

# Heat-Related Safety Issues for Baseball and Softball

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## Heat-Related Illnesses: Definitions and Overview

### I. Heat stroke

A. Heat stroke is the most serious heat-related illness. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. Heat stroke can cause death or permanent disability if emergency treatment is not given.

### B. Symptoms include:

- Confusion, altered mental status, slurred speech
- Loss of consciousness (coma)
- Hot, dry skin or profuse sweating
- Seizures
- Very high body temperature
- Fatal if treatment delayed

### C. First aid

1. Call 911 for emergency medical care.
2. Stay with the affected person until emergency medical services arrive.
3. Move the affected person to a shaded, cool area and remove outer clothing.
4. Cool the affected person quickly with a cold water or ice bath if possible; wet the skin, place cold wet cloths on skin, or soak clothing with cool water.
5. Circulate the air around the affected person to speed cooling.
6. Place cold wet cloths or ice on head, neck, armpits, and groin; or soak the clothing with cool water.

D. Source: [https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat Stroke](https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat_Stroke)

II. Heat exhaustion

A. Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating.

B. Symptoms include:

- Headache
- Nausea
- Dizziness
- Weakness
- Irritability
- Thirst
- Heavy sweating
- Elevated body temperature
- Decreased urine output

C. First aid:

1. Take the affected person to a clinic or emergency room for medical evaluation and treatment.
2. If medical care is unavailable, call 911.
3. Someone should stay with the affected person until help arrives.
4. Remove the affected person from hot area and give liquids to drink.
5. Remove unnecessary clothing, including shoes and socks.
6. Cool the affected person with cold compresses or have the affected person wash head, face, and neck with cold water.
7. Encourage frequent sips of cool water.

D. Source: [https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat Exhaustion](https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat_Exhaustion)

### III. Heat cramps

- A. Heat cramps usually affect peoples who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.
- B. Symptoms include muscle cramps, pain, or spasms in the abdomen, arms, or legs.
- C. First aid:
  - 1. Drink water and have a snack and/or carbohydrate-electrolyte replacement liquid (e.g., sports drinks) every 15 to 20 minutes.
  - 2. Avoid salt tablets.
  - 3. Get medical help if the person has heart problems, is on a low sodium diet, or if cramps do not subside within 1 hour.
- D. Source: <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat Cramps>

### IV. Heat syncope

- A. Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.
- B. Symptoms include:
  - Fainting (short duration)
  - Dizziness
  - Light-headedness during prolonged standing or suddenly rising from a sitting or lying position
- C. First aid:
  - Sit or lie down in a cool place.
  - Slowly drink water, clear juice, or a sports drink.
- D. Source: <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html# Heat Syncope>

V. Dilutional Hyponatremia (*aka* Water Intoxication)

A. Dilutional hyponatremia occurs when the blood sodium level falls too low to maintain normal body function. This is usually the result of drinking more than enough water while failing to eat.

B. Symptoms include:

- Headache
- Weakness
- Fatigue
- Lightheadedness
- Muscle cramps
- Nausea, with or without vomiting
- Sweaty skin
- Core temperature is normal.
- More severe signs of include a patient who is disoriented, irritable, and combative.

C. First aid:

1. Patients with mild to moderate symptoms and a normal mental state should rest in the shade without beverages (including sports electrolyte drinks) and gradually intake salty foods while the kidneys reestablish a sodium balance. Once a patient develops hunger and thirst combined with normal urine output, the problem is solved.
2. Patients with an altered mental state require rapid evacuation to a medical facility.

D. Source: <https://filestore.scouting.org/filestore/pdf/680-008.pdf> (BSA Wilderness First Aid Curriculum and Doctrine Guidelines 2017 EDITION, pages 31-32)

## VI. Rhabdomyolysis

- A. Rhabdomyolysis is a medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream that can cause irregular heart rhythms and seizures, and damage the kidneys.
- B. Symptoms include:
- Muscle cramps/pain
  - Abnormally dark (tea or cola colored) urine
  - Weakness
  - Exercise intolerance
  - Asymptomatic
- C. First aid:
1. Stop activity.
  2. Increase oral hydration (water preferred).
  3. Seek immediate care at the nearest medical facility.
  4. Ask to be checked for rhabdomyolysis (i.e., blood sample analyzed for creatine kinase).
- D. Source: <https://www.cdc.gov/niosh/topics/heatstress/heatreillness.html#rhabdo>

## VII. Heat rash

- A. Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.
- B. Symptoms include:
- Red cluster of pimples or small blisters
  - Usually appears on the neck, upper chest, groin, under the breasts, and in elbow creases

C. First aid:

- When possible, a cooler, less humid work environment is best treatment.
- Keep rash area dry.
- Powder may be applied to increase comfort.
- Ointments and creams should not be used.

D. Source: [https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html#\\_Heat\\_Rash](https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html#_Heat_Rash)

## General Preventative Methods

- I. Hydration
  - A. Ensure that water is available **and** that the kids have the opportunity to drink it.
    1. Kids might show up dehydrated. Encourage hydration before workouts in addition to during and after.
    2. Thirst is powerful, but people can ignore it. Educate the kids on the importance of drinking water before they get dehydrated.
    3. Water is the best hydrating agent and should be the one offered on a routine basis. Avoid sports drinks, as they contain sugar which is not necessary for hydration.
  - B. Over-hydration can result in dilutional hyponatremia, a serious medical condition. While this is rare, avoid forcing kids to drink if they insist that they are not thirsty (adult judgement required) and “urine must be colorless” imperatives.
  - C. These guidelines apply to coaches, parents, and umpires, too.
- II. As the Heat Index Increases, stay cool, avoid the sun and unnecessary exertion
  - A. If the kids are not working out, have them resting in the shade.
  - B. Reduce the intensity of the workouts depending on the weather conditions and acclimatization levels of the kids.
  - C. Encourage the use of sunblock and hats.
  - D. Allow the players to sit in the shade if the dugout is not covered.
  - E. Preemptively use cooling towels. Cooling towels are most effective when applied to the neck and the inside of the forearms.
  - F. Rotate positions, especially catchers and pitchers
  - G. Avoid having the catchers in gear when not necessary.
- III. Monitor the kids (and coaches, parents, umpires) for potential problems:
  - A. Frequently ask how they are feeling, especially catchers.
  - B. Look for poor play, lethargy, dizziness, confusion.

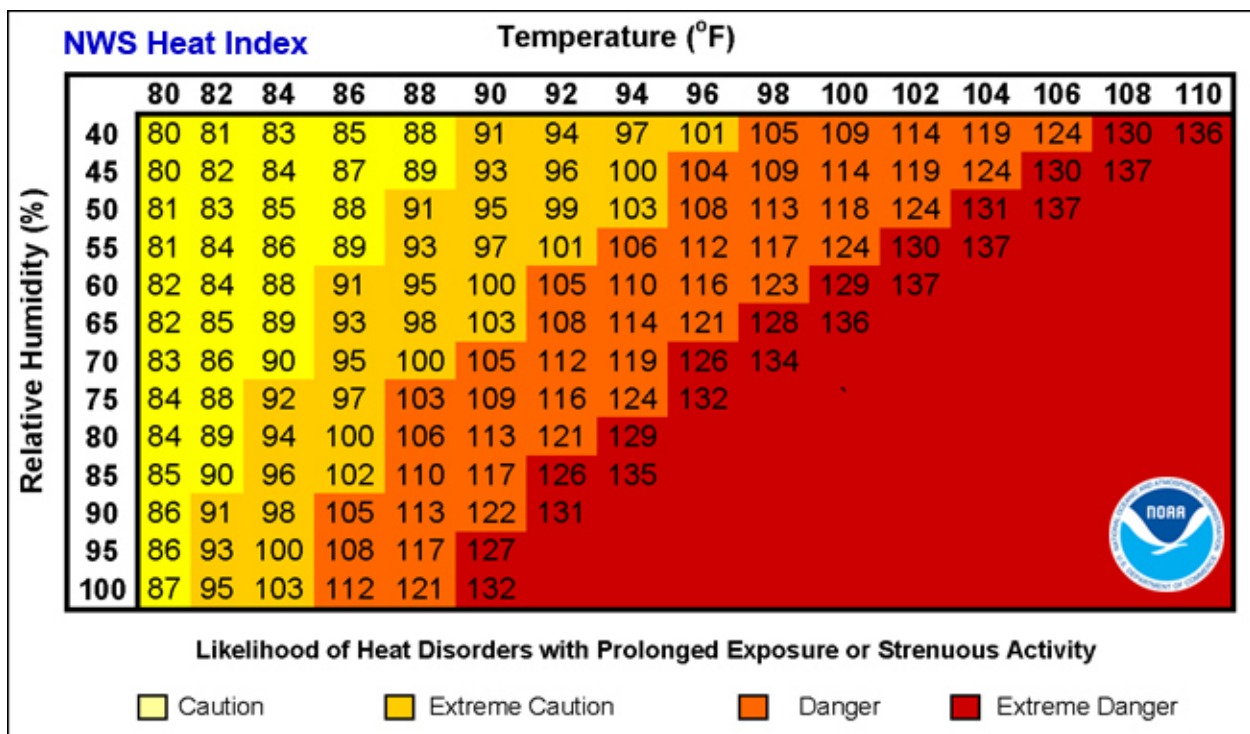
IV. Links:

- A. <https://www.nays.org/blog/the-drinking-problem-in-youth-sports/>
- B. <https://www.nays.org/blog/behind-in-the-game-of-hydration1/>
- C. <https://www.nays.org/sklive/for-parents/defeating-dehydration/>
- D. <https://www.cnn.com/2018/08/07/health/young-athletes-football-overhydration-partner/index.html>
- E. <https://www.nays.org/blog/rethink-your-drink-why-sports-drinks-shouldn-t-be-offered-to-young-athletes/>
- F. <https://www.nays.org/sklive/sure-shots/danger-rising-temperatures-mean-increased-risk-for-young-athletes/>



# Heat Index

The National Weather Service created the heat index, which is a measure of how hot it feels when the relative humidity is factored in with the actual air temperature. It is readily available from the National Weather Service and is easy to calculate from the chart below if the temperature and relative humidity are known. The heat index can inform what precautions are needed for a particular day. However, it does not factor in wind, sun angle, cloud cover, or other extenuating circumstances. Coaches should use their best judgement if they feel that more aggressive measures are warranted.



NWS Heat Index: <https://www.weather.gov/safety/heat-index>

## **Mobile App's and Websites**

### **First Aid: American Red Cross**

- Information on giving first aid, including for heat-related illnesses.
- <https://itunes.apple.com/us/app/first-aid-american-red-cross/id529160691?mt=8>
- <https://play.google.com/store/apps/details?id=com.cube.arc.fa&hl=en>

### **The National Weather Service**

- This is the official website of the National Weather Service. It weather forecasts and heat index information.
- <https://www.weather.gov>

### **NFHS Heat Illness Prevention Coarse**

- Free online-coarse
- <https://nfhslearn.com/courses/61140/heat-illness-prevention>

## Guidelines for Games and Practices

- I. Coaches should check the Heat Index forecast before the game or practice.
- II. Water should be available to players at all times. The players are responsible for bringing their own water. However, the coaches should have water on-hand for emergencies. Water is available at Binny's for purchase using a league-provided gift card when the Heat Index is "Caution" or greater.
- III. Ice should be available when the Heat Index is expected to be greater than 85 °F. Ice is available at Binny's for purchase using a league-provided gift card when the Heat Index is "Caution" or greater.
- IV. Heat Index Suggested Guidelines:
  - A. **Caution** (Heat Index between 80 and 90 °F)
    1. Coaches should follow the suggestions described in the General Preventive Methods section.
    2. Pitchers should pitch no more than two consecutive innings.
    3. Catchers should catch no more than two consecutive innings.
    4. Water breaks after no more than 20 minutes in the field.
  - B. **Extreme Caution** (Heat Index between 91 and 103 °F)
    1. All of the recommendations for Caution
    2. Pitchers should pitch no consecutive innings.
    3. Catchers should catch no consecutive innings.
    4. Water breaks after no more than 15 minutes in the field.
  - C. **Danger** (Heat Index greater than 104 °F)
    1. All of the above recommendations for Caution and Extreme Caution
    2. Consider rescheduling the game or practice.
- V. In the case of an incident, coaches should follow the guidance provided by the CDC website. To summarize:
  - A. If in doubt, call 911.
  - B. In all cases:
    1. Move the person to shade.
    2. Cool them with water, ice, and / or cooling towels.
  - C. If conscious, give water, but NEVER GIVE LIQUIDS TO AN UNCONSCIOUS PERSON.
  - D. Call 911 for suspected heat stroke.
  - E. Persons with suspected heat exhaustion, rhabdomyolysis, persistent heat cramps (ie greater than one hour) or hyponatremia should seek medical evaluation.
  - F. Persons with heat syncope, heat cramps, or simple dehydration should hydrate and cool.