

Hot Weather Hydration & Nutrition

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Water Intoxication (leads to hyponatremia)

- Is a real situation (don't fall for the saying "you can't drink too much water")
- Can occur during rest or during exercise and in both sedentary and active people
- Will occur during exercise when your fluid consumption exceeds your sweat rate
- Risk factors
 - Novice participant
 - Excessive fluid intake
 - Water weight gain during the event
 - Slower finishers
 - Low body weight
 - Untrained, unacclimated
 - NSAID use is potential
- NSAIDs limit the flow of fluid to the kidneys and they promote water retention
- Once the level of water intoxication is reached then even sports drinks contribute

Sodium (the misunderstood mineral)

- Your body requires sodium every day
- Our kidneys regulate our sodium excretion and we lose it in sweat
- We lose 16x more sodium in our sweat than we ever lose potassium
- Guidelines for congestive heart failure is to consume <2000 mg a day
- American Heart Association actually promotes consuming <1500 mg a day
- The exception is those exposed to prolonged heat (work or exercise) who then can benefit from 6,000 to 9,000 mg sodium per day
- Even those with hypertension can have an increase in sodium in prep for training/event
- Table salt is typically sodium chloride for Western cuisine and MSG (monosodium glutamate) for Asian cuisine
- One teaspoon of salt = 2300 mg sodium
- Sea salt = 1400 mg sodium (and is still salt)
- fat % is a better indicator of health than your body weight
- Those with salt stains on their workout clothes after exercise need to consider "salt loading" 6-12 hours before your long-distance training
- You can eat or drink your sodium
 - Pasta with extra parmesan, Romano, asiago, or feta cheese
 - Any Asian cuisine with soy sauce (one packet = 1000 mg sodium)
 - Cottage cheese, tomato sauce, salad dressing, ketchup, pickles, sauerkraut, beef jerky, bread, crackers, etc are examples of salted food items
- Water follows salt = you will retain more fluid and have more fluid to give away
- The average diet typically provides enough sodium to avoid hyponatremia
- However, if one is a heavy sweater or a salty sweater then intentionally consume sodium

Best Practices

- Consume adequate fluid, not too little and not in excess while exercising
- Drink fluid during your recovery to cool your core body temp (popsicles, cold drinks, etc)
- Benchmark your weight the day before long distance
- Weigh first thing in the morning naked and evacuated
- Compare your post exercise weight (before you shower) to your benchmark weight
- Replace fluid by drinking 20 ounces for every pound lost (16 oz vs 20 oz debate)
- Aim to consume 100 mg sodium for each hour you exercise in the heat

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Sweat

- The body cools itself by sweating to maintain correct body temp (think fluid loss)
- Dehydration inhibits this ability to cool and your effort then increases
- Dehydration is the single largest contributor to fatigue when training or racing
- Issues arise with a 2% body weight loss during exercise
- A 3% loss becomes a risk of electrolyte imbalance, cramping, and high heart rate
- Your sweat rate changes with temp, humidity, intensity, fitness, & acclimatization
- Sweat = water with a small amount of sodium and trace amounts of potassium
- The composition of sweat can even change from initiation of exercise to completion
- The more you train in hot weather then the more efficient your sweating becomes

Cramping

- is very rarely the result of low potassium
- can be isolated muscle fatigue
- can be fluid loss (dehydration)
- can be electrolyte imbalance (most likely hyponatremia)
- can be a combination of any of these

Water vs. Sports Drinks (and why do I care?)

- There are no significant electrolytes in water alone
- You can use water, fluid replacement (sports drinks), or both while training
- Rehydration with only water during *moderate prolonged exercise* is safe (60-90 minutes)
- Most individuals however benefit from sports drinks after 60 minutes
- Sports drinks = water with sodium, potassium, and potentially other minerals along with simple sugars or sugar substitutes
- The carbohydrate content in sports drinks is often 6-8% by volume
 - this is intentional for taste and then for absorption
 - two different types of sugar are often used to increase the absorption rate by using different intestinal transporter systems
- Hyponatremia is best avoided by using sports drinks or salted food while exercising
 - Low sodium content of your blood leads to negative and dangerous effects
 - Normal sodium is 135-145 mmol/L
 - Mild case of hyponatremia is serum sodium of 131-134 mmol/L
 - No symptoms but possible effect on performance
 - Moderate case is 121-130 mmol/L
 - Puffy hands or feet
 - Headache
 - Nausea
 - Vomiting
 - Severe case is 120 mmol/L or less
 - Seizures
 - Coma
 - Respiratory arrest
 - Brain damage
 - Death
- The goal is to meet fluid needs without diluting your own serum sodium
- You can do this with water combined with a salted food item or simply a sports drink