

EXERCISE-RELATED HEAT EXHAUSTION

What is exercise-related heat exhaustion?

Exercise-related heat exhaustion is an illness caused by getting too hot when you exercise. During heat exhaustion, your body temperature rises above normal.

Your brain usually keeps your body temperature within a degree or two of 98.6°F (37°C). This temperature control is important because many processes in your body only work well within a certain range of temperatures.

Your body has several ways to lower your body temperature when it gets too high. Your body can cool itself by sweating. When sweat evaporates, it lowers your temperature. Your body can also lower the temperature by sending more blood to your skin and to your arms, legs, and head. This lets more heat can escape. If your body cannot get rid of the extra heat, your body temperature will rise. In heat exhaustion, your body temperature may rise to 101°F (38.3°C) to 104°F (40°C). This can make you feel weak and dizzy. Your heart may not be able to pump enough blood. This can make you collapse.

Heat exhaustion is less serious than heat stroke, another heat-related illness. But heat exhaustion can lead to heat stroke if it is not treated. In heat stroke, your body temperature rises even higher. This stops basic processes in your body. This can cause serious problems, including death.

Unfortunately, heat exhaustion is common. In the U.S., exercise-related heat exhaustion is a common problem in athletes, especially football players. It is also common in military recruits in basic training.

What causes exercise-related heat exhaustion?

Exercise-related heat exhaustion happens when your body can no longer get rid of the extra heat made during exercise, and your body temperature rises more than is healthy. Not drinking enough fluids during exercise can also cause dehydration. Together, these things can make you collapse.

Exercising outdoors on a hot day can cause heat exhaustion. But humidity also plays a large role. In high humidity, your body can't use sweat to cool itself. This robs your body of one of the most important ways of getting rid of extra heat.

Many other things can make it harder for your body to get rid of extra heat. These include:

- Being in poor physical shape
- Having an infection
- Being dehydrated
- Using alcohol before exercising
- Being obese
- Not being used to a hot environment
- Taking certain medicines such as stimulants, antihistamines, and medicines for epilepsy
- Having certain medical conditions, like sickle cell disease or conditions that decrease sweat
- Having a mental illness

Adults over the age of 65 and young children also have a higher risk for heat exhaustion and other heat-related illnesses. This is because their bodies cannot cool down as easily as those of older children and younger adults.

What are the symptoms of heat exhaustion?

The main symptom of heat exhaustion is a body temperature of 101°F (38.3°C) to 104°F (40°C). Some symptoms may be warning signs that heat exhaustion is about to happen. Symptoms may vary depending on how serious the heat exhaustion is. Signs and symptoms may include:

- Rapid heartbeat
- Fast breathing
- Heavy sweating
- Dizziness
- Fainting
- Nausea, vomiting, or diarrhea
- Headache
- Weakness
- Muscle cramps
- Mild, temporary confusion
- Low blood pressure
- Dehydration
- Problems coordinating movement

Unlike heat stroke, heat exhaustion does not cause significant brain or thinking problems, such as delirium, agitation, unconsciousness, or coma.

How is heat exhaustion diagnosed?

Your health care provider will ask you about your health history. This includes your recent symptoms and your past health conditions. You will also need a medical exam. This exam may give your provider other clues about whether you have heat exhaustion. In some cases, the provider might need to rule out other causes of high temperature, like an infection or a response to a medicine.

Heat exhaustion does not cause health complications, like damage to organs or brain or thinking problems. If you have these problems, you may have another heat-related illness like heat stroke. In some cases, your provider may run tests to check for these complications. These tests might include:

- Blood tests to look at electrolytes and check for infection
- Drug panels to check for a medicine-related cause of high temperature
- Blood and urine tests to see how well your kidneys and liver are working
- Chest X-ray to check your lungs
- Electrocardiogram (EKG) to check your heart rhythm

A health care provider trained in emergency care usually diagnoses heat exhaustion. This might take place on the athletic field or at a hospital.

How is heat exhaustion treated?

You may be first treated at the place where you collapsed. This might be an athletic field or some other place that is not a medical facility like a hospital. These are common ways of treating heat exhaustion:

- Stopping the activity and moving to a cooler area
- Raising your legs to a level above your head
- Taking off any extra clothing and equipment
- Cooling you until your rectal temperature is down to 101°F (38.3°C). Oral thermometers and other ways to measure temperature are not accurate. If it is not possible to take a rectal temperature, you should be cooled until you shiver. This might include putting you in cold water, spraying you with water, or putting a fan on you.
- Giving you water or a sports drink if you can drink, are not confused, and are not nauseated. If you are being treated at a hospital, the staff may give you intravenous fluids.
- Monitoring your heart rate, blood pressure, breathing rate, and mental status.

Many people will get better within an hour or two of treatment. If you do not get better quickly, someone should take you to the emergency room. There you will be checked for more serious problems.

What are the complications of heat exhaustion?

On its own, heat exhaustion does not usually cause complications. If you have severe dehydration along with heat exhaustion, you may have problems like kidney damage or low blood pressure.

If not treated, heat exhaustion can progress to heat stroke. Heat stroke is a condition in which your body temperature rises even higher. This can lead to serious problems such as:

- Lung problems such as pulmonary edema or acute respiratory distress syndrome
- Heart injury and heart failure
- Seizures
- Muscle breakdown
- Kidney injury
- Liver injury
- Blood clotting problems

What can I do to prevent heat exhaustion?

You can take steps to help prevent heat exhaustion:

- If you exercise in hot, humid environments, take breaks often.
- Get plenty of fluids while you exercise.
- Wear lightweight, loose clothing.
- Stop exercising or get yourself out of the hot environment at the first warning signs of heat-related illness.

When should I call the doctor?

Seek medical attention immediately if you have more serious symptoms from a heat-related illness, like a seizure or delirium.

Someone should get medical help for you right away if you have a rectal temperature higher than 104°F. The person should keep trying to cool you until medical help gets there.