Getting ready for the big day

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Heat and the young athlete
Making sure practice does more good than harm

BY DONNA NITZBERG

On a blistering hot afternoon last August, Jimmy Martinez, then 11, was playing football for a Pop Warner team in northern New Jersey. He scored four touchdowns that day and his coach kept him in the whole game. But his mother, Jane Martinez, who is also the president of the team, noticed that something was wrong.

“By the end of the game, Jimmy literally stumbled off the field, and was staggering around,” she says. “He didn’t run, like he always does. It scared me to death. We had to sit him down at the curb and get the car and bring it to him. Then we drove up the road to a store to get him some Gatorade. He recovered, but it was very scary.”

In olden times (back when I was a kid), youngsters slogged their way through the dog days of late summer: But with the advent of year-round sports teams and pre-season practices, many of today’s kids—like Jimmy Martinez—are encouraged to run, jump and kick their way through high heat and humidity. While it’s great to get lots of exercise, the situation is not always safe.

“Problems often come when you’re being pushed. People on their own will usually take breaks naturally because we have an internal warning mechanism—you feel a little woozy, a little hot, you take a break,” says Dr. Craig Hersh, a family physician who is also the Medical Director of Holy Name Hospital’s Sports Medicine program, as well as a partner in the practice HNH Fitness. “But when you’re pushed (by a coach) it’s extremely important to know that you’re at greater risk.”

By far, the most common threat to working out in the heat is the onset of heat illness, which in the mildest form means that the body is working overtime to cool down, and in the worst case scenario is no longer capable of cooling down.

How do our bodies cool down? Our main cooling mechanism is a two-step process. First we sweat, producing a thin film of moisture on top of the skin. And then the sweat evaporates in the air. That’s why both heat and humidity are factors in heat illness. When the air is dry and breezy, the moisture evaporates quickly and cools the body efficiently. But when the air is still and moist, evaporation doesn’t always take place. “The sweat can actually keep the heat in if it doesn’t evaporate,” says Hersh.

Accessing conditions
It’s therefore important to take note of the overall environment when deciding how vulnerable young athletes are to becoming overheated during sports, says Mike Prybicien, athletic trainer at Passaic High School, who is also the president of the Athletic Trainer’s Society of New Jersey. (An athletic trainer is a certified and state licensed health professional who works with professional sport teams, in secondary schools and private practices, under the supervision of a doctor). For example, even when you’re playing on a natural grass field and the temperature is only in, say, the mid-80s, you would need to be more vigilant playing a game on the humid banks of the Hudson River, than in a verdant field that’s not near a large body of water, notes Prybicien.
In addition, the temperature on artificial turf is generally a few degrees higher than it is on natural grass, so you need to be more careful when playing on these hotter surfaces; exercising only in the very early and very late hours, taking more water breaks than usual, and resting in the shade frequently.

Can you build up a tolerance to heat and humidity? Well, the answer is yes, sort of. Because there are limits. Athletes do fare better when eased into workouts during extreme heat. In fact, the National Athletic Trainer's Association only this past June released a set of guidelines for coaches about how to best acclimate their students to the summer heat. The guidelines specify things like not wearing protective gear and only having one practice session on the first few days of practice, while working up to full equipment and multiple practice sessions over a two-week period.

"During the first five days you improve your control of cardiovascular function," says Prybicien, "then in a couple more days it goes to the body's core temperature adjustment, and then slowly you get even more acclimated."

But while Hersh agrees that it's good to go slowly get used to hot and humid conditions instead of just jumping in full-tilt, don't assume you're not vulnerable to heat illness even if you go slowly.

"It's not like acclimatization to altitude," he warns. "It's not that protective. It's more of a hydration phenomenon, where when you spent weeks in warm weather you naturally are going to start to drink more and take measures to cool down intermittently, so you're not jarring your system ... But people who live in extremely hot climates, like Arizona or Florida, (and who are thus acclimated to the heat) are still at greater risk for heat stroke than people who live here and get an occasional hot day."

Thus, anyone, even the fittest athlete used to working out in the heat, can end up with a heat illness. But young children and the elderly are at the greatest risk, says Hersh. In addition, the risks go up for those who are very thin, overweight, out of condition, the kids under normal circumstances or have an underlying illness - which could be anything from diabetes to the common cold. Also, some kids' medications can speed up dehydration, so you should be especially careful to keep your child drinking if they are on a prescription medication.

**Signs and symptoms**

Here's a quick overview of the four types of heat illnesses, which form a continuum of severity, according to athletic trainer Mike Prybicien:

- **Dehydration** is the mildest type. It happens when someone sweats a lot, but doesn't drink enough to replace the fluids completely. Symptoms include: dry mouth, thirst, irritability, headache, lack of interest, dark yellow or brownish urine, fatigue and poor performance. Not everybody has all of the symptoms at the same time; even one should serve as a warning to take it easy and drink more fluids.

- **Heat cramps** are the next level of heat illness. Muscles cramp up as a reaction to the loss of fluid and salt from excessive sweating (it can even happen to swimmers, who can become dehydrated despite the fact that they are immersed in water). The cramps are most common in the calf and hamstring muscles, but can happen in almost any muscle. Often the cramps occur in the middle of the night, hours after play is over. In addition to replenishing fluids, you should gently stretch and massage the cramping muscle.

- **Heat exhaustion** is where things start to get out of control. Someone suffering from heat exhaustion feels terrible - in addition to having symptoms of dehydration and heat cramps, they may also lose coordination, feel dizzy or faint and have digestive symptoms like nausea, vomiting and diarrhea, which makes it difficult for them to drink and rehydrate. They will also be sweating profusely and have pale and clammy skin.

Prybicien notes that if a child doesn't improve quickly, parents should seek medical help. Even after a young athlete is treated and feels better, he or she should sit out for a day or so before going back to the playing field.

- **Heat stroke** is the most serious heat illness, and is considered a medical emergency. It's a potentially fatal condition, so you should call 911 immediately if you even suspect heat stroke.

Here, the body temperature gets to a point where it can't regulate itself. It skyrocket's out of control and can top 104 degrees, causing brain and other major organ damage. So, in addition to all of the symptoms listed in the less severe heat illnesses, someone with heat stroke can also suffer from hallucinations, seizures, mental confusion, emotional instability and irrational behavior, as well as decreased heart, blood pressure and breathing rates. At this point, sweat stops being produced and the skin quickly turns red, hot and dry.

Heat stroke, however, is rare; most people are successfully treated for the milder forms of heat illness before things spiral out of control.

"I've never had to deal with heat stroke in my 19 years as an athletic trainer," says Prybicien, "because we've been able to watch for the signs of milder heat illness and take care of it before it ever gets that bad."

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drug. And make sure they stay away from caffeine (including caffeinated sodas), which can act as a diuretic, and contribute to dehydration.

Keeping hydrated

The main trick in summer, then, is to keep hydrated and cool and thus prevent heat illness. Even when not exercising, you should be drinking steadily throughout the day. Water is the drink of choice. When exercising, you should be drinking a cup or two of water an hour, advises Hersh. "On a hot day, you should think about doubling that."

Sports drinks and fruit juices are OK, too — as long as they are diluted with water to reduce the sugar content. These drinks may be more palatable to some kids who wouldn't otherwise drink enough water to keep hydrated, but they're not any better than water, at least in the short term. "No one develops any heat illness as a result of loss of electrolytes or minerals; that's more of a long-term phenomenon," says Hersh. "Those things are excreted in your sweat, but at any given day that's not going to put you in danger."

Besides making sure that your child stays hydrated during summer sports, they should apply lots of sun block (for preventing skin cancer), wear light colored clothing (which absorbs less heat than dark garments, and take frequent breaks in the shade.

Quick cool downs

A quick way to cool down is to apply cold, wet towels around the neck, under the armpits and in the groin, according to Prybicien. Those are the main pulse areas, he says, so the now cooler blood supply is quickly pumped throughout the body. Quicker still, of course, is dunking the child's whole body in cool water, he adds. But you don't always have that option out on the playing field. If a child's face is pale and they're looking shaky, a symptom of heat exhaustion, he suggests you elevate their legs to direct the blood back to their face.

Jane Martinez says that in retrospect she should have been more assertive when dealing with her sons coach that hot day last August. "I was
worried about Jimmy, but didn't realize the extent of the problem until after the game. So I didn't raise a stink. I just said, 'why don't you take Jimmy out?'

Which can be a tough thing to do with an authority figure. But you need to stick to your guns and support your kids, who are undoubtedly cowed by their coaches even more than you are. "I definitely think parents need to be vocal and voice their concerns," says Martinez, who adds that she's learned her lesson. "You have to go with your instincts, no matter what the coach says."

**Precautions**

Luckily, most high school athletic teams, which often require pre-season practices in the heat of late summer, are on top of safety issues. About 80 percent of our local high schools have athletic trainers on staff to oversee medical and safety concerns. And they all require secondary school athletes to have a careful pre-participation physical, which tries to identify any underlying cardiac or pulmonary issues. They also generally have worked out detailed emergency action plans with local EMS personnel so that everything goes smoothly and no time is wasted when there is an actual emergency.

"My school, Passaic High School, is an inner-city type of school with various fields and venue locations," says Prybicien, "so we have different EAPs (Emergency Action Plans) for each venue. Like if there's an emergency at the football stadium, the local EMS driver knows to go to the north entrance and that the back gate will be open when they get there. Things like that need to be worked out ahead of time.

"Even have an EAP for lightning, which is particularly important in late summer. So when a team comes to my school, we go over the EAP with that team and with the umpires. Everyone should know where to go if there's a lightning storm (into the closest building or the bus, or even nearby cars – whatever the plan says). You don't want everybody scrambling when a storm comes upon them."

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