jan 10; 358:152