

# Preventive screening for sudden cardiac death in young athletes debated

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While ensuring the safety of high school and college athletes is hardly controversial, the method and associated costs of doing so are hotly debated. Conducting electrocardiographic (ECG) screenings of all young competitive athletes in the United States would cost up to \$69 billion over 20 years and save about 4,813 lives, making the cost per life saved over \$10 million, according to a study published online today in the *Journal of the American College of Cardiology*.

A corresponding editorial suggests that this number is inflated and "misleading" and blames the high costs on cultural attitudes and medical policies on preventative medicine in the [United States](#). The issue has been widely debated among experts currently in sports cardiology, a growing field of medicine in the United States. The [European Society of Cardiology](#) recommends mandatory ECG screening of all competitive athletes, but the [American Heart Association](#) recommends a physical exam and family history questionnaire as a first-line screening, with further examination based on the results of those initial steps.

"While this research focuses on the [monetary costs](#) of mandatory ECG screening, it is important to consider the human costs of false positives, which can result in additional potentially unnecessary tests and removal from play of athletes who are not actually at risk," said ACC President William Zoghbi, MD, FACC. "Most in this discussion agree that physicals, thorough family histories, targeted testing with ECG and other modalities when needed, widespread training in CPR, and availability of automated external defibrillators save lives from [sudden cardiac arrest](#)."

A 2006 Italian observational study found that mandatory ECG-based screening of athletes implemented by Italian law led, over a 20-year period, to a 89 percent relative risk reduction in sudden cardiac death; however, the absolute risk reduction, the cost and the economic ramifications have not been addressed in this study.

Researchers in the current study established a cost-projection model based on the Italian study to estimate the number of athletes who would need to undergo screening if it were required in the U.S., compute the costs and determine the number of lives that could be saved. The number of screening-eligible athletes was estimated from data provided by the National Collegiate Athletic Association and the National Federation of State High School Associations and diagnostic test costs were determined from Medicare reimbursement rates.

Based on this data, researchers determined that 8.5 million athletes would undergo annual ECG screening over 20 years, with 2 percent ultimately disqualified as a result of follow up screenings each year. That equates to 170 million screening tests and 3.4 million disqualifications over two decades.

The number of athletes disqualified for heart conditions would cause the [sudden cardiac death](#) rate to decrease from 4 to 0.43 per 100,000, but the costs would be in the billions. Researchers estimate that 20 years of testing would cost between \$51 billion and \$69 billion and save about 4,813 lives, which averages to between \$10.6 million and \$14.4 million per life saved.

Antonio Pelliccia, MD, of the Institute of Sport Medicine and Science in Rome, disagrees with the conclusions of the study. He argues the study overestimates costs because the screenings are part of a preventative program that targets young people who are for the most part healthy, is conducted outside of hospitals and is performed by team physicians, not

cardiologists. Screenings would be packaged as a unique medical procedure instead of priced as individual diagnostic tests.

He acknowledges that reimbursement of pre-participation screenings as a preventative medicine program does not currently exist in the Medicare system and this "represents a major obstacle" in implementing ECG-based pre-participation screening.

According to Dr. Pelliccia, in Italy where ECG screening is mandatory for [athletes](#), the cost is about \$60 per athlete, including history, physical and 12-lead ECG, which is a price based on an agreement between the Board of Sport Physicians and the Italian government. The National Health System also refunds this fee for low income individuals.

He said the obstacles in the United States are not economic but cultural and "will require a change in the cultural attitude and current medical policy in the United States, where [preventative medicine](#) programs are unlikely to be federally supported."

**More information:** In addition to being posted online today, the full study will be published in the Dec. 4 *JACC* print edition.

Provided by American College of Cardiology

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