

Young athletes need dual screening tests for heart defects, study suggests

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To best detect early signs of life-threatening heart defects in young athletes, screening programs should include both popular diagnostic tests, not just one of them, according to new research from heart experts at Johns Hopkins.

Sudden cardiac death due to [heart](#) rhythm disturbances is blamed for more than 3,000 deaths a year in young people, especially athletes who have inherited tendencies to develop overly enlarged and thickened hearts, says Theodore Abraham, M.D., an associate professor at the Johns Hopkins University School of Medicine and its Heart and Vascular Institute. In some instances, top athletes have died from heart conditions while seemingly in peak physical form, something that can hide warning signs and allow many cases to go undiagnosed.

In a study to be presented Nov. 15 at the American Heart Association's (AHA) annual Scientific Sessions in Orlando, Abraham and colleagues analyzed data from 134 top Maryland high school athletes that they screened at the 2008 track and field state championships. The researchers were looking for life-threatening cardiac abnormalities, such as hypertrophic cardiomyopathies. Doctors took a medical history, took weight and [blood pressure](#) measurements and listened for unusual heartbeats or murmurs. They also conducted an echocardiogram — a cardiac ultrasound, or ECHO — to measure heart size and pumping function and to check for faulty heart valves; and an electrocardiogram, or EKG, to assess the heart's electrical rhythms.

None of the student athletes were found to have life-threatening [heart defects](#), but abnormal findings were discovered in 36 athletes. Twenty-two of those abnormalities were found by EKG alone, nine by ECHO alone and five were picked up on both tests. Those with abnormalities -- which included 19 with high blood pressure, 29 with elevated blood pressure in need of future

monitoring, and five with low blood pressure readings -- were referred for follow-up to their doctors.

"If you are going to screen, it has to be comprehensive," says Abraham, who spearheads the annual "Heart Hype" screening program run by Johns Hopkins, and designed to serve as a national model for other leading academic medical centers. Some screening programs just include EKGs and not ECHOs. "An EKG does show you a lot," he says, "but it doesn't tell you the whole story. The advantage of a comprehensive screening is that it is holistic, rather than being pinpoint."

For example, if a doctor were screening for prostate cancer, "he wouldn't ignore a large tumor on your head," Abraham says.

Lead study investigator Aurelio Pinheiro, M.D., a postdoctoral research fellow at Hopkins, says he wasn't surprised that he and his colleagues didn't find anyone with a life-threatening heart abnormality since it is estimated that one in 500 Americans has undiagnosed hypertrophic cardiomyopathy and the Hopkins team screened fewer than that. Still, he says, the screening program is not just designed to prevent deaths from sudden cardiac arrest, but also to raise awareness of the risks to young athletes.

Less pressing — but still serious — medical conditions also were found by the researchers, notably high blood pressure, which in teenagers, Pinheiro says, can lead to heart failure or kidney disease 10 or 15 years in the future if left untreated. He adds that two of the track stars examined were obese, which can lead to other health risks in the future if not taken care of.

During this year's screening program, doctors found a serious undiagnosed valve disease in one athlete and found another suffering from a condition they didn't know about that could likely mean a heart

transplant in the future. The students had no symptoms.

In some nations, programs to screen teenage athletes and non-athletes for possible heart problems have been routine for years. In 2004, the International Olympic Committee recommended that all athletes be EKG-tested every two years for potential heart abnormalities, regardless of whether they have a history of cardiac trouble. The U.S. Olympic Committee offers voluntary cardiac screening.

Other screening programs have used just EKG and not ECHO, which the study suggests will miss some heart problems.

Some argue that doing expensive diagnostic tests such as the EKG and ECHO are not worth the costs since [sudden cardiac death](#) in young people is relatively rare and mass screenings are unlikely to turn up a large number of teens in immediate danger.

Abraham disagrees. "What is the price for a single life?" he asks. "We're counting the costs upfront. We're not counting the savings on the downstream end."

"They're still teenagers. They think and feel like they're at the top of the world," Abraham says. "[Athletes](#) and other teens should let someone know how they are feeling, especially if they have had chest pains, shortness of breath with activity or have fainted. This could save their life."

Source: Johns Hopkins Medical Institutions

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