

Dehydration, Electrolytes, Coffee and Cramps

Researchers may have contributed to the solution of the puzzle related to exercise-associated muscle cramps (EAMC). Dehydration, electrolyte (sodium and potassium) imbalance, environmental conditions such as heat and humidity, and fatigue have all been implicated as causes of EAMC, but little has been done in the scientific community to support those assertions.

The research team wanted to determine the role of hydration and electrolytes in preventing cramps. They recruited 13 men, all college age, and put them through two trials that had been proven to cause muscle cramps in the calves. Both trials were conducted in very hot conditions (98.6 degrees F) and relatively high humidity (60 percent). The volunteers drank a carbohydrate/electrolyte beverage two and a half hours before each trial. During one of the trials, they also consumed a carbohydrate/electrolyte/sodium chloride beverage at a rate similar to perspiration loss.

Here is what they found. Nine of the 13 participants developed cramps, and seven of them cramped in both trials. Among those who developed cramps in both trials, the length of time they were able to exercise before the onset of EAMC was approximately 36 minutes (just under a good game of Touch), when they replaced fluid as it was lost, compared to 14 minutes when fluid was not replaced.

It's suggested that dehydration and electrolyte loss are not the only causes of exercise-induced muscle cramps because seven of 16 suffered cramps in both trials. It can be concluded that consumption of a carbohydrate-electrolyte beverage before and during exercise in a hot environment may delay the onset of EAMC, thereby allowing participants to exercise longer.

Replacing Fluids With Food

Drinking enough water to offset the fluids lost through perspiration, evaporation, feces, and urine can be difficult for some exercises and athletes. Juices, sports drinks, some soft drinks, tea and coffee, and low-fat milk are all acceptable fluid-replacement choices, depending the intensity level and timing of subsequent workouts or athletic events.

But there is also the food alternative: The fluid that athletes need doesn't have to come exclusively in the form of water or other drinks. Every mouthful of food contains water, and there are some foods that contribute significant amounts of water to your diet. These foods, especially fruits and vegetables, supplement fluid intake and supply other nutrients.

Caffeine and Hydration

There is mixed evidence in the literature regarding caffeine and hydration. In a review article published in the International Journal of Sport Nutrition and Exercise Metabolism, researcher Lawrence E. Armstrong found that caffeine may not be as dehydrating as once thought. In fact, he concluded that caffeine is no more a diuretic than water itself. Armstrong's analysis of the scientific literature focused on moderate amounts of caffeine (equal to one to four cups of coffee a day). Following are some of his findings:

- When consuming a caffeinated beverage, the body retains some of the fluid
- Moderate caffeine consumption causes a mild diuresis very similar to that of water
- Water, when consumed in large volume, increases urine output
- A person who regularly consumes caffeine has a higher tolerance to the diuretic effect
- There is no evidence that consumption of caffeinated beverages causes a fluid-electrolyte imbalance that is detrimental to health or exercise performance

(Bring on that Caramel Latte!)