

# Heat Illness

Performing physical tasks—such as hiking up hills—can increase your body temperature to near-critical levels. Think about taking a break after this type of activity to try and get your core temperature down. The ability to balance heat is different between individuals, and varies on a daily basis. Each case is unique. Only the individual truly knows if they are OK. The [Heat Stress Study RLS](#) released on the Wildfire Lessons Learned site on July 8, 2015, discusses heat and wildland firefighter exertion. Portions of information from this RLS are incorporated into this discussion.

Heat exhaustion is mild to moderate symptoms of heat illness and heat stroke is severe symptoms of heat illness. The line between heat exhaustion and heat stroke can be very fine. A person can rapidly progress from heat exhaustion to heat stroke or it may take days of poor recovery to get to heat stroke. Heat exhaustion is cramping, nausea, thirst, headache, swelling of hands and feet, itchy red rash, progressing to more concerning symptoms of vomiting, worsening headache and dizziness, lightheadedness, body temperature elevated but less than 102° F, rapid heartbeat, increased sweating, but normal mental status. Exertional heat stroke is body temperature above 104° F, altered mental status or unconsciousness, seizures, rapid heartbeat, abnormal breathing, low blood pressure, more likely sweating but may have dry skin, and cardiac arrest.

HEAT EXHAUSTION	EXERTIONAL HEAT STROKE
Normal to elevated body temp <102°F	Body temperature >/= 104°F
NORMAL MENTAL STATUS	ALTERED MENTAL STATUS or unconscious
Sweating	Likely sweating but may have dry skin
Muscle cramping	Seizures
Nausea/Vomiting	Rapid heartbeat
Thirst	Abnormal breathing
Headache/Dizziness	Low blood pressure
Swollen hands and feet	Cardiac Arrest
Itchy red rash	
Lightheaded	
Rapid heartbeat	

Prevention of heat illness involves several aspects. **Hydration alone will not prevent a heat-related injury.**

- Aerobic fitness is important. The more aerobically fit you are the better heat tolerance you tend to have, but adequate recovery from high-heat producing physical tasks is important as well.
- Personal health is important. Illness or chronic medical conditions can put you at increased risk of heat illness. Fatigue can decrease your body's ability to respond to heat. Good hydration before and during the exertion is important to prevent dehydration which leads into heat illness.

- Medications can put you at increased risk for heat illness, even over-the-counter ones. Some medications can interfere with the heart response to heat or can alter your heat tolerance.
- The after effects of overindulgence in alcohol and use of illegal drugs can last over 24 hours, so what you do on your days off may affect you the day you return to work. Alcohol and illegal drugs can elevate your heart rate and blood pressure and decrease your heat tolerance. Alcohol is also a diuretic causing your body to lose more fluids than you think. This is the same for legal stimulants, energy drinks, herbal supplements, No-Doz, etc.
- Prior heat illness puts you at increased risk for repeat heat illness.
- Personal history of Sickle Cell Trait or Disease puts a person at increased risk of serious injury or death from heat illness.

### Self-Assessment

- Am I hydrated?
  - Have I been drinking non-caffeinated fluids the day before exertion to stay hydrated?
  - Did I party a little too hard last evening? Do I feel hung over, even the slightest?
  - During exertion, drink at least 1 liter of fluid, water or Gatorade/electrolyte solution, per hour
    - $\frac{1}{3}$  to  $\frac{1}{2}$  of your daily fluid intake for moderate to arduous exertion should be an electrolyte solution of some type and the rest water
- Am I feeling well?
  - Any stomach issues?
    - Nausea, vomiting, diarrhea
  - Any headache?
    - Pain, pressure, lightheaded, dizzy
  - Any muscle pain or cramps beyond what I would normally have?
  - Any cold symptoms (not known allergy symptoms)?
    - Stuffy nose, sore throat, cough, fever
  - Am I taking any medications (including over-the-counter) or herbal remedies that may have unknown side effects with the heat?
- Am I rested?
  - Have I been sleeping well and getting enough sleep?
- Do I have a history of a prior moderate to severe heat illness – moderate to severe heat exhaustion or heat stroke?
  - A history of prior heat illness puts you at increased risk for repeat heat illness
  - Have I made a full recovery from that episode – NO symptoms for at least 24 hours with exertion and/or heat exposure for heat exhaustion; medically cleared by medical provider AND no symptoms with heat exposure and exertion for heat stroke