

Screening Unlikely to Prevent Sudden Cardiac Arrest in Athletes

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TORONTO, ON — Screening programs for cardiac conditions are not an effective way to prevent sudden cardiac arrest in competitive sports and may prevent healthy athletes from participating, new research indicates^[1].

"Sudden cardiac death during participation in competitive sports is rare, the causes are varied, and more than 80% of cases would not have been identified with the use of systematic clinical preparticipation screening alone or in combination with electrocardiography-based preparticipation screening," write the researchers, led by Dr Paul Dorian (University of Toronto, St Michael's Hospital, ON).

Using the [Toronto Regional RescuNET](#) cardiac-arrest database, they identified a total of 3825 out-of-hospital cardiac arrests that occurred during sports participation among individuals aged 12 to 45 from 2009 through 2014.

Over the course of the 6-year study period (and 18.5 million person-years of observation), a total of 74 sudden cardiac arrests occurred during sports participation: 16 occurred during competitive sports and 58 occurred during noncompetitive sports. Hypertrophic cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy were uncommon; among the 16 cases of sudden cardiac arrest that happened during competitive sports, there were only two cases of hypertrophic cardiomyopathy and no cases of arrhythmogenic right ventricular cardiomyopathy.

Only three cases of sudden cardiac arrest that occurred during participation in competitive sports were potentially identifiable if the athletes had undergone preparticipation screening, the researchers report.

The study was published November 16, 2017 in the *New England Journal of Medicine*.

Screening "Extraordinarily Ineffective"

The incidence of sudden cardiac arrest during competitive sports was 0.76 cases per 100,000 athlete-years, which is similar to that reported previously.

"The rarity of sudden cardiac arrest due to structural heart disease that we found in our analysis raises questions about the potential value of preparticipation screening," write Dorian and colleagues.

"Preparticipation screening of athletes is a very controversial and hotly debated topic," Dorian noted in an interview with [theheart.org | Medscape Cardiology](#).

"Our study helps inform that debate in a very substantive way. The bottom line in terms of implications of our data is that preparticipation screening for competitive athletes for the purpose of identifying individuals at risk and preventing them from dying suddenly is likely to be extraordinarily ineffective. That's because the majority of athletes who die suddenly during sports have conditions that cannot be diagnosed by preparticipation screening," said Dorian.

The benefits of participating in competitive sports "far outweigh any risk of sudden cardiac arrest," he added.

Dr Sumeet Chugh (Cedars-Sinai Heart Institute, Los Angeles, CA) agrees. "In the big picture, sporting activity saves many more lives than it takes. Associated with 0.2% of all sudden cardiac arrests in this Canadian population, sports was a rare trigger for sudden cardiac arrest," Chugh told [theheart.org | Medscape Cardiology](#).

"However, these data also indicate that even if we had screened all 74 of these unfortunate athletes, we would have missed the diagnosis in 97%. Cardiac arrest in the young remains a devastating condition, and significantly more research is needed to pinpoint risk factors and identify those who are highest risk," said Chugh.

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References

1. CH Landry, Allan KS, Connelly KA, et al. Sudden cardiac arrest during participation in competitive sports. *N Engl J Med.* 2017;377:1943-1953. [Abstract](#)

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