

HYDRATION, DEHYDRATION AND OVERHYDRATION (OR HYPONATREMIA)

Proper hydration in a marathon is vital to any good performance. Most training programs to prepare runners for a marathon running event advise runners to ensure they maintain an adequate fluid intake to avoid dehydration and poor performance. For the last 15 years, sport medicine doctors have come to understand that drinking too much can be as harmful to your performance and your health as drinking too little.

Dehydration is losing more than 2% of your body mass or >1.2 kg for a 60 kg runner. **Overhydration** can occur when a runner drinks so much they gain weight during the run. The symptoms of both are similar: headache, muscle cramps, nausea and vomiting. Both can lead to poor performance, mental confusion and serious consequences such as hospitalization and death.

The best way to avoid either of these outcomes is to 1. Have a **hydration strategy** that will ensure you get enough fluids without overdoing it, and 2. Practice this strategy during training. The guidelines for fluid replacement in marathons are simply this: **drink only to match your fluid loss**. You can determine your fluid loss by weighing yourself before and after your long runs. The weight loss during the run represents lost fluids, which occurs mostly from your sweat. You then know how much fluid you need to drink to replace your losses.

So if you weigh 65 kg before and 64 kg after your 3 hour run, you've lost 1 kg = 1 L of water. This means you're losing 333 ml of water per hour, or 166.5 ml of water every 30 min. Now you know that you need to replace your fluid at a rate of 166.5 ml every 30 min of your long runs (1 cup = 8oz = 250ml). You do lose more fluids on hotter days and less on cooler days.

You can drink **too much** water, which is the most important cause of **hyponatremia** (which means not enough sodium in the blood). It occurs more frequently in slower runners taking **more than 4 hours** to complete a marathon (because they have more time to consume fluids), **women** (because of their smaller body mass) and those who consume products like **ASA or ibuprofen** during the run (these drugs influence kidney function).

The most important sign is **weight gain** during the marathon, (though it has occurred in runners who's weight stayed the same), as you are expected to lose some weight during the race. Remember, only fluid loss **in excess of 2%** is deemed too much.

So general fluid replacement guidelines are as follows:

- Drink to **replace fluid losses**, not in excess of those losses. This is best determined during your training. Remember, though, that marathon day conditions may be much different than your training days and you may need to adjust your drinking pattern accordingly.
 - Consume fluids on a schedule only if you determined your fluid losses during training and the conditions on marathon day are similar to those during your training. Otherwise your "schedule" may not be enough or may be too much fluid.
- Fluids should be cool to be more palatable and help avoid overheating
- Drink smaller amounts more frequently, not larger amounts less often
- Drinks with carbohydrates and sodium can help to provide energy but play only a small role in preventing hyponatremia. For runners expecting to take longer than 4 hours to complete the run, you may plan to have snacks that contain salt.
- Ensure proper hydration before the marathon by drinking fluids the day or two before to keep your urine the colour of lemonade, not darker (apple juice) or lighter (water). Also ensure that you are consuming healthy meals and don't avoid the salt (but don't overdo it either).