

# Researchers recommend preparticipation cardiac screening for college athletes

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Sudden cardiac death in young athletes who had not previously exhibited symptoms is a relatively rare yet tragic event. This occurs in around 60-80 young athletes annually in the United States. In the June 2011 issue of *The American Journal of Medicine*, researchers collected electrocardiograms and echocardiograms of 964 athletes at a single university and found that distinct ECG abnormalities were present in 10% and were more common in males as well as black athletes. Two athletes were subsequently excluded from competition.

Investigators from Saint Luke's Mid America Heart and Vascular Institute, Kansas City, MO, Lawrence Memorial Hospital, Lawrence, KS, and the University of Kansas, Lawrence, prospectively screened male and female varsity athletes enrolled at the University of Kansas, Lawrence. These athletes represented 14 competitive sports with football comprising about 25% of the subjects, rowing 18% and track and field 16%. Close to 9% of all subjects reported a family history of premature death and nearly 15% reported symptoms. Almost 23% of all athletes met the current guidelines for further cardiac testing.

"These findings offer a framework for performing preparticipation screening in competitive collegiate athletes," commented lead investigator Anthony Magalski, MD, Saint Luke's Mid America Heart and Vascular Institute, Kansas City. "To our knowledge, this work represents one of the largest single cohorts of collegiate athletes in the US undergoing comprehensive preparticipation screening incorporating both 12-lead electrocardiography and echocardiography in every athlete.

The addition of electrocardiography and echocardiography to routine preparticipation history and physical examination provided incremental diagnostic value. Although routinely practiced in Europe, promoted by the International Olympic Committee, and mandated in Italy, preparticipation screening including 12-lead ECG is not commonly performed in competitive collegiate athletes in the US."

Researchers found that male athletes were nearly 3 times more likely to have distinctly abnormal ECG [patterns](#), while mildly abnormal patterns were similar in males and females. Black athletes were more than twice as likely to have distinctly abnormal ECG patterns, and even after adjusting for sex and body mass index, blacks were still 70 to 80% more likely to show these patterns. However, the racial differences in ECG patterns observed in the current study were not confirmed through [echocardiography](#) and this could lead to a higher likelihood of false-positive ECG findings in the black athlete.

The authors point to three novel findings resulting from the study: First, adherence strictly to American Heart Association/American College of Cardiology guidelines for preparticipation screening identified nearly one quarter of athletes who were candidates for noninvasive cardiovascular screening based on history or symptoms. Second, ECG findings revealed clinically important electrical abnormalities in nearly 1% of the cohort, including 7 [athletes](#) with previously unrecognized Wolff-Parkinson- White patterns and 1 with long QT syndrome. Third, although black race was independently associated with a greater prevalence of distinctly abnormal ECG patterns, clinically important racial differences in cardiac structure were not apparent.

**More information:** The article is "Cardiovascular Screening with Electrocardiography and Echocardiography in Collegiate Athletes" by Anthony Magalski, MD, Marcia McCoy, RN, MSN, Michael Zabel, MD, Lawrence M. Magee, MD, Joseph Goeke, MD, Michael L. Main,

MD, Linda Buntun, RN, BSN, Kimberly J. Reid, MS, and Brian M. Ramza, MD, PhD. It appears in *The American Journal of Medicine*, Volume 124, Issue 6 (June 2011)

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