



FACT SHEET SPORTS DRINKS

For optimal performance, athletes should aim to be hydrated and adequately fuelled during exercise. Exercise scientists have extensively researched the best fluid to drink during exercise and there is now a range of beverages available that are marketed with reference to sport or performance. This fact sheet will discuss the 'traditional' sports drink (carbohydrate-electrolyte beverage) as well as the more recently available sports waters.

Sports drinks are designed to provide the right balance of carbohydrate and fluid, to ensure that they are emptied quickly from the stomach and are rapidly absorbed from the small intestine. When used according to sports nutrition guidelines, sports drinks can have performance benefits (see Fact Sheet Eating & Drinking before Sport and Fact Sheet Eating & Drinking during & after Sport). Table 1 (see below) compares the nutritional composition of commercially available ready-to-drink sports drinks and sports waters.

Some sports drink products are available in powdered form. These are generally cheaper than ready-to-drink products. It is important that consumers using powdered drinks follow the manufacturer's instructions. This is to ensure that the carbohydrate and electrolyte balance is optimal for gut absorption, fluid balance and fuel delivery. Incorrect preparation may lead to gastrointestinal discomfort and a negative impact on performance.

WHAT'S IN A SPORTS DRINK?

1. Carbohydrate

It is well accepted that consuming carbohydrate can have performance benefits in a range of sporting events. Carbohydrate provides a fuel source for muscles and the brain, and contributes to the palatability of sports drinks. Ideally the carbohydrate concentration of a sports drink should range between 6- 8%. High carbohydrate solutions can impair gastric emptying during exercise. Note: all sports drinks presented in Table 1 contain carbohydrate within this range.

2. Electrolytes

Sports drinks include the electrolytes sodium and potassium. The addition of sodium to sports drinks does have potential benefits. Sodium-containing beverages can encourage fluid intake by driving the thirst mechanism. Sodium also increases fluid absorption and retention. Sports drinks may also help with salt replacement for athletes who are heavy or salty sweaters. Most commercial sports drinks contain sodium in the range of 10-25mmol/L and in the case of some sports waters, even lower. It should be high-

lighted that low sodium drinks are not suitable when rehydration is crucial to subsequent performance (i.e. must replace a fluid deficit in a short period of time). The addition of potassium to sports drinks is beneficial to assist with muscle contraction during exercise.

3. Flavour

Flavour is an important feature of sports drinks. Research indicates that voluntary fluid intake is higher for fluids with flavour compared to plain water due to the taste. The more you enjoy the flavour of a drink, the more you drink.

4. Other Ingredients

Some beverages marketed as sports drinks have other added ingredients like vitamins, minerals, protein and herbs. The levels of antioxidants (Vitamin E and Vitamin C) in both sports drinks and sports waters in Table 1 provide relatively small amounts. A small number of products marketed as sports drinks contain protein. The recovery benefits of carbohydrate and protein ingested together post-exercise are well documented however, the potential performance benefits of ingestion during exercise are mixed. It should be acknowledged that additional ingredients may affect the palatability, and subsequent consumption of a sports drink.

WHEN SHOULD SPORTS DRINKS BE USED?

1. Before Exercise

Sports drinks may be used by athletes before an event to fine tune their fluid and fuel intake. The carbohydrate tops up muscle glycogen fuel levels, while the added sodium may reduce urine losses before exercise begins.

2. During Exercise

Sports drinks are primarily designed for use during exercise, for optimal fluid and fuel delivery. They will allow the athlete to perform for longer and more effectively in training and competition.

3. Recovery

Sports drinks assist to meet individual's nutrition recovery goals by replacing fluids lost in sweat and also assist with refuelling targets to replenish glycogen stores. When aggressive re-hydration strategies are required, drinks with a higher sodium content may be more useful. To meet all recovery goals, the ingestion of sports drinks should be complimented with other foods and fluids that provide additional carbohydrate, protein, and other nutrients essential for recovery.



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FLUIDS OTHER THAN SPORTS DRINKS

1. Sports Water

A popular drink designed for those who may prefer to drink water during exercise. These drinks are lightly flavoured and generally contain a much lower carbohydrate and electrolyte content than sports drinks. May be a suitable option for moderate exercise of a short duration (<60minutes) or lower intensity sports.

2. Water

Voluntary fluid intake is less when drinking water compared to flavoured drinks. Water is suitable for low intensity or short duration (less than 45 mins) exercise, or in addition to sports drinks.

3. Cordial / Soft Drink / Fruit Juice

Generally these are higher in carbohydrate and low in electrolytes compared with sports drinks. However some choices, such as cola drinks, are popular among endurance athletes as a flavor change and a small source of caffeine towards the end of a race. Such drinks should be de-fizzed, since carbonation decreases voluntary fluid intake and may cause gastrointestinal discomfort, such as bloating.

4. Energy Drinks

The carbohydrate concentration of these is generally too high to be beneficial for performance. They contain added ingredients such as caffeine, vitamins, taurine and guarana. Research is inconclusive as to the performance benefits of these ingredients; however the addition of small to moderate doses of caffeine (75 - 200 mg) can help to sustain exercise performance. Caffeine is no longer banned by the World Anti Doping Agency. Consultation with a sports dietitian is important before deciding to use an energy drink in sporting situations. See our fact sheet on Caffeine for more information

COMMON MISCONCEPTIONS ABOUT SPORTS DRINKS

1. Sports Drinks Are High In Salt

The sodium in sports drinks plays a valuable role in improving fluid absorption and the desire to drink. Sodium can also play a role in replacing the large salt losses that can occur in long events (e.g. ironman triathlons) or for salty sweaters. Sports drinks have a similar sodium content to foods such as milk, bread and breakfast cereal, but are much better tolerated during exercise.

2. Sports Drinks Are Not Suitable For Children

Children have a poor voluntary fluid intake during exercise and

therefore are at greater risk of heat illness. Sports drinks have been demonstrated to improve voluntary fluid intake in children during exercise.

3. Sports Drinks Should Be Diluted

In almost all exercise situations, sports drinks should not be diluted as this reduces the amount of carbohydrate available, changes the sodium concentration (both of which can affect the speed at which the drink empties from the stomach), and changes the flavour.

4. Sports Drinks Cause Gastro-intestinal Upset

You should always experiment with sports drinks in training before using them in competition. Not drinking enough sports drink, or drinking a lot in a short period of time, can cause gastro-intestinal upset. Drink small amounts frequently to minimise problems.

DENTAL HEALTH

Acidic foods and fluids are one of the factors linked to tooth enamel erosion. Sports drinks, together with fruit juice, soft drink, wine, beer, tea and coffee are all examples of acidic fluids. The use of sports drinks alone is unlikely to cause dental erosion. However, athletes who use large quantities of sports drinks for prolonged periods should pay extra attention to dental hygiene. Athletes should also be encouraged to squirt sports drinks into the back of the mouth, follow with a rinse of water, and avoid drinking with a mouth guard in place to minimise damage to tooth enamel. For more information on how to protect your teeth, please see our fact sheet on Dental Health for Athletes.

SUMMARY

- Sports drinks provide carbohydrates and electrolytes.
- The carbohydrates supply the muscles with fuel during exercise.
- The main electrolyte is sodium, which improves the drive to drink and can assist with fluid replacement (see Fluids in Sport fact sheet)
- Flavoured drinks increase palatability and can assist with fluid consumption.
- Sports drinks and sports waters can be used before, during and after exercise.
- The choice of which drink to consume is an individual one, based on a number of factors. An Accredited Sports Dietitian can help to develop an appropriate fluid plan for your sport. Go to: www.sportsdietitians.com.au/FindASportsDietitian/ to find one near you!



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The ideal sports drink depends on personal taste preferences and individual tolerance. The nutrition compositions of sports drinks are critically reviewed by sports dietitians in order to assess their suitability to form a part of an athlete's individual fluid plan. Talk to your sports dietitian to design a fluid plan that is right for you.

Table 1: Composition of common ready-to-drink Sports Drinks and Sports Waters available in Australia

Product	CHO g/l	CHO (%)	Protein (g/L)	Sodium (mmo l/L)	Potassium (mg/L)	Other Ingredients
SPORTS DRINKS						
Gatorade	60	6	0	23	225	n/a
Gatorade Endurance	62	6.2	0	38	392	Chloride Calcium Magnesium
Powerade Isotonic	76	7.6	0	12	141	n/a
Staminade	72	7.2	0	12	160	Magnesium
SPORTS WATER						
Pumped	22	2.2	0	4.8	47	n/a
MiZone Water	37	2.7	0	10	0	B Vitamins Vitamin C

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