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Sports Drinks

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Sports drinks are an often helpful way to prevent dehydration and depletion of your body's carbohydrate reserves during prolonged physical activity, though not all sports drinks are created equal. Many commercial sports drinks contain questionable ingredients that may unfavorably affect your health. It is important to understand the circumstances in which sports drinks can best support your exercise performance and the ingredients that make up commercial sports beverages.

Electrolytes Explained

Electrolytes are ions (and, in some cases, essential minerals) that affect metabolic processes in your body, including the movement of nutrients into your cells and the removal of cellular waste products. Electrolytes help regulate the acid-base balance in your body necessary for normal cellular function. Sweat that you lose during exercise contains numerous electrolytes, including calcium, magnesium, sodium, chloride, and potassium, among others. Significant sweat loss without electrolyte replenishment may lead to severe dehydration.

Effects of Dehydration

Your body sweats during exercise to

help keep your core temperature constant. The cost of keeping your core temperature at 37 degrees C, however, is fluid and electrolyte loss. Dehydration can occur quickly with physical activity in extreme environments. The physiological effects of dehydration depend on the percentage of body weight you lose as sweat during prolonged exercise. According to a study published in the *International Journal of Sports Medicine*, you will experience impaired exercise performance after losing as little as 2 percent of your body weight as sweat. A 4 percent body weight loss as sweat significantly reduces your ability to perform muscular work, and sweat-related body weight losses of 5 and 7 percent cause heat exhaustion and hallucinations, respectively. If you lose 10 percent of your body weight as sweat, you will experience circulatory collapse and heat stroke.¹

Carbohydrate Depletion

Carbohydrate depletion - the depletion of your muscle and liver glycogen reserves - is another factor to consider with prolonged, endurance-based activities, such as marathon running. Glycogen is the principle form in which glucose is stored in your liver and muscle tissue.

QUESTION:

At what % loss of body weight from sweating can you experience hallucinations?

- A) 2%
- B) 5%
- C) 7%
- D) 10%

ANSWER:

- C) 7%

QUESTION:

Too much caffeine can cause....

- A) heart palpitations
- B) headaches
- C) insomnia
- D) all of the above

ANSWER:

- D) all of the above

TRUE OR FALSE:

Water is better than a sports drink for low-intensity, short-duration activity

ANSWER:

True

Your body reacts to prolonged periods of physical exertion by releasing hormones that convert glycogen to glucose to maintain your blood glucose levels. When you perform exercise that relies more on carbohydrates as a fuel (as opposed to fats) you can maintain a relatively high intensity for about 2 hours.² After 2 hours, your muscle and liver glycogen stores are in danger of being depleted. Further exercise will require the consumption of carbohydrate to stave off low blood sugar levels, fatigue and other detrimental effects to your exercise performance. Ingesting carbohydrate during exercise can help you maintain your body's glycogen levels and provide you with the energy you need to perform your endurance event or activity.

Sports Drink Considerations

Sports drinks, though consumed by many athletes, both recreational and competitive alike, may be most appropriate for individuals participating in vigorous physical activity; that is, a bout of exercise lasting at least 45-60 minutes, during which time you are sweating profusely. Sports drinks may provide little benefit beyond water for individuals participating in low-intensity activity for short durations. Consider both the duration and intensity of your activity as well as the climate in which you will be exercising before selecting your sports drink.

Common inclusions in many commercial sports drinks, or energy drinks, include caffeine, high-fructose corn syrup, and other added sweeteners. Caffeine, often found in high quantities in these beverages, stimulates your nervous system and actually may improve your endurance performance.

One study published in the journal *Physician and Sportsmedicine* notes that caffeine can increase exercise ventilation and lung function at all workloads in competitive endurance athletes³ but caffeine may also raise your heart rate and blood pressure. Some people who consume large amounts of caffeine may experience insomnia, irritability, restlessness, headaches, and heart palpitations.⁴

High-fructose corn syrup and other types of added sweeteners are common ingredients in sports drinks, and they present significant health risks. The Mayo Clinic states that consumption of large amounts of any type of added sugar in beverages, including high-fructose corn syrup, is linked to weight gain, dental cavities, poor nutrition, and elevated triglyceride levels, which may boost your likelihood of a heart attack.⁵

Consider making your own sports drink to promote both health and performance or using other products readily available in many grocery stores. Coconut water, the clear fluid inside coconuts, is an excellent substitution for conventional sports drinks, as it contains significant amounts of electrolytes, minerals, and antioxidants. A study published in the *Journal of Physiological Anthropology and Applied Human Science* states that consumption of fresh, young coconut water is appropriate for whole body rehydration after exercise.⁶ To make your own sports drink, blend ice and water with one apple, two carrots, two celery sticks, one small parsley bunch, and a handful of mixed greens.



Quote to Inspire

*“Water is the
drivin force of
all nature”*

Leonardo da Vinci

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