

Conversation Corner

With Neal Spruce



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A Newsletter for Fitness Enthusiasts

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During the *Dog Days*, Drink Enough But Not Too Much

Summer is coming and if you have been keeping up with our newsletters and heeding some of the advice, you should feel good about wearing that skimpy bathing suit. Not the guys—please no Speedos—stay with the baggies.

Okay, so you're ready or not for the beach but the question this month is, are you properly prepared to compete during the hot summer months?

Heat & Hydration

Elite, professional or seasoned amateur athletes generally have no trouble with properly hydrating under any conditions. They are keenly aware of the role fluids play in their performance and therefore take all measures to insure proper hydration before, during and after activities (see side bar for recommendations), including acclimating to the environment in which they will be competing.

Heat acclimatization

It is well-known that exercising in a hot environment accelerates muscle fatigue, and for all the right reasons: to keep you from running until your body overheats to a point of complete collapse. As your core temperature rises a change in muscle metabolism takes place (e.g., increase in lactate and free radical production, accelerated glycogen usage, etc.). The negative affects to performance brought on by high temperatures are most profound in the first days of training in the heat. The good news is that almost a complete adaptation can take place in approximately 7-14 days.

The basic mechanisms by which the body dissipates heat are: 1) increasing skin blood flow, which moves core heat to the skin, and 2) producing sweat, moving heat to the environment. Both heat loss functions are enhanced during the acclimation period, allowing most athletes to perform at their maximum if they maintain proper hydration.

Exercising in high heat can increase sweat rates up to three-fold causing some athletes to lose two to three liters of fluids in one hour and thus complicating the competitor's hydration strategy for maximizing performance.

Fluids and performance

If you are not properly hydrated, you will not perform to potential, even if exercise is only a few minutes long. So obviously, the longer the task the greater decrease one will experience in performance when fluid levels are inadequate.

The sensation of thirst occurs when the water deficit is approximately two percent of body mass. Performance can start being impaired at a water loss of one percent, suggesting our natural mechanisms cannot keep up with exercise-induced fluid losses in order to maximize training outcomes. In other words, performance is affected before we trigger thirst.

In case you are wondering how performance is impaired by small fluid deficits, part of it is probably the decrease in plasma volume. Since that's how we deliver oxygen to the working muscles, any reduction would hamper performance. Additionally, when we lose fluids, especially during exercise, we also lose electrolytes that are involved in muscle and nerve function and use glycogen, the body's fuel. Therefore, proper intake of all three is the general formula for maintaining proper hydration for extended periods.

Children and older exercisers/athletes

In young children through adolescents and in older (40+) athletes, we find natural hydration mechanisms (e.g., thirst triggers, taste) and heat dissipation functions (skin blood flow and sweat rates) are underdeveloped in the former group and diminished in the latter making it more important to maintain vigilance over a properly designed hydration strategy.

Hydration for the newcomer or novice competitor/exerciser

As mentioned at the beginning, experienced competitors have little problem maintaining proper hydration. It's the hydration protocols for beginners, novices and youth exercisers/athletes that are of more concern. Often this group's sources of information are unqualified parents or coaches and media.

A little bit of knowledge can be dangerous

This is never more true in the world of nutrition in sports and weight loss, and hydration is no exception. In recent years there has been so much attention to “water” intake, especially since there is now money in pouring water into a bottle and putting it on a store shelf.

To put things in perspective, the typical more sedentary human has no trouble accurately replacing the approximate loss of two to three liters of fluids they use daily and it’s often done without drinking one glass of *pure water*.

In spite of this, sensational articles pop up everywhere about water making many people, including exercisers, think they need more.

Too much of anything can be bad for you

Guess what? Yep, some people even abuse water intake. In their defense it’s usually based on bad or incomplete advice.

Inexperienced runners, including charity participants, often function under the outdated notion that you can’t get too much water. Yet they move slowly enough during events to become overloaded with fluid, which can cause hyponatremia.

Hyponatremia occurs when blood sodium concentration falls to an abnormally low level prompting a rapid swelling of the brain that can result in seizures, coma and death. The key risk factor is excessive drinking—especially non-electrolyte fluids such as many types of water.

First reported in 1985, the disorder was thought to be a singular phenomenon but has become more common since the early 1990s. More than 250 severe cases had been reported in literature by 2003, but most go unreported—as discovered after the 2002 Boston Marathon. A post race study done on 488 participants found that 13 percent experienced hyponatremia. Basically these people had gained weight from excess water consumption going into the start of the event and continued to gain as they drank during the race, partially because their relatively long race times give them enough time to ingest more fluids than they expelled.

The risk of hyponatremia can be reduced by making certain that fluid intake does not exceed sweat loss and by ingesting sodium-containing beverages or foods to help replace the sodium lost in sweat. Follow the proper hydration instructions (see sidebar) for before, during and after training, including weighing yourself after the workout/event and make adjustments appropriately. Additionally, weigh each morning. A stable weight generally indicates proper fluid balance.

To be sure, for most athletes dehydration is the primary challenge to optimizing performance, not hyponatremia. But the message regarding this

increasing problem is for the zealous, less experienced exercisers or competitors—make sure you start off with the accurate hydration recommendations.

So there you have it: ripped and hydrated. Have a great summer!

Hydration Guidelines

Pre workout Guidelines

- Drink approximately 16 ounces of fluid two hours before activity, and an additional 8-16 ounces 30-60 minutes prior to training on warm and/or humid days.
- Water may be adequate for activities less than an hour.
- If you are participating in endurance events, repeated bouts of exercise greater than 60 minutes, or multiple practices a day, a sports drink containing 6-8% carbohydrate (e.g., Apex Recovery Sports Drink) is recommended.

During Exercise

- Depending on your sport, consume 6-12 ounces of water or sports drink every 15-20 minutes. This equates to approximately 32 ounces per hour.
- For prolonged exercise greater than 4 hours, choose a sports drink with small amounts of electrolytes.

Post workout Guidelines

- Immediately following activity, consume at least 16 ounces of fluid for every pound of weight lost to ensure proper rehydration.
- A liquid shake with high carbohydrate content, minimal protein and fat can maximize recovery if muscle glycogen levels have been depleted.
- Drink an additional 16 ounces with your post workout snack and/or meal.

Weigh yourself each morning. A stable weight generally indicates proper fluid balance.