**Preventing Heat Related Illness**

***IMPORTANT INFORMATION: PLEASE READ.***

**Recognizing symptoms of heat injury.**

There are three stages to heat illness; heat cramps, heat exhaustion, and heat stroke -- listed in order of increasing severity. Often the border between them is blurred into a continuous spectrum. Heat cramps are due to muscle spasms and often occur in the arms, legs, or abdomen. They are thought to be caused by dehydration and loss of salt and other electrolytes. Heat exhaustion is due to more profound loss of water and electrolytes. It is characterized by generalized weakness, headache, dizziness, low blood pressure, elevated pulse, and temperature elevation as high as 104 degrees F (40 degrees C). Both can usually be treated by moving out of the sun, drinking fluids, and eating salty food.

**Preventing Heat Related Illness**

Normally, our body temperature is regulated by sweating. A number of factors can limit the sweat response, including intense exercise in high temperatures or high humidity, age, obesity, fever, dehydration, illness, medications and alcohol. When an athlete develops a heat illness, it usually occurs after several hours of exertion and excessive sweating that leads, first to to dehydration, and then to electrolyte imbalance.

**Tips for staying Hydrated**

**Drink Consistently Rather Than Taking a Big Drink Break**: Drinking over a set period of time is more effective for complete rehydration, vs. rapid replacement of fluid which instead stimulates increased urine production, reducing body water retention.

### Consume Salty Foods and Beverages: This prevents the bodies loss of sodium which is very important for fluid balance.

### Use Common Sense Avoid hot foods, alcohol and heavy foods that increase your core temperature. If you feel any headaches, fatigue or irritability or notice your exercise performance decreasing, stop exercising and cool off.

### ****Drink before, during, and after the battle:**** Hydrate thoroughly the day before the battle. How do you know if you are drinking enough? A good sign of hydration is the output of large volumes of clear, dilute urine.

**Hyper hydrate** just before the start of the battles. Drinking approximately 400 - 600 ml (13 - 20 ounces) of water or an electrolyte solution can help delay the process of dehydration.

**Humidity is not your friend**. The rate of sweating is higher in humid conditions but the cooling is less. The reason is that because the air is already very saturated with water, sweat can't evaporate. Sweat that beads up and rolls off doesn't function in the cooling process. However, this "futile sweat" does deplete the body of vital water and salt. As dehydration progresses’ cooling becomes more difficult. Performance drops and heat injury becomes a real threat. Deaths have occurred when the air temperature was less than 75 degrees F (24 degrees C) but the relative humidity was above 95%.

Remember, it is easier to prevent heat illness than to treat it once symptoms develop.

**Signs of Dehydration**

When your body is dehydrated, it doesn't have as much water and fluids as it should. Dehydration may be caused by not drinking enough fluids, losing too much fluid, or both. Depending on how much of the body's fluid is not replenished or is lost, dehydration can be mild, moderate, or severe. Severe dehydration is a life-threatening emergency. Vomiting, diarrhea, excessive urine output, **excessive sweating**, and fever all cause fluid loss in the body.

Children and the elderly have a higher risk of developing dehydration.

**General Signs and Symptoms of dehydration include:**  
The following are the most common symptoms of dehydration, although each individual may experience symptoms differently. Symptoms may include:

1. Dry or sticky mouth
2. thirst
3. less-frequent urination
4. very dark colored, concentrated urine
5. dry skin
6. fatigue
7. light-headedness
8. dizziness
9. confusion
10. dry mouth and mucous membranes
11. increased heart rate and breathing

In children, additional symptoms may include:

1. dry mouth and tongue
2. no tears when crying
3. no wet diapers for more than 3 hours
4. sunken abdomen, eyes or cheeks
5. high fever
6. listlessness
7. irritability
8. skin that does not flatten when pinched and released

You can correct mild dehydration by the following methods:

**Wear a hat and sun screen to protect you from the sun**.

Frequent small amounts of fluid, rather than drinking a large amount of fluid all at once, which may cause vomiting. Electrolyte solutions are especially effective, but avoid sport drinks that contain sugar that may cause or worsen diarrhea.

* Everyone should drink plenty of fluid every day and more during hot weather and while exercising. While ill, don't wait for signs of dehydration; attempt to push fluids or get medical attention.
* A test for dehydration is to pull on the skin and see if it stays up like a tent

**Symptoms of Mild to Moderate Dehydration**

* increased thirst
* a dry mouth and tongue
* decreased urine output
* normal to increased heart rate and pulses, normal to fast breathing, and cool extremities
* capillary refill greater than 2 seconds
* recoil on skin turgor test in less than 2 seconds
* slightly sunken eyes (and/or sunken soft spot/fontanel in a baby

**Symptoms of Severe Dehydration**

Severe dehydration is a medical emergency and you should seek immediate medical attention.

If you have:

* poor drinking or may be unable to drink
* a parched mouth and tongue
* minimal or no urine output
* increased heart rate, weak pulses, deep breathing, and cool, mottled extremities
* capillary refill that is very prolonged or minimal recoil on skin turgor test in more than 2 seconds
* deeply sunken eyes (and/or sunken soft spot/fontanel in a baby)
* Hospitalization and intravenous fluids are sometimes necessary for moderate to severe dehydration, as well as to treat the cause of the dehydration. Immediate attention is needed for symptoms including:
  + Dizziness
  + Lightheadedness
  + Lethargy
  + Confusion
  + Lack of tears

**CHILDREN:**

We often forget the wee one's running around our camp, screaming at the top of their lungs except when they enter our space with such noise that it becomes annoying. However, we should all watch over our cubs to make sure they remain able to be annoying.

Avoid plain water for rehydrating infants and children; instead, use commercial electrolyte solutions such as Pedialyte, or Gatorade.

If their dehydration worsens, children may begin to feel tired, restless, and irritable, which makes it difficult to get them to drink more fluids.

These children appear lethargic (meaning they are difficult to keep awake) or may be unconscious.

In an infant less than two months old, diarrhea or vomiting, little or no urine output in an eight-hour period, sunken eyes, dry skin that stays up like a tent when pinched into a fold (called skin tenting), dry mouth or eyes, sunken soft spot (fontanel), rapid heartbeat, blood in the stool or vomit, or listlessness and inactiveness.

**Other heat related problems:**

**Heat Cramps:**

Heat cramps are painful muscle spasms that occur in the arms, legs, or abdomen that usually occur after several hours of exertion in the heat. In addition to muscle cramps, other symptoms of heat cramps may include faintness, dizziness, weakness, and excessive sweating.

Usually an athlete suffers from heat cramps after several hours of exertion and excessive sweating that results in <http://sportsmedicine.about.com/od/glossary/g/Dehydration_def.htm>dehydration.

**Preventing Heat Cramps**

Follow these tips to minimize your risk of developing heat cramps:

* Hydrate well before and during exercise and replace lost electrolytes such as sodium, potassium and magnesium with food or a sports drink (drink 16 to 20 oz/hour).
* Avoid exercising during the hottest time of day.
* Wear light, loose clothing, so sweat can evaporate. Better yet, invest in some clothes that wick moisture from your skin to the outer layer of the clothing where it can evaporate more easily. Brands like CoolMax®, Drymax®, Smartwool or polypropylene all have this property.
* Use sunscreen to prevent sunburn, which can limit the skin's ability to cool itself.
* Wear a hat with a brim.
* If you feel your abilities start to diminish, stop activity and seek out a cool, shaded place.
* Do not drink alcohol or beverages with caffeine before exercise because they increase the rate of dehydration.
* *Remember, it is easier to prevent heat illness than to treat it once symptoms develop.*

**Treating Heat Cramps**

As soon as you recognize any of the symptoms of a heat illness, take the following actions:

* Stop activity, and sit quietly in a cool place.
* Drink a sports beverage with electrolytes (you can make you own sodium-based solution with 1/4 teaspoon table salt mixed in a quart of water).
* Gently stretch and massage the cramping muscle.
* Hold the joint in a stretched position until the cramp stops.
* Seek medical attention for heat cramps if they do not subside in 1 hour.

**What Is Heat Exhaustion?**  
Heat exhaustion is the body's response to dehydration and an excessive loss of water and salt through sweat. Heat exhaustion typically occurs after long periods of heat exposure. Heat exhaustion occurs when the body becomes overwhelmed by heat and the sweat response stops working properly.

**Signs and Symptoms of Heat Exhaustion**

The following are the most common signs and symptoms of heat exhaustion:

* nausea
* dizziness
* weakness
* headache
* pale, cool and moist skin
* fast and weak pulse
* disorientation.
* paleness
* muscle cramps
* tiredness
* fainting

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**Heat Exhaustion vs. Heat Stroke**  
If heat exhaustion is left untreated, it may lead to heat stroke. The key difference between heat stroke and heat exhaustion is the presence of confusion and other mental status changes during heat stroke. During heat stroke, the neurological system is affected and can cause odd behavior, delusions, hallucinations, and eventually seizures or a coma.

**Heat Exhaustion Treatment**

If you recognize the symptoms of heat exhaustion, take the following actions:

* Stop activities and rest
* Drink cool, non-alcoholic beverages
* Take a cool shower, or bath
* Move to an air-conditioned room
* Remove extra clothing

**Heat Stroke:**

Heat stroke is a serious medical emergency in which the body's cooling systems stop working and the core temperature can rise to dangerous levels. Symptoms of heat stroke include hot, dry skin, lack of sweating, a very fast pulse, confusion and perhaps seizures or coma. If untreated, heat stroke can be fatal.

**Heat Stroke Prevention**:

Preventing heat stroke begins with preventing heat exhaustion.

**Treatment**

The first step in treating heat stroke is to reduce body temperature by cooling the body from the outside. This can be done by removing tight or unnecessary clothing, armor and boots. Applying a wet towel to back of neck, wrists and ankles will bring temperature down at a safe rate.

Alternatively, as the body begins to cool down, spraying the person with water, blowing cool air on the person, or wrapping the person loosely in wet sheets. Using ice packs placed at the neck, groin and armpits will also accelerate cooling.

Avoid sudden cooling of the body. Shivering will only cause the body temperature to increase again.

Remember for someone with a high body temperature, temped water will feel like ice.

**What Is Heat Rash?**

Heat rash is typically seen in young children or infants, but it can occasionally occur in athletes who sweat while exercising in hot and humid conditions. This skin irritation looks like any other rash, but is caused by blocked sweat ducts that become red, irritated and itchy. When perspiration can't escape through the sweat glands, little red bumps and even blisters develop. This rash can be itchy or prickly and is sometimes called "prickly heat." It commonly occurs where two body parts rub together, such as the inner thighs.

**How Is Heat Rash Treated?**

A heat rash will usually go away on its own when you move to a cool, dry place. It's important to avoid sweating and keep the rash dry. Powders, creams or ointments should not be used on a heat rash because they can block pores and make the heat rash worse. Calamine lotion and Vitamin C supplements are sometimes recommended to help reduce itching.

If a heat rash gets worse or continues more than three days it may be time to visit a physician for treatment.

**Some medications interfere with cooling.**  Certain drugs may cause dehydration or interfere with sweating. Antihistamines and some blood pressure medications decrease sweating. **Caffeine and alcohol** are diuretics (*make you pee a lot*) and thus cause your body to lose water. You should avoid their use for several days prior to a battle. (*We know that is not going to happen*.) For those under a physician's care it is best to check with your doctor about medication -- and about your ability to fight in the heat.

I hope this information is helpful. If you follow the tips for prevention I am sure you will have a safe, pleasant and productive war. (and my job becomes easier).

*HnH*

*Lady Elidth the Adopted*