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Hyponatremia, also called water intoxication, is generally the result of drinking excessive amounts of plain water which causes a low concentration of sodium in the blood. Once a rare occurrence at sporting events, it is becoming more prevalent as participation increases and more novice exercisers are entering endurance events.

Prolonged and excessive sweating increases the risk that an athlete will alter the delicate balance of blood-sodium concentration. Because sodium is lost in sweat it is important for those exercising at high intensities for long periods of time to replace any losses.

Research has found that long duration endurance events, such as the Ironman distance triathlons, often have finishers with low blood sodium concentrations. Those at most risk are those who are on the course the longest, because they tend to drink the most water during the event. Runners who drink extra fluids in the days before the race or those who stop at water stop during the race are also at increased risk of hyponatremia. In fact, a study published in the New England Journal of Medicine (April, 2005) found that 13 percent of Boston Marathon runners developed hyponatremia from drinking too much water.

Causes of Hyponatremia

During high intensity exercise, sodium is lost along with sweat. An athlete who only replaces the lost fluid with water will have a decreased blood-sodium concentration. As an example, consider a full glass of salt-water. If you dump out half of the contents of the glass (as is lost in sweat), and replace that with water only, the sodium concentration of in the glass is far less and the water is more dilute. This can occur in the bloodstream of an athlete who only hydrates with water during excessive sweating. The result is hyponatremia.

Adequate sodium balance is necessary for transmitting nerve impulses and proper muscle function, and even a slight depletion of this concentration can cause problems. Studies have shown that high intensity athletes can lose up to 2 grams of salt per liter of sweat. Replacing this during the event is critical to performance and safety.

Symptoms of Hyponatremia

The early warning signs are often subtle and may be similar to dehydration and include nausea, muscle cramps, disorientation, slurred speech, and confusion. At this point, many athletes drink more water because they think they are dehydrated. Unfortunately, water alone will increase the problem of hyponatremia. At the most extreme an athlete may experience seizures, coma, or death.

Treatment of Hyponatremia

At the first sign of symptoms an athlete should drink a sodium containing sports drink or eat salty foods. Ideally, an athlete should plan ahead and estimate his or her fluid loss and need for sodium replacement during the event, and stay on a hydration schedule during the race. If the symptoms are extreme, a medical professional should be seen.

Preventing Hyponatremia

The best way for an athlete to avoid such problems is to plan ahead by training in the same conditions you will encounter during race day. Hydration recommendations include:

- Use a sodium containing sports drinks during long distance, high intensity events (more than 60-90 minutes long).
- Increase salt intake per day several days prior to competition (except for those with hypertension).
- Try not to drink more than you sweat.
- During a marathon a good rule of thumb is to drink about 1 cup of fluid every 20 minutes.
- In the days before the race, add salt to your foods (provided that you don't have high blood pressure and your doctor has not restricted your salt intake).
- Avoid use of nonsteroidal anti-inflammatory (NSAIDs) medicines that contain sodium. Research suggests that these drugs may predispose runners to hyponatremia.

Keep in mind that all athletes respond differently to exercise; fluid and sodium needs will vary accordingly.

Source: Clinical Journal of Sports Medicine

Sports Nutrition for Endurance Athletes by Monique Ryan

This is an essentially resource for anyone involved in Adventure Racing, Triathlon, Swimming, Running, Cycling, Mountain Biking and Cross-Country Skiing.

This technical reference book includes the following:

Part I: The Daily Training Diet

- Fluid first
- The daily training diet
- Nutrients for optimal performance

Part II: Training Nutrition

- Eating for optimal recovery
- Eating for training and competition
- Creating the optimal training diet
- Weight and changing body composition
- Nutritional ergogenic aids

Part III: Sports Specific Nutritional Plans

- Nutrition for triathlon
- Nutrition for cycling
- Nutrition for distance running
- Nutrition for swimming
- Nutrition for cross-country skiing
- Nutrition for adventure racing

Appendixes

Appendix A: Glycemic Index of Foods

Appendix B: Fact about Vitamins and Mineral

Appendix C: Comparison of Sports Nutrition Products

Appendix D: Sample Menus



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