Coping With The Heat

As I sat, sweating, at my daughter's softball game the other day, I realized it was probably a good time to write about what problems can arise while in the heat.

As we exercise, our bodies produce heat from muscular activity. Environmental conditions also add to this heat load. Increased heat must be lost by the body to maintain a safe internal – or "core" – temperature.

Our bodies use several different means to dissipate heat while exercising, with the primary methods being radiation and evaporation of sweat. As the air temperature rises into the 90s, evaporation becomes the primary cooling mechanism. As sweat evaporates off our skin, it provides a cooling effect. Sweat production increases sharply along with body temperature, and it is an efficient way to cool our bodies. This system becomes less effective as humidity rises.

We also loose electrolytes in our sweat. Electrolytes are charged ions that help cells perform basic functions like muscle contraction and nerve transmission. The kidneys work to keep electrolyte levels constant in your body despite changing conditions.

As we lose fluids and electrolytes, the body can become dehydrated. Losing even 2% of body fluid can impair performance and lead to one of three levels of heat illness: heat cramps, heat exhaustion, and heat stroke.

Heat Cramps: This is the most common and least serious heat-related illness. The exact mechanism is unknown, but it is thought to be an electrolyte imbalance. Symptoms may include profuse sweating, and cramping in the abdominal muscles or extremities. Treatment includes resting in a cool place, restoring fluids, and gentle stretching. Do not use salt tablets as they are absorbed slowly, irritate the stomach, and do not replace fluids. If all symptoms resolve completely, you may return to activity, monitoring for any further symptoms. If left untreated it can lead to the next level of heat illness.

Heat Exhaustion: This is caused by excessive fluid or electrolyte loss. Symptoms may include weakness, dizziness, nausea/vomiting, headache, muscle aches, and fainting. Treatment includes reclining the victim in a cool environment, replenishing fluids/electrolytes, sponging with cool water, or placing ice packs at the groin and armpit regions. It is also important to monitor vital signs (breathing, pulse, blood pressure). If symptoms are not reversed or seem to worsen, follow up with medical attention. Again, this can lead to the next level of heat illness.

Heat Stroke: This is a true medical emergency. It offers when all of the body's cooling mechanisms have failed and core temperatures reaches 106 degrees or higher. Severe organ damage and death can result if left untreated. Signs of heat stroke can include all of the above along with altered mental status – including bizarre behavior, confusion, disorientation, hallucinations, and unconsciousness. Symptoms develop rapidly in about 80 percent of cases, sometimes including rapid pulse and lowered blood pressure.

Call 911, and try to cool the victim by sponging the body with cold water, or using icepacks as described above. He or she should recline with feet elevated. Provide fluids if conscious. Heat stroke patients need hospitalization to recover.

Here are some tips to beat the heat. If you have questions or signs of symptoms of heat illness, follow up with a doctor:

1) Allow for acclimation. Your body may need 7-10 days to get used to working out in the heat. Gradually increase your workout intensity.
2) Use sport drinks to hydrate when you can, especially if you are exercising in the heat on a regular basis. They replace the electrolytes you use, as well as providing carbohydrates which will help fuel your muscles for activities lasing over 1 hour.
3) Drink Up. Generally consume 16 ounces of liquid two to three hours before activity, and 8 oz after warm-up. Then ingest 8 oz every 10 to 15 minutes during exercise. Don't start your next workout already low on fluids. Drink 20-24 oz of fluids for every pound of body weight you lose through sweat.
4) Change out of wet clothing if you continue to exercise. Soggy clothing impedes evaporation.
5) Don't rely on thirst. It is not an accurate way to know if your body needs fluid.
6) Children and the elderly are more prone to heat illness. Monitor them closely and be more conservative in their care.
7) Drinking a lot of coffee and soda can dehydrate the body. Re-hydrate before beginning exercise. Remember not to use drinks with more that 8% carbohydrate (fruit juices, some energy drinks, soda)as this slows down the absorption of fluids.

(Michael Adesso is Director of Physical Therapy and Athletic Training at the University of Sports Medicine's Youngs Road office. E-mail: M_Adesso@hotmail.com)