Environmental Conditions Guidelines

Heat and Hydration

Definition: Heat illness is inherent to physical activity and its incidence increases with rising ambient temperature and relative humidity. Athletes who begin training in the late summer, experience exertional heat-related illnesses more often than athletes who begin training during the winter and spring. Traditional classification of heat illness defines three categories: heat cramps, heat exhaustion, and heat stroke. Heat illness is more likely in hot, humid weather, but can occur in the absence of hot humid conditions.

Heat Cramps

Painful spasms usually in the muscles of legs and abdomen, usually accompanied by heavy sweating.

First aid: Firm pressure on cramping muscles or gentle massage to relieve spasms. Give sips of water. If nausea occurs, discontinue water.

Heat Exhaustion

Symptoms range in severity from mild heat cramps to heat exhaustion to potentially life-threatening heatstroke. Heat exhaustion can begin suddenly, usually after working or playing in the heat, perspiring heavily or being dehydrated.

Signs and Symptoms:

- Muscle cramps
- Nausea/vomiting
- Headache
- Dizziness
- Fatigue
- Blurred vision
- Heavy sweating usually with cool and clammy skin

First aid: Untreated heat exhaustion can lead to heat stroke which is a life-threatening condition. If you suspect heat exhaustion, take these steps immediately.

- Move the person out of the heat and into a shady or air-conditioned place.
- Lay the person down and elevate the legs and feet slightly.
- Remove tight or heavy clothing.
- Have the person sip cool water or other nonalcoholic beverage without caffeine if they are not vomiting and they are fully conscious.
• Cool the person by spraying or sponging with cool water and fanning.
• Monitor the person carefully.
• Call 911 if the person’s condition deteriorates, especially if he or she experiences: fainting, confusion, seizures, uncontrolled vomiting or a fever of 104°F (40°C) or greater

**Heat Stroke**

*Is the most serious heat related illness and is a severe medical emergency.* The body becomes unable to control its temperature.

**Signs and Symptoms:**

- High body temperature: A body temperature of 104°F (40°C) or higher
- Altered mental state or behavior: Confusion, agitation, slurried speech, irritability, or delirium,
- May lose consciousness
- Alteration in sweating: skin will feel hot and dry to the touch.
- Nausea and vomiting
- Hot Red Skin
- Rapid heart rate
- Headache

**First Aid: CALL 911 IMMEDIATELY**

- Move the person out of the heat and into a shady or air-conditioned place.
- Lay the person down and elevate the legs and feet slightly.
- Remove tight or heavy clothing.
- Try to rapidly cool the person (put in a cool tub of water or a cool shower, spray with a garden hose, sponge with cool water, fan while misting with cool water or place ice packs or cold, wet towels on the person’s head, neck, armpits and groin)
- Do not give fluids

**Prevention of Heat Illness**

**Staying Cool on Warmer Days**

- Warm up in the shade
- Increase the rest times between exercises
- Schedule water and cool down breaks in the shade if possible
  - Drinks (Water and sport drinks)
  - Wet towels kept in iced water
  - Ice bath after practice
  - Fans
- Wear light colored, moisture wicking, loose fitted clothing
  - The less the gear the better
- Avoid workouts during the hottest times of the day
- Progress exercise time and intensity slowly throughout a warmer week. Get the body slowly used to the heat
  - Example: Start with an easy 30-minute workout and each day slowly increase the length of the workout and intensity
- Wear sunscreen
• Avoid hot and heavy meals before working out, they add heat to your body

**Hydration**

*Drinking enough fluids is one of the most important things you can do to prevent heat illness*

- Drink 20 oz of water 2-3 hours before you workout
- Drink 8 oz of water for every 15 minutes of exercise
- Drink sport drinks when possible
- Have adequate nutrition
  - Eating a balanced diet to fuel the body that contains proportions of carbohydrates, fats, and proteins
- Monitor weight loss
- Stay away from sugary and alcoholic drinks
  - These can cause you to become dehydrated more quickly
- Monitor the color of your pee (see chart below)

### URINE COLOR

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
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<tr>
<td><em>Very Good</em></td>
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<td><em>Good</em></td>
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<td><em>Fair</em></td>
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<td><em>Light Dehydrated</em></td>
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<tr>
<td><em>Dehydrated</em></td>
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<tr>
<td><em>Very Dehydrated</em></td>
<td></td>
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<tr>
<td><em>Severe Dehydrated</em></td>
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</table>

**Heat Index**

- The heat index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature
- If the heat index (shown below) is in the yellow, practice should not exceed 2 hours and there should be mandatory water breaks every 20 minutes
- If the heat index (shown below) is in the orange or red student athletes shall not participate in outdoor activities.
• In order to utilize the heat index utilize www.weather.gov/ or download the weather app

<table>
<thead>
<tr>
<th>Relative Humidity (%)</th>
<th>Temperature (°F)</th>
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<tbody>
<tr>
<td>80</td>
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<tr>
<td>100</td>
<td>97</td>
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</tbody>
</table>

**Air Quality**

**Definition:** The Air Quality Index (AQI) is an index for reporting daily air quality. The AQI focuses on potential health effects experienced from exposure to breathing polluted air. AQI accounts for five major air pollutants: ground-level ozone, particle pollution (also known as particulate matter, including PM2.5 and PM10), carbon monoxide, sulfur dioxide, and nitrogen dioxide. The AQI air

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pollution ranges from 0 to 500. The higher the AQI value, the greater the level of air pollution, and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 200 represents very unhealthy air quality.

**Air Quality Monitoring**

All club members are responsible for monitoring air quality/projected air quality and proceeding according to the information outlined below.

- Monitor using these links
  - www.sparetheair.com
  - www.purpleair.com (we have purple air sensors on campus)
  - www.airnow.gov
  - www.noaa.gov
  - www.weather.com

- The following table will be used to determine activity restrictions
  - Level of 151 (or higher), all outdoor activities must be moved indoors, postponed or cancelled
  - Please ensure you are routinely checking the AQI before outdoor participation so that way you can be proactive and proceed accordingly

<table>
<thead>
<tr>
<th>Air Quality Index (AQI)</th>
<th>Color</th>
<th>Description</th>
<th>Practice/Competition Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50</td>
<td>Green</td>
<td>Good</td>
<td>Air quality is satisfactory and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>51-100</td>
<td>Yellow</td>
<td>Moderate</td>
<td>Student-athletes with unusual severe respiratory illnesses shall not participate in outside activity.</td>
</tr>
<tr>
<td>101-150</td>
<td>Orange</td>
<td>Unhealthy for sensitive groups</td>
<td>Those student-athletes with respiratory illnesses shall reduce prolonged or heavy outdoor exertion. All other student-athletes shall monitor themselves closely for distress.</td>
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<tr>
<td>150-200</td>
<td>Red</td>
<td>Unhealthy</td>
<td>ALL student-athletes shall not participate in outside activities</td>
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<tr>
<td>201-300</td>
<td>Purple</td>
<td>Very Unhealthy</td>
<td>ALL student-athletes shall not participate in outside activities</td>
</tr>
<tr>
<td>&gt;300</td>
<td>Maroon</td>
<td>Hazardous</td>
<td>ALL student-athletes shall not participate in outside activities</td>
</tr>
</tbody>
</table>

**Cold**

**Definition:** The Windchill Temperature Index is a “measure of the combined cooling effect of wind and temperature.” When the wind picks up speed, it draws more heat away, so if your skin is exposed to the wind, your body will cool more quickly than it would have on a still day. If you combine freezing temperatures with a frigid wind, the danger of frostbite and hypothermia increases.
Wind Chill Temperature Chart

- The Windchill Temperature index gives the perceived temperature equivalent for the combination of cold air and wind. It shows air temperature in degrees Fahrenheit and wind speed in miles per hour.
- The chart also includes a frostbite indicator, showing the points where temperature, wind speed and exposure time will produce frostbite on humans. Each of the three shaded area shows how long a person can be exposed before frostbite develops.
- If frostbite times get to 30 minutes or less outdoor activity must be cancelled or moved indoors.

Dangers of Windchill

- Frostbite
  o Frostbite is body tissue that has frozen and usually starts with the fingers, toes, tips of the nose, and ear lobes. You may lose feeling in these area or they are turning pale or white.
    - Get inside
    - Warm gradually with body heat, do not rub
    - Immerse affected area in warm water
    - Apply sterile dressing to blisters
    - Do not thaw if risk of re-freezing
    - Get medical attention
- Hypothermia
  o When your body’s temperature drops too low, hypothermia sets in. Uncontrollable shivering, disorientation, and incoherence are signs of this issue.
    - Move into warm shelter if possible
    - Remove wet clothing and wrap into warm clothing
    - Apply direct body heat
- Re warm neck, chest, abdomen, and groin
- Give warm sweet drinks if conscious
- Monitor breathing
- Get Medical Attention

Prevention

- Provide additional protective clothing, cover as much exposed skin as practical, and provide opportunities and facilities for rewarming.
  - Clothing should allow for sweat evaporation, insulation, and wind and water resistance
    - Cover exposed flesh (especially face and hands)
    - Mittens are more useful than gloves
    - Wear a hat
  - Have alternate plans in place for deteriorating conditions and activities that must be adjusted or cancelled.
  - Consider modifying activity to limit exposure or to allow more frequent chances to rewarmin.

Resources

https://www.nata.org/practice-patient-care/health-issues/heat-illness
https://www.nata.org/sites/default/files/EnvironmentalColdInjuries.pdf
Sacramento State Athletics- Environmental Conditions Policy. (2020)