



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 competitive market 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 and energy drinks. (Refer to Table One on page 2 to compare the nutritional composition of these beverages.)

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](#)).

What's in a sports drink?

1. Carbohydrate

It is well known 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 not exceed 8%, or even be slightly less. High carbohydrate solutions can impair gastric emptying during exercise. All sports drinks presented in Table One have a carbohydrate content which range between 6-8%.

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 highlighted that these drinks are not suitable when rehydration is crucial to subsequent performance (i.e. must replace a fluid deficit in a short period of time).

3. Flavour

Flavour is an important feature of sports drinks. The more you enjoy the flavour of a drink, the more you drink. It has been shown that fluid intake via a sports drinks is significantly better when compared to plain water due to the taste.

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 One provide relatively small amounts. A small number of products marketed as sports drinks contain protein. The recovery benefits of carbohydrate and protein ingestion 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 athletes' 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.

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).

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 defizzed, since carbonation decreases voluntary fluid intake and may cause gut discomfort.

4. **Energy Drinks** – carbohydrate concentration of these is generally too high. They contain added ingredients such as vitamins, taurine and glucuronolactone. Current evidence suggests that these additives have no impact on sport performance. However the addition of small to moderate doses of caffeine (75 - 200 mg) can help to sustain exercise performance, reduce the perception of effort, and is unlikely to alter hydration status during exercise. Caffeine is no longer banned by the World Anti Doping Agency. Ensure that you use with the advice of a sports dietitian or sports scientist and consider individual responses to caffeine.

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 gastrointestinal 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 gastrointestinal 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 and follow with a rinse of water to minimise damage to tooth enamel.

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.
- The addition of protein may be beneficial to prevent muscle damage and may improve or maintain subsequent performance over consecutive days.
- Other active ingredients (vitamins and minerals) may play a role in energy metabolism or in free radical defense, but are usually found in smaller amounts than other modes of supplementation and it is unclear if they have any direct performance benefits.

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 One: Composition of Sports Drinks and Sports Waters available in Australia

Product	CH O g/L	CH O (%)	Prote in (g/L)	Sodiu m (mmol /L)	Potassiu m (mg/L)	Other Ingredi ents
Sports Drinks						
Gatorade	60	6	0	21	230	n/a
Gatorade Endurance	62.4	6	0	36	150	n/a
Accelerad e	60	6	15	21	66	Calcium, Iron Vitamin E
Powerade Isotonic	76	7.6	0	12	141	n/a
Powerade Energy Edge	75	7.5	0	22	141	100mg caffeine per 450ml serve
Powerade Recovery	73	7.3	17	13	140	
Staminade	72	7.2	0	12	160	Magnesium
PB Sports Electrolyte Drink	68	6.8	0	20	180	
Mizone Rapid	39	3.9	0	10	0	B Vitamins Vitamin C
Powerbar Endurance Formula	70	7	0	33		
Sports Water						
Powerade No Sugar	0.1	n/a	0.5	23	230	n/a
Propel Fitness Water	38	3.8	0	0.8	5	Vitamin E Niacin Panthothen ic Acid Vitamin B6 Vitamin B12 Folic Acid
Mizone Water	25	2.5	0	2	0	B Vitamins Vitamin C