



Hydrate Facts / Consequences of Dehydration



Water is a *nutrient* that is essential to life! It carries oxygen and nutrients to working muscles and transports wastes away.

We tend to sweat more in hot weather.

In humid weather, evaporation is reduced, and it becomes harder to cool off.

Sweat or rubber suits are dangerous because they inhibit evaporation and don't allow the body to cool off.

A large portion of the water lost comes from the blood

If water is not continually replaced, blood circulation becomes more difficult, and the ability to cool off becomes impaired.

A dehydrated athlete is at a competitive disadvantage!!

General needs:

- ▶ Most fairly sedentary adults require 2.5 liters per day, because we lose this amount through: urine, feces, skin to air, breathing and sweat.
- ▶ Exercise increases the need for water due to increased losses through sweat.
- ▶ The *rate* at which one sweats varies with the athlete's fitness level, age, gender, hydrations status, intensity, duration of the exercise, and environmental temperature.

Sweating protects us from overheating because:

- ▶ Blood carries heat from our bodies' core to the skin, activating sweat glands, which release sweat through pores in the skin.
- ▶ The cooling effect actually occurs when sweat evaporates. The blood near the surface of the skin is cooled; it then returns to deeper tissues to pick up more heat, re-circulates to the surface of the skin, continuing the process of cooling the body.

In a dehydrated state, the following occurs:

- ▶ Blood volume decreases (due to a loss of water in blood)
- ▶ Stroke volume decreases (the amount of blood pumped by the heart with each beat)
- ▶ Reduced blood flow to the skin
- ▶ More heat stays in the body's tissues, and less heat is brought to the surface
- ▶ Sweat rate is decreased
- ▶ Heart rate increases (in an effort pump more blood)
- ▶ This cycle continues, with:
 - Work becoming increasingly difficult – fatigue sets in; performance suffers!
 - Symptoms reflect the severity of dehydration. They may progress from thirst and fatigue to dizziness, weakness, mental confusion, and muscle spasms. Later stages can result in heat stroke and renal failure!

Optimal Hydration Strategies

- ▶ Eat a nutritionally balanced diet:
 - High protein diets waste water
 - Carbohydrates help store water – for each gram of glycogen, muscles store 3 grams of water
 - Fruits and vegetables contain a high water content. They help provide fluids
- ▶ Drink 16 oz. fluid 2 hours prior to an event – this promotes hydration and allows sufficient time to excrete any excess fluid
- ▶ During exercise drink regularly to replace lost water
- ▶ Cooler fluids (59°-72°F), and flavored beverages enhance palatability, and promote fluid replacement
- ▶ For exercise lasting >1 hour, a carbohydrate/electrolyte solution is recommended (4-8% carbohydrate; 0.5-0.8 grams or 500-800 mg. of sodium per liter)
- ▶ Weigh yourself before and after exercise. For each pound lost, drink 18-22 oz. of fluid (150% of fluid losses)
- ▶ Take note of the fluid loss and time spend exercising. Fluid intake during subsequent training under similar conditions should match the following:

WEIGHT LOST (lbs/hr)	FLUID INTAKE (oz)	FREQUENCY (min)
1	4	15
2	8	15
3	8	10
4	10	10
5	12	10
6	16	10

- ▶ Monitor urine output – if it is dark in color, infrequent and of small volume, you are probably dehydrated, and need to drink more fluids
- ▶ Alcohol is not a good re-hydration beverage - it promotes fluid losses. Caffeine containing beverages are of questionable value and may promote fluid loss also
- ▶ Potassium is lost in small amounts; it is easily replaced with fruits & vegetables
- ▶ It takes 6 hours or more to re-hydrate.

References:

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