

Background

Sports drinks, or carbohydrate-electrolyte beverages, are intended to maintain hydration and restore electrolytes, unlike energy drinks (which contain caffeine). They have been shown to improve performance during exercise.¹⁻³ Sports drinks are traditionally about 4%–8% carbohydrates, or 14 to 19 g per 8-ounce serving⁴, contain sodium and potassium, and some of the newer ones also contain protein. Other beverages that are marketed as sports waters but contain little or no carbohydrates are not true sports drinks.

If the amount of energy provided by the calories in a drink is too high (either from carbohydrates or protein), hydration status may be compromised by inadequate absorption. Read the label carefully, as all sport drinks are not created equal, and caution should be exercised due to the multiple combinations of ingredients. Any number of “other ingredients”—such as magnesium, calcium, B vitamins, and vitamins A, C, and E—may be ingested unknowingly, leading to excessive intakes.

Overall, an effective sports drink will contain a mixture of carbohydrates (e.g., glucose, fructose, sucrose, galactose, and/or maltodextrins) and/or electrolytes (e.g., sodium and potassium) and possibly protein/amino acids.⁴ Overall, sports drinks are very popular, and approximately 23% of warriors use sports drinks.⁵

Dose Range and Upper Limit:

Food and Nutrition Board DRI:

RDA/AI: Not relevant due to variations and combinations of ingredients.

Upper Limit: Not relevant due to variations and combinations of ingredients.

Doses Used In Randomized Clinical Trials: No data found.

Toxicology Data: No data found.

Evaluation of Potential Benefits

Significant evidence indicates that sports drinks improve exercise performance.¹⁻³ In particular, sports drinks with carbohydrates help maintain blood glucose levels.⁶ Several studies on soldiers show that ingesting a sports drink is more likely to sustain physical performance than eating a portion of their food, and such drinks provide an accessible source of calories, which can be advantageous when limited food is available or inadequate food consumption is likely.^{7,8} Likewise, studies have shown that ingesting a sports drink improves vigilance and mood,⁹ endurance, and performance after exercise in the heat by replacing lost electrolytes. Consuming sports drinks with electrolytes while exercising in the heat can serve to replace electrolytes lost from sweating.¹⁰ If soldiers lose more than eight liters of sweat per day, participate in prolonged exercise (>60 min), have not acclimated to their environment, skip meals, or are ill, a carbohydrate-electrolyte beverage may be needed.¹¹

Fluid replacement during exercise should be based on individual sweating rates, exercise duration, and opportunities to rehydrate. Carbohydrates and electrolytes that need to be consumed depend on the duration of exercise, exercise intensity, and the weather. For high-intensity exercise that lasts longer than one hour, carbohydrate consumption can be beneficial to maintain exercise intensity. After exercise, consuming beverages (and snacks) that contain sodium will help stimulate thirst and fluid retention.⁶ The recommended ranges for sodium and potassium in sports drinks to offset sweat losses and promote fluid absorption are 20-30 mEq/l (460-700 mg/l) and 2-10 mEq/l (78-390 mg/l), respectively. The only anion recommended is chloride, as it optimizes fluid absorption.¹¹

Potential Detrimental Effects on...

Military Performance: Overconsumption of water during long bouts of exercise without replacing electrolytes can lead to hyponatremia (low sodium levels in body fluids).⁹

Military Survivability: Soldiers suffering from hyponatremia have been misdiagnosed with dehydration and, as a result, have been given large volumes of water, aggravating the hyponatremia.⁹

Other Health Risks

No data found.

Interactions with Medications or Other Bioactive Substances

No data found. However, some ingredients may have interactions when considered individually. For details of potential interactions associated with individual ingredients, visit the Natural Medicines Comprehensive Database.¹²

Withdrawal Effects

No data found.

Concern and Benefit Estimate (see Dietary Supplement Risk Matrix)

Benefit potential: High

Risk (safety concern): Minimal

Classification Score: 1

Sports drinks provide a convenient delivery of fluid and carbohydrates during and after exercise,⁴ but one should be cautious when choosing a beverage and review the additional ingredients included. They should not be confused with energy drinks.

References

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