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Sudden Death in Athletes May Be Undercounted

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MedPage Today Action Points

- Explain that in this study of NCAA athletes, approximately 2/3 of deaths over a 5-year period were due to nonmedical or traumatic causes, and approximately 30% were due to medical causes.
- Note that cardiovascular-related sudden death was the leading cause of death in slightly more than half of the medical cases.
- Note also that the rate is reported in this study is higher than in most previous studies, which have relied primarily on media reports and insurance claims data.

Review

Previous studies may have underestimated the rate of sudden cardiac death among college athletes, researchers found.

Combining data from the National Collegiate Athletic Association (NCAA) and media reports, Kimberly Harmon, MD, of the University of Washington in Seattle, and colleagues estimated the rate of sudden cardiac death to be one in every 43,770 student-athletes per year.

That makes dying suddenly from cardiac reasons the leading medical cause of death among college athletes, the researchers reported in the April 19 issue of *Circulation: Journal of the American Heart Association*.

The rate is higher than in most previous studies, which have relied primarily on media reports and insurance claims data.

According to Harmon and her colleagues, the findings could have implications for the routine use of electrocardiographic screening of athletes before participation in sports, because estimates of cost-effectiveness rely on an accurate assessment of the risk of sudden cardiac death.

Professional organizations differ on the cost-effectiveness of routine ECG screening.

The European Society of Cardiology and the International Olympic Committee recommend an ECG as part of routine screening before sports participation, but the American Heart Association recommends using a detailed medical history and physical examination, with an ECG reserved for the follow-up of concerning signs.

But, Harmon and her colleagues argued, "a history and physical examination without an ECG are of questionable value and have been shown not to be cost-effective because of their poor sensitivity and specificity. Targeting high-risk groups may prove a reasonable starting point to begin ECG screening programs in the United States."

Numerous studies have tried to assess the rate of sudden cardiac death, but the estimates vary widely because of differences in methodology. Most previous studies have relied on media reports, retrospective surveys, voluntary registries, and NCAA catastrophic insurance claims data.

The current study used a database that combined information from two sources -- the NCAA's database on student-athletes who died and a database from Parent Heart Watch, a nonprofit organization that performs weekly systematic searches of media reports of sudden cardiac death and cardiac arrest in young people.

From 2004 through 2008 -- which covered 1,969,663 athlete participant-years -- there were 273 deaths from any cause.

About two-thirds (68%) did not occur during athletic participation and included accidents, suicide, homicide, and drug overdoses.

Another 29% of deaths were from medical causes. Of those, 45 (56%) were attributed to sudden cardiac death.

There were differences in the rate of sudden death in various athlete subgroups.

Males were more than twice as likely as females to die suddenly, with one out of every 33,134 male athletes dying suddenly compared with one out of every 76,646 female athletes per year.

The risk was higher among blacks compared with whites -- one out of every 17,696 versus one out of every 58,653 per year.

Basketball players were most likely to die suddenly from cardiac causes, followed swimmers, lacrosse players, football players, and cross-country runners.

The athletes with the highest risk were Division I male basketball players -- one out of every 3,126 per year.

Harmon and her colleagues determined that 87% of the sudden cardiac deaths would have been identified with the NCAA database alone, 56% would have been identified with the use of public media reports alone, and only 20% would have been identified from NCAA catastrophic claims data alone.

In addition to reconsideration of routine ECG screening -- at least in high-risk groups -- the findings suggest that consideration should be given to placing automated external defibrillators (AEDs) in venues where the sports with the highest risks of sudden cardiac death occur, according to the researchers.

They noted that preparing for a sudden cardiac arrest in distance runners is more difficult.

"Runners should be encouraged to train with a partner and to carry cell phones," the authors wrote. "Organizers of cross-country meets should consider having AEDs accessible via carts or bikes, and spotters on the course should have a communication system with access to the medical team."

Potential limitations of the study included the lack of confirmation of the cause of death by autopsy in most cases, the retrospective data collection, and the possibility that some deaths were missed.

The authors reported that they had no conflicts of interest.

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