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Hidden Threats to Young Athletes

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In February, hundreds of youth sports safety advocates convened at a Washington hotel. They were determined to talk about something other than concussions, a counterintuitive ambition considering the rampant worry about the effects of head trauma in young athletes.

But the Washington group knew something most do not: the No. 1 killer of young athletes is sudden cardiac arrest, typically brought on by a pre-existing, detectable condition that could have been treated. Another substantial yet hidden lethal threat is heat stroke, a condition considered completely preventable.

Concussions are receiving attention nationwide, but death from a blow to the head is exceedingly rare. In contrast, a young athlete dies from a cardiac incident once every three days in the United States, researchers say. In hot months like August, heat stroke often causes the death of a young athlete every other day on average.

“Concussion victims almost always get a second chance,” said Laura Friend, an attendee at the Washington summit whose 12-year-old daughter, Sarah, died of sudden cardiac arrest while swimming at a Texas community pool in 2004. “When your heart fails from something that could have been treated — which happens all the time — you don’t have another chance. As someone told me, sudden cardiac arrest is not rare; surviving it is.”

Heat stroke, also known as exertional heat illness, has been a focus of sports safety advocates because of simple, common-sense pre measures, like introducing gradual levels of exercise at the be sports season in hot temperatures.

“When my son died, people treated it as a freak thing,” said

Fincher, whose 13-year-old son, Kendrick, died in 1995 from heat stroke sustained during a season-opening football practice in northwestern Arkansas. “The ignorance was unacceptable because, unfortunately, it is not infrequent. And we should all know that.

“No healthy child should be sent off to a routine practice and die from it.”

Leaders of youth sports acknowledge that concussions have long been overlooked and that the injury deserves a period of heightened awareness, especially because of the potential for long-term consequences. But as the focus of the February conference organized by the National Athletic Trainers’ Association suggests, there is a mounting worry that more hazardous health concerns are being disregarded because of the intense emphasis on brain injuries.

A sudden heart-related death is “so incredibly tragic and stunning that people aren’t comfortable putting it into the everyday conversation,” said Dr. Jonathan Drezner, the president of the American Medical Society for Sports Medicine.

“I do wish, to some extent, it was something people talked more about,” Drezner added, “because we are getting to a place where we could prevent many of these deaths.”

One factor that may be inhibiting the conversation is a widespread disagreement about the best course of action to reduce deaths from sudden cardiac arrest. The debate hinges on suitable precautionary measures for young athletes.

The physical examination that virtually every athlete in the United States must pass to play a school sport includes listening to the heart, checking blood pressure and reviewing family medical history. Additional testing is typically not done unless a red flag is raised.

But many doctors strongly advocate adding an electrocardiogram, or EKG, to the pre-participation exam. They say it would detect about two-thirds of the deadly, concealed heart trouble aggravated by exercise in competition. Sudden cardiac arrest in a young athlete is most commonly set off by a

structural heart defect or a problem with the heart's electrical circuitry that is not usually found during a routine physical. The most frequent cause is hypertrophic cardiomyopathy, a thickening of the heart muscle. The condition has few warning signs.

In other countries, most notably Italy, young athletes are required to have EKGs to play sports, but adopting the practice in the United States could cost $25 to $150 per EKG, which may not be covered by insurance.

Some school districts have arranged for deeply discounted EKGs for their athletes, and several hospitals, like Cook Children's Medical Center in Fort Worth, offer to conduct an EKG on an athlete and have it read by a pediatric cardiologist for $25. Some hospitals, like Miami Children's Hospital, have begun offering free EKGs for athletes. Many colleges screen all of their athletes before every season.

But even at discounted prices, the cost of giving an EKG to each of the country's 7.7 million high school athletes has led to skepticism of whether EKGs are a prudent, practical medical procedure. Because the test can produce false positives, leading to more testing, the debate can be contentious.

At the Washington summit, the role of EKGs was hotly discussed. But when the conference created a national action plan for sports safety, the tests were not part of it. Many attendees felt that the focus on universal EKG screening was a distraction from more pertinent goals, like having lifesaving automatic external defibrillators, or A.E.D.'s, in every school in the country and near every playing field and gymnasium.

Every Minute Counts

An A.E.D., properly administered, can boost the survival rate after sudden cardiac arrest by 60 percent or more, but about 30 percent of schools nationwide do not have an A.E.D. In some poorer states, half of the schools might be without an A.E.D.

"When someone collapses with sudden cardiac arrest, the survival rate goes down 10 percent every minute if the people around the victim don't

know CPR or have an A.E.D.," said Ron Courson, the senior associate athletic director of sports medicine at the University of Georgia and a researcher with the National Athletic Trainers' Association. "The vast majority of patients will die. A.E.D.'s can cost as little as $1,200. We've got to get them everywhere."

David Wilganowski of Bryan, Tex., was a 17-year-old senior defensive lineman when his heart stopped and he collapsed during the fourth quarter of a game two years ago. Wilganowski, who had recently accepted a football scholarship to Rice, was walking off the field and had not been involved in contact on the previous play.

Rudder High School's athletic trainer, Jamie Woodall, quickly performed CPR on Wilganowski and shocked his heart with an A.E.D. three times until it resumed beating. Doctors later attributed Wilganowski's episode to an undiagnosed heart condition and implanted a defibrillator in his chest.

He has not been permitted to resume his football career, but Rice fulfilled its scholarship offer. Wilganowski, studying mechanical engineering, recently completed his freshman year.

"I'm lucky there was an A.E.D. there and someone who knew how to use it," Wilganowski said this month. "It's kind of interesting looking back, because as a team, we had been taught the entire concussion protocol. We knew everything to look for. But I had no idea my heart could stop."

The presence of Woodall at Wilganowski's side raises another sensitive subject in the debate over how best to handle the threat of cardiac events. Some safety advocates oppose a widespread implementation of EKG screenings because they want the money spent on hiring certified athletic trainers in high schools. About 40 percent of high schools in the United States have a certified athletic trainer on staff.

"Instead of spending millions of dollars on EKGs, we ought to pay for 700 more athletic trainers in schools who would provide a host of services, including implementing emergency procedures and training others how to use A.E.D.'s," said Douglas Casa, a University of Connecticut professor and athletic trainer. Casa is also the chief operating officer of the Korey

Stringer Institute, named for the N.F.L. player who died of heat stroke during a 2001 training camp practice.

“The athletic trainer could help prevent a host of things: heat stroke, head injuries and orthopedic injuries,” Casa said.

For some doctors, however, EKG screening remains the pivotal topic because they are convinced it will soon become the norm in preseason sports physicals.

“I don’t think we’re far from that happening because more doctors are recognizing the deficiencies of what we’re currently doing,” Drezner, of the American Medical Society for Sports Medicine, said.

Drezner, also the team doctor for the Seattle Seahawks, added: “The fact is, we already spend a lot of money on millions of sports physicals. Adding an EKG would raise the cost, but it would greatly raise the effectiveness, too. And how do you put a price on the lives saved?”

In the near future, rather than being mandated, the test could become a routine option made available to parents during a sports physical.

“Let the parents decide,” said Friend, a founder of Parent Heart Watch, a national organization committed to preventing sudden cardiac arrest in children. “No one told me that I could have paid $50 or $100 for a test that would have detected a fatal heart condition in my daughter. I would have paid for that.

“I don’t see the EKG controversy people are talking about. Offer it to everyone and give the power to the parents.”

Preseason Dangers

When the subject is heat stroke, the conversation about how best to limit deaths is not divisive, but there are significant obstacles nonetheless.

Prevention efforts contrast with decades of belief that the best way to get a team into shape during the preseason is a series of punishing workouts.

Advanced research and better investigation of sports-related deaths have revealed the danger of two-a-day workouts common at football camps. Any overly strenuous sessions in hot weather before athletes have had time to acclimate to an increased level of exercise can be dangerous, especially outdoors.

The workouts may be more dangerous than ever because of ordinary technological advances like air-conditioning. Even athletes trying to get into shape by running on a treadmill probably do so in an air-conditioned setting. Many also reside and sleep in air-conditioned homes. At the same time, fewer school-age children have outdoor jobs in agriculture, landscaping and other hot-weather activities. These lifestyle changes make modern athletes less likely to be ready for the heat of an outdoor practice.

Ten years ago, the N.C.A.A. imposed strict guidelines on the first five days of preseason football practices, limiting practice to three hours once a day and making helmets the only piece of equipment the players may wear on the first two days.

In the 10 years since those restrictions were first enforced, the number of heat stroke deaths at college football practices has plummeted. The N.F.L. has since adopted similar acclimation standards. But without a national governing body for high school athletics, attaining comparable guidelines for heat stroke has been a state-by-state fight.

Still, measures have been passed in Texas, Georgia, Florida and several other states. Heat stroke deaths in those states have dropped.

“That’s the thing about curtailing exertional heat illness: it’s 100 percent preventable, and unlike other health threats to athletes, the solutions can be very low-tech and inexpensive,” said Dr. Michael F. Bergeron, the director of the National Institute for Athletic Health & Performance at the University of South Dakota’s Sanford Medical Center.

As an example, Bergeron described the ice water immersion tubs many teams now keep beside their practice fields in case a player is suspected of heat stroke. Arkansas, where Fincher’s son died 18 years ago after his core body temperature reached 108 degrees after a football practice, now

requires immersion tubs on the sidelines of all school football practices.

“Every school district can certainly afford a $150 tub and some ice to save a life,” Fincher said.

Youth sports safety advocates are adamant that cost is not the central issue when it comes to diminishing risks to athletes. They say that additional education can raise the awareness needed to reduce fatalities, and that co-opting the amplified attention on concussion management might even be effective.

“All the talk about head injuries can be a gateway for telling people about the other things they need to know about, like cardiac events and heat illness,” said Casa, the UConn professor. “It doesn’t really matter how we get through to people as long as we continue to make sports safer.”