

The Heat Index: Ambient temperature is not the only factor that plays a role in creating the potential for heat injuries, humidity is also important. Since our bodies rely on the evaporation of sweat as a major method of cooling, high humidity reduces our ability to cool the body, increasing the risk of heat illnesses. The Heat Index shows the relative effects of temperature and humidity.

		The Heat Index										
		Environmental Temperature F° (C°)				Apparent Temperature F° (C°)						
		70° (21)	75° (24)	80° (27)	85° (29)	90° (32)	95° (35)	100° (38)	105° (41)	110° (43)	115° (46)	120° (49)
Relative Humidity												
0%		64°(18)	69°(20)	73°(23)	78°(26)	83°(28)	87°(31)	91°(33)	95°(35)	99°(37)	103°(39)	107°(42)
10%		65°(18)	70°(21)	75°(24)	80°(27)	85°(29)	90°(33)	95°(36)	100°(38)	105°(41)	111°(44)	116°(47)
20%		66°(19)	72°(22)	77°(25)	82°(28)	87°(30)	93°(33)	99°(37)	105°(41)	112°(44)	120°(49)	130°(54)
30%		67°(19)	73°(23)	78°(26)	84°(29)	90°(33)	96°(36)	104°(40)	113°(45)	123°(51)	135°(57)	148°(64)
40%		68°(20)	74°(23)	79°(26)	86°(30)	93°(34)	101°(38)	110°(43)	123°(56)	137°(58)	151°(66)	
50%		69°(20)	75°(24)	81°(27)	88°(31)	96°(36)	107°(42)	120°(49)	135°(57)	150°(66)		
60%		70°(21)	76°(24)	82°(28)	90°(33)	100°(38)	114°(46)	132°(66)	149°(65)			
70%		70°(21)	77°(25)	85°(29)	93°(34)	106°(41)	124°(51)	144°(62)				
80%		71°(22)	78°(26)	86°(30)	97°(36)	113°(45)	136°(58)					
90%		71°(22)	79°(26)	88°(31)	102°(39)	122°(50)						
100%		72°(22)	80°(27)	91°(33)	108°(42)							

Apparent Temperature	Heat-stress risk with physical activity and/or prolonged exposure.
80°-89° (27-31)	Fatigue possible with prolonged exposure and/or physical activity.
90°-104° (32-40)	Heat cramps or Heat Exhaustion possible with prolonged exposure and/or physical activity.
105°-130° (31-54)	Heat cramps or Heat Exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity. No more than 5 min work - work/rest: 5/20 min (with shade: 5/5)
130° and up (54 and up)	Heat Stroke very likely. No work Caution: This chart provides guidelines for assessing the potential severity of heat stress. Individual reactions to heat will vary. Heat illnesses can occur at lower temperature than indicated on this chart. Exposure to full sunshine can increase values up to 15° F. Source: National Weather Service

HIP Pocket Guide (Heat Injury Prevention Guide)

- Hazards
- Individual Risk Factors
- Fluid Replacement and Work/Rest Guide
- Heat Injury Controls
- Warning Signs and Symptoms of Heat Stress and Illness
- Hazards:
 - High heat category - measure Apparent Temperature over 90°F.
 - Exertional level of activities, especially on several sequential days.
 - Acclimatization (and other individual risk factors - See reverse side).
 - Time (length of heat exposure, especially sequential days, and recovery time allowed).

High Risk for Heat Illness:

- Not acclimatized to heat (need 10-14 days to get adequately acclimated).
- Exposure to cumulative days (2-3 days) of any of the following:
 - Increased heat exposure
 - Increased exertion level
 - Lack of quality sleep
 - Poor fitness (Run 2 miles > 16 minutes).
 - Overweight.
 - Minor illness (cold symptoms, sore throat, low grade fever, nausea, vomiting).
 - Taking medications (either prescribed or over counter)/supplements/dietary aids.
 - Use of Alcohol in the last 24 hours.
 - Prior history or heat illness (any heat stroke, or > 2 episodes of heat exhaustion).
 - Skin disorders such as heat rash and sunburn which prevent effective sweating.
 - Age >40 years.

* from: AMERICAN ACADEMY OF PEDIATRICS: Climatic Heat Stress and the Exercising Child and Adolescent

- The rules for minimizing the heat effects are simple
- Monitor forecasts and advisories for periods of high heat indices.
 - Take frequent breaks in the shade.
 - Avoid prolonged exertion.
 - Drink water often - and drink more than you think you need.

CAUTION: Hourly fluid intake for adults should not exceed 1½ quarts. Daily fluid intake should not exceed 12 quarts. Less for children. Make sure everyone eats regularly.

In warm months, hikers in Arizona should carry and drink about a gallon (4 liters) of water per day. Watch your "ins and outs". Drink enough so that urine frequency, clarity, and volume are normal. You are not drinking enough water if your urine is dark, small in quantity, or non-existent. Eating will help you replace the electrolytes (salts) that you are sweating. During the summer months, your fluid/electrolyte loss can exceed two quarts per hour. Do not wait until you start feeling thirsty to start replacing lost fluid. By the time you are thirsty, you are already dehydrated! Your body can absorb only about one quart of fluid per hour. Drink one-half to one full quart of water or sports drink each and every hour you are hiking in the heat. (National Park Service, Grand Canyon)

- Exercising children are able to dissipate heat effectively in a neutral or mildly warm climate. However, when air temperature exceeds 35°C (95°F), they have a lower exercise tolerance than do adults. The higher the air temperature, the greater the effect on the child. It is important to emphasize that humidity is a major component of heat stress, sometimes even more important than air temperature.*
- Children frequently do not feel the need to drink enough to replenish fluid loss during prolonged exercise. This may lead to severe dehydration. If they feel thirsty, they are already dehydrated.*
- Before prolonged physical activity, the child should be well-hydrated. During the activity, periodic drinking should be enforced (e.g., each 20 minutes 150 mL [5 oz] of cold tap water or a flavored salted beverage for a child weighing 40 kg (88 lbs) and 250 mL [9 oz] for an adolescent weighing 60 kg (132 lbs)), even if the child does not feel thirsty.*
- Encourage frequent drinking, but not to exceed 1½ quarts per hour or 12 quarts per day for an adult. The 88 lb child in the above example is drinking about ½ quart per hour.
- Make water more palatable, if possible, by cooling or flavoring.*
- On hot days, rest in shade every at least every 15 minutes. On very hot days, after 5 min of work/walking.
- All events should incorporate good prior planning.
- Do not allow Scouts to empty canteens to lighten load.
- Ensure Scouts are well hydrated before activity. Ask about urine; urine is clear if well hydrated.
- Ensure all meals are eaten during the meal break.
- Ensure adequate time to eat and drink meals.
- Table salt may be added to food when the heat category is high. Salt tablets are not recommended.
- Spot checks for water consumption by senior youth and adult leaders.
- Prior to any activity in hot weather, all participants should consume ½ quart of water 2 hours prior to the activity to ensure hydration.
- Enforce buddy checks — need to be aware of each other's eating, drinking and frequency of urination.
- Plan placement of leaders to observe and react to heat injuries in dispersed events.
- On hot sunny days, cover exposed skin and head. Clothing should be light-colored and lightweight absorbent material to facilitate evaporation of sweat. Sweat-saturated garments should be replaced by dry garments.* A loose lightweight white floppy material over the wicking material will help to keep it cool however tight layers will retain heat.
- Watch the local animals. If they are not out, neither should you be.

Warning Signs and Symptoms of Heat Stress and Illness

With any of the below symptoms or signs, immediately call for medical assistance.

Indications of Possible Heat Casualty

MORE COMMON SIGNS/SYMPTOMS

- Dizziness
- Headache
- Nausea
- Unsteady walk
- Weakness or fatigue
- Muscle cramps

SERIOUS SIGNS/SYMPTOMS

- Hot body, high temperature
- Confusion, agitation (Mental Status Assessment)
- Vomiting
- Involuntary bowel movement
- Convulsions
- Weak or rapid pulse
- Unresponsiveness, coma

IMMEDIATE ACTIONS

- Allow to rest in shade
- Loosen clothing
- Take sips of water

Immediately call for medical assistance while doing the following:

- Lay person down in shade with feet elevated until Medevac or ambulance arrives
- Undress as much as possible
- Aggressively apply ice packs or ice sheets
- Pour cold water over person and fan
- Give sips of water while awaiting ambulance (if conscious)
- Monitor airway and breathing until ambulance or Medevac arrive

Mental Status Assessment

An important sign of a serious life-threatening condition is the presence of mental confusion (with or without increased temperature).

Anyone can do a mental status assessment asking some simple questions.

Call 911 if any of the following exist:

- **What is your name?** (Does not know their name.)
- **What month is it? What year is it?** (Does not know the month or year.)
- **Where are we/you?** (Does not know where they are.)
- **What were you doing before you became ill?** (Does not know the events that led to the present situation.)

Indications of Possible Water Intoxication (Over Hydration)

Signs and Symptoms: Confusion, Weakness, and Vomiting

What to do:

Ask these questions to the they or buddy:

- Has they been eating?
- Have they been drinking a lot? (suspect water intoxication if they have been drinking constantly)
- How often have they urinated? (frequent urination seen with water intoxication; infrequent urination with heat illness)
- What color is urine (clear urine may indicate over hydration)

if they have been eating, drinking and urinating a lot, yet have these symptoms, immediately call 911

Information on this page from: U.S. Army Center for Health Promotion and Preventive Medicine