

Hyponatremia and the Marathon

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The marathon has become an event that people of all running abilities are pursuing. In fact, the majority of participants are novice runners, many of who are participating in their first marathon with “Charity runners” being a large part of the current marathon population.

The needs of novice runners are different than the needs of more accomplished marathoners. Generally, novices and charity runners are slower and less well conditioned than experienced runners. They also are less knowledgeable of how their body will react to the stresses of the marathon. This is due predominantly to lack of experience. For many, the primary source of information is the advice of running partners and coaches rather than personal experience. Novices look to these people for training tips, information about shoes, and hydration. This is where problems may begin. While it is generally reasonable to seek the advice of more experienced runners, it is also important for the novice runner to evaluate the information to make sure it makes sense, and to see how it relates to them. Hydration is one part of the running experience that must be individualized, both for novice and experienced marathoners.

Hyponatremia

Hyponatremia (hype o nay treem ee a) is a condition that arises when the sodium (salt) level in one’s blood stream becomes lower than normal levels. This previously had been thought to be rare in the active population. However, in the last twenty to thirty years it has been recognized in ultra-endurance athletes and ironman triathletes. More recently, it has been seen in marathoners.

Why Does Hyponatremia Occur

We know that the problem begins with drinking too much fluid. This includes water and sports drinks. In an attempt to prevent dehydration, athletes are drinking fluids in excess of what they need to be optimally hydrated. Slower runners often overestimate their needs and perceive incorrectly that their fatigue is due to dehydration. Well-meaning friends and coaches have also advised them that they can’t drink too much, so they overhydrate without any knowledge of the consequences. Research done at the Houston marathon has shown that some people drink so much during the marathon that they actually gain weight during the race! The extra weight is all from fluid intake. Generally, a loss of 1-2% of normal body weight is tolerated and expected without compromising performance for marathons and similar races.

We suspect that other factors influence the development of hyponatremia once overhydration occurs. We have seen that running in hot weather is an aggravating factor. Being fearful of dehydration and the effects of heat on performance, many runners drink more aggressively. Also, heat and exercise induce stress in the body, which may cause increases in hormonal levels that regulate fluid levels within the body. We have seen that women are more often affected than men. This is probably due to several factors. Women are smaller in body size, so if they drink the same amounts as men, then the dilutional effect within their bodies is greater. They may also be more vulnerable to hormonal shifts in their bodies. One recent case of hyponatremia was a female runner (fatal) in the 2002 Boston Marathon.

Here are some basic in-race guidelines:

1. Drink 16-24 ounces of fluid 1-2 hours prior to your run, especially if it is warm.
2. In general, it is recommended to drink 3-6 ounces of cool to cold fluid every 20 minutes while active. That amounts to 9-18 ounces every hour, or about ½ quart per hour. (It is not likely that anyone needs more than 1 quart (1000 ml) per hour, which would equal 10.5 ounces every 20 minutes. Furthermore, our digestive systems cannot absorb more than 800 ml per hour anyway!)
3. If you are exercising more than 1 hour, use sports beverages in your hydration regimen.
4. Keep relative track of your urination, both for amount and color. If you are drinking you should be urinating. Try to keep your urine light yellow. If it is clear, you may be over hydrated and if it is dark yellow you may be running low on fluids.
5. Replace fluids after a run according to your weight loss. 16 ounces for every pound lost. Have a salty snack.

These recommendations are good starting points and should be modified according to one's findings of their own weight changes during training runs as they prepare for a race.

A Quick Look at Hyponatremia

Causes

Hyponatremia - Sodium loss, weight gain from too much fluid? Hormonal abnormalities

Symptoms

Hyponatremia - Uneasy feeling, headache, nausea, lethargy

Signs

Hyponatremia - normal heart rate, normal blood pressure, normal respiration (initially), vomiting, weight gain

Risk Factors

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1. Over hydration
2. Finish time greater than 4 hrs
3. Marathon inexperience
4. Women more than men
5. Warm, humid weather
6. Longer races, submaximal effort