



Hike Safety

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# Fluids and Electrolytes



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### OVERVIEW:

Fluid and electrolyte deficiency can ruin your hiking day and in extreme cases is potentially fatal. It can creep up on you without warning and is time consuming to treat in the field. Many times, emergency care is needed. It is easily prevented by taking just a few sensible steps.

There are a variety of replacement options. There is no one answer for all individuals so try several to find the one(s) that work best for you.

PC Hiking Club requests all hikers to carry some type of electrolyte replacement.

Be sure to check with your physician regarding appropriate electrolyte levels for you during a hike, particularly if you have any heart condition, blood pressure, diabetes, or kidney issues.

### BACKGROUND:

Electrolytes are minerals such as sodium, potassium, chloride, calcium, magnesium, bicarbonate, phosphate and sulfates. With water, they break into electrically charged particles called ions that regulate all the electrical activities in the body.

Heat, excess perspiration, general health and exertion can all contribute to fluid and electrolyte deficiency.

### SYMPTOMS of FLUID AND ELECTROLYTE DEFICIENCY:

General symptoms include extreme thirst, cramps, particularly in legs, weakness, light headedness, nausea, headache, gut distress and dizziness.

**Heat exhaustion** results from intense sweating. The symptoms include pale face, nausea, vomiting, cool and moist skin (clammy), headache and cramps.

Heat exhaustion can be treated with water, electrolytes, resting in shade for 30 to 45 minutes and body cooling by wetting clothes with water.

Untreated heat exhaustion can lead to heat stroke.

**Heat stroke**, in contrast, is a life threatening emergency where the body's heat regulating mechanism falls apart and you lose the ability to cool yourself. Symptoms include flushed face, dry skin (not clammy skin as with heat exhaustion), weak or rapid pulse, confusion, poor judgment, extreme irritability, unconsciousness or seizures.

Heat stroke victims must be cooled immediately. Remove excessive clothing. Move victim to shade. Get the body temperature down with continuous drenching of water. The victim needs evacuation to a hospital.



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**Hyponatremia** (water intoxication) is caused by insufficient sodium in the blood, due to sweating or consumption of too much water.

The symptoms are very similar to heat exhaustion; nausea, vomiting but will often include confusion and frequent urination.

Treatment is to replenish electrolytes and rest in shade. If alertness diminishes, seek immediate medical help.

### **TIPS:**

Prior to and during a hike, minimize consumption of caffeinated beverages and alcohol. Hyperhydration, the consumption of a pint of fluids 15 – 30 minutes prior to exercise, seems to offer little benefit.

Never wait until you are thirsty to drink or take in fluids or electrolytes. By the time you are thirsty, you are generally past the point where you should hydrate and are already dehydrated. However, ideally, only ½ to 1 quart per hour is a desirable level for fluid replenishment. Any more can be a concern as your body can only absorb about 1 quart of fluids per hour. An old rule of thumb is ½ to 1 cup every 10 – 15 minutes.

After a hike, fluid replacement is also important. Ideally, one would want to complete this within 2 hours. Strive to drink 1 ½ to 2 pints of fluids for each pound of weight loss. Monitor how you are feeling. Replacement differs with each individual.

During a hike, don't be hesitant to contact the Hike Lead or Hike Sweep if you are not feeling well or want to stop.

Don't be a multitasking hiker (don't "gawk and walk"). Don't drink from a bottle while moving during a hike. The majority of reported hiking injuries involve folks that have tripped and fallen while drinking from bottles. Instead, stop and drink from bottle.

### **ELECTROLYTE OPTIONS:**

There are many factors regarding the need for timely electrolyte replacement; duration of exercise, outside temperature, acclimation to heat, health issues, conditioning and age. So, there is no one answer for all individuals.

How much water and how much electrolyte should a hiker carry? There is also no set answer and this will vary according to an individual's health as indicated above in Overview. However, for a hike of several hours, it would be wise to not drink just water due to the possibility of hyponatremia, and also wise to not drink just electrolytes since that can impact certain health conditions

Here are some choices.

There are electrolyte packets that can be added to water. The added benefit is that one is consuming fluids along with the electrolytes. PC Hiking Club recommends to not add the packets to your backpack water reservoir. Instead, carry a



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separate bottle of premixed water and electrolytes. Many of the packets contain some type of sucrose which can become a breeding ground for bacteria in a water reservoir.

There are a variety of water-add products: Clif Electrolyte Replacement drink, powdered Gatorade, Camelbak Elixer, FRS, Ultima Replenisher, Emergen-C packets among others. Also, consider diluting Gatorade liquid with water.

In a pinch, one can make their own electrolyte beverage by mixing 1/3 teaspoon of table salt, 3 to 5 tsp sugar and 1 quart of water.

For a hiker using a hydration bladder, the club recommends water in the bladder and separate containers of electrolytes. For a hiker not using a hydration bladder, the club recommends some bottles of water and some bottles of electrolytes. Some hikers prefer carrying electrolytes only, but at a weaker concentration (maybe 50% or less of normal strength); this is probably equivalent for the body but it is still good to have some water for other emergency use.

Eating salty snacks is beneficial. Among these can be: crackers, salted nuts, trail mix and jerky.

Good natural sources for both hydration and electrolytes include watermelon, bell peppers, cucumbers, strawberries and cantaloupe.

Supplements can be used in lieu of liquids or snacks. These can come in capsule or tablet form and include such products as Sport Legs, Endurolytes, or Salt Stick.

It's important to review these, discuss with friends, and try perhaps several options to see what works best for you. Obviously, be sure to include your physician in the discussions.

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