

News

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****How to kill an athlete

DALLAS--The blazing, dog days of summer are almost here. As temperatures start to soar, one Dallas heat expert warns against the dangers of overexertion.

Athletes -- young and old -- can and should protect themselves from the effects of heatstroke, says Dr. James Knochel, professor and vice chairman of internal medicine at The University of Texas Southwestern Medical Center at Dallas and chief of medicine at the Dallas Veterans Administration Medical Center. "Left untreated, heatstroke is always fatal," Knochel told reporters at an American Heart Association science writers' forum held at UT Southwestern.

To stress his point, Knochel assembled some old coaches' tales that could, if followed, kill an athlete. Such methods were in practice 25 years ago, he says, and "although improvement has resulted from dedicated efforts to correct these illusions, it is evident that they persist, since deaths continue to occur."

Based on misconceptions, here are Knochel's suggestions on "how to kill an athlete":

Method 1 -- Schedule practice sessions between the hottest hours of the day, 2:30 to 6 each afternoon.

Method 2 -- Don't provide water during the practice sessions; if you do, make the water tepid. "Put it in an old milk can with a sweat sock containing oatmeal and salt. This will assure that no one will consume water even if it is available."

Method 3 -- Encourage ingestion of large quantities of sodium chloride tablets on the way to the practice field, even if water is not provided.

Method 4 -- Help overweight athletes lose weight more rapidly by giving them diuretics. Have them sweat it off by a sauna bath or take an extra 20 laps or so around the track while wearing a plastic suit.

Method 5 -- Make your players wear their entire football uniform, complete with helmet, throughout each practice session during the hot, humid days, so that they may be toughened up.

Method 6 -- Don't stop wind sprints at the end of each practice session until a sizable number of the players vomit, have muscle cramps, or collapse.

Method 7 -- Everyone can superachieve with amphetamines. If someone asks if your players use them for this purpose, offer a noncommittal expression. Look up, glance to the right, pucker your chin, extend your fingers, and hold your hands supine at the shoulder level.

Knochel is serious when he says that "intentional or even permissive dehydration is treacherous." Too often it leads to exertional heatstroke, caused by heat generated during muscle activity -- in other words, during exercise or work. The heat accumulates faster than the body can dissipate it. Exertional heatstroke can affect any person who overexerts himself. Another type, classic heatstroke, occurs with or without exertion and is usually caused by an inability of the circulatory system to respond to heat stress. The result is that not enough sweat is produced to cool the body.

The heart is the key to a person's ability to cope with heat, Knochel explains. "It must increase its output in order to pump the hot blood to the skin surface where the heat is then dissipated by sweating." If the heart is not able to respond properly or if the blood volume is low, as in dehydration, then the sweat mechanism will fail and the body temperature will rise.

A number of conditions make an individual more susceptible to heatstroke, including heart disease, obesity, the use of certain drugs, as well as alcoholism and diabetes (both of which can result in dehydration and malnutrition).

To keep the summer sun from taking its toll, Knochel advises priming young

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athletes with water before games and practices begin. Free and easy access to water is essential during strenuous outdoor activities, says Knochel.

"Athletes should guzzle water until they can't drink anymore, and that's still not enough," he says. "Not only should coaches and trainers provide the kids with water, they should make sure they drink it.

"Meanwhile, athletes should not be expected to do more than they are qualified to do."

Before working out in the sizzling heat, Knochel tells athletes to eat salty foods. "There is no need for salt pills," he says, "and besides, they usually make you nauseated. Instead, athletes should eat salty foods or sprinkle foods with extra amounts of salt when they eat." Along with the extra salt, Knochel tells athletes to drink enough water to exceed sweat loss or weight loss in practice.

Athletes can also mix up a "replacement solution" to drink over the course of one hour before charging out onto the field or track, says Knochel. To one quart of cold water or unsweetened Koolaid, add 1/3 teaspoon salt and 5 teaspoons sugar, he says.

As for dehydration, thirst is a lagging indicator that the body needs water, Knochel says. If you are taking in enough fluids, at least once during the day you should be able to produce virtually clear urine. The yellower it becomes, the more dehydrated you are.

Knochel says that acclimatization is important for athletes to work comfortably and safely in the summer heat. If you are not acclimatized, the fluid lost by sweating and shunting of blood to the skin lowers blood volume. If this becomes severe, blood flow to the brain falls and you may pass out.

The key to acclimatization is slowly and gradually to build up the tempo of the exercise from day to day. "At the end of two weeks athletes will be fully acclimatized, but that doesn't guarantee there'll be no trouble," Knochel says. "When there is the combination of high heat and high humidity, you just can't cool yourself."

Supervisors need to know the humidity levels of practice areas. "If you've watered the football field all night and then the sun hits it, the relative humidity there may be 100 percent while the weather bureau reports 25 percent. Humidity should be measured where you are working out."

Early symptoms of heat exhaustion are headache and nausea. These are followed by cramps, fatigue, malaise and mild confusion. Heat exhaustion can lead to heatstroke.

People in heatstroke are in comatose states; that is, they are unresponsive to any external stimulation. Sweating usually ceases, so their skin is dry, flushed and extremely hot to touch. Body temperature is usually more than 106 degrees. "If their temperature reaches 108 degrees, the heat starts altering proteins, which is what the whole body is made of," says Knochel. "What happens is that every tissue and organ -- including the brain -- gets cooked. At that temperature you are likely to have permanent brain damage."

First aid for heatstroke is to lower the body temperature as quickly as possible. "Your first inclination is to call an ambulance. But the victim could die before the ambulance gets there," says Knochel.

Get the victim out of the sun, remove his clothing and douse him with water. Use a piece of his clothing or whatever is available to fan him. The goal is to imitate the sweating mechanism. As sweat evaporates from the skin, it cools the body. This technique could save the victim's life before the ambulance arrives.

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Note: The University of Texas Southwestern Medical Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and Southwestern Allied Health Sciences School.