



AIS SPORTS SUPPLEMENT PROGRAM FACT SHEET

Sports Drinks

Supplement Overview

- Composition: carbohydrate-rich fluid (6-8% carbohydrate), containing sodium (10-25 mmol/l) and potassium (3-5 mmol/l) which provides rapid delivery of fluid and fuel during and after exercise.
- The taste of sports drinks increases voluntary intake of fluid compared to water, even for athletes who claim not to like the taste. Studies show that athletes more closely match sweat losses with fluid intake during exercise and recovery when offered sports drinks compared to water.
- Sports drinks are rapidly emptied from the stomach and absorbed through the small intestine. Solutions of 6-8% carbohydrate do not interfere with rehydration goals.
- Replacement of fluid and carbohydrate during endurance exercise has a substantial independent and additive effect on performance. For example, a 12% improvement in time trial performance (6% due to fluid replacement + 6% due to carbohydrate replacement) has been shown.
- Research suggests that carbohydrate replacement during exercise may be beneficial to performance of events of high intensity exercise of ~1 hr duration. Benefits to the performance of endurance/ultra-endurance events, and prolonged intermittent exercise (e.g. team games) are well documented.
- Recent research suggests that carbohydrate replacement during prolonged exercise enhances immune function by reducing the immunosuppression seen in the hours after the session.
- Replacement of electrolytes, particularly sodium, is useful for maintaining thirst drive and may help to reduce urine losses during post-exercise recovery. Dedicated electrolyte supplements suited to the replacement of large electrolyte losses are discussed in the *Electrolyte Replacement Supplements* fact sheet.
- Athletes may be able to tolerate greater amounts of fluid during competition by practicing optimal drinking habits during training sessions.

Supplement Profile

- Sports drinks should be regarded as the sports supplement with the greatest potential to enhance performance in a wide variety of sporting situations.
- Sports drinks are an ideal fluid to consume during and after training and competition sessions, allowing the athlete to replace fluid and electrolyte losses, and simultaneously providing an additional source of carbohydrate fuel. In many situations, sports drinks are a **better** choice than water
 - Sports drinks are likely to promote better fluid intake than water.
 - Sports drinks increase retention of fluid consumed post-exercise by reducing urine losses.
 - Sports drinks provide an additional source of fuel that may enhance performance and reduce immune stresses.
 - In situations in which these benefits do not occur, sports drinks do not detract from performance compared to water.
- Powdered sports drinks can be made up in different concentrations to change the relative delivery of fluid and carbohydrate. For example, a more concentrated drink may be useful when intake of fuel has priority over hydration (e.g. exercise in a cold environment when sweat losses are small), and a more dilute drink may be useful when fluid replacement is critical. However, these modifications should only be undertaken with the advice of a sport scientist. Alterations to the standard formulation will change the taste profile and may reduce voluntary intake of the

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sports drink. Furthermore, dilution of the drink may prevent adequate carbohydrate intake.

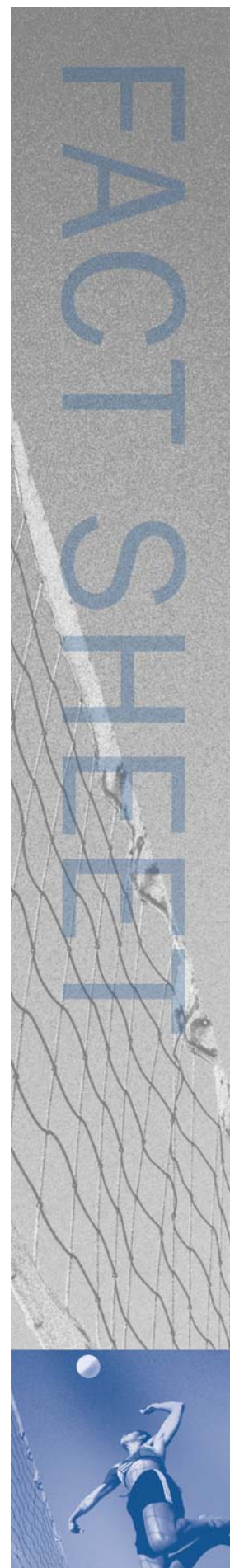
Situations for Use in Sport

- **Use During Exercise:** Athletes should use the opportunities existing in their sport and training activities to drink sufficient fluid to replace as much of their sweat losses as is practical and comfortable. Ideally, the fluid deficit should be kept below 2% of body mass but athletes should not drink excessive amounts of fluid so that they over-hydrate and incur a substantial weight gain over the session. The concentration of the sports drink can be changed to increase delivery of carbohydrate in sports where the need for fuel replacement takes priority over hydration (e.g. distance events in cold conditions), or to decrease carbohydrate concentration where fluid delivery is a priority (e.g. events on very hot conditions). However, this should only occur on the advice of a sports scientist since dilution may change flavour characteristics and reduce voluntary intake of the drink. Furthermore, dilution may prevent adequate carbohydrate intake.
- **Use After Exercise:** Typically, athletes will finish a training or competition session with mild to severe deficit. Monitoring of changes in body mass can provide an estimate of levels of dehydration. Rehydration requires a fluid intake of ~150% of the volume of the post-exercise fluid deficit over the next 1-2 hours, and may not occur voluntarily. Use of a palatable drink and the replacement of electrolytes are important in this process.
- ***We believe that many athletes and teams currently do not make optimal use of sports drinks during training sessions and competition:***
 - They may not be organised to have supplies of sports drink available and accessible during sessions.
 - They may be unaware of sweat losses during sessions, or the amount of sports drink needed to provide a substantial fuel source during/after sessions.
 - They may not be aware of performance benefits during workouts or competition from better hydration or carbohydrate replacement.
 - They may not be aware of recent research showing that proactive use of sports drinks during prolonged training sessions/races is immunoprotective - it appears to reduce the effects of intense exercise on the immune system.

Concerns Associated with Supplement Use

- Over-consumption of fluid during exercise, so that a substantial weight gain occurs over the session, is a major risk factor for the development of hyponatremia.
- For athletes who must remain lean or meet weight (body mass) targets: Overuse of energy-containing fluids may create problems of energy balance or overall nutrient density in a restricted energy diet.
- Sports drinks should be mixed properly, according to the manufacturer's directions or special strategies suggested by a sports scientist, to ensure that fluid and carbohydrate intake goals are met.
- Drinks should be kept cool to promote palatability and encourage intake.
- Higher sodium concentrations may be useful in fluids consumed during exercise by certain (susceptible) athletes to replace excessive sodium losses or prevent hyponatremia. Higher sodium concentrations are needed in fluids consumed after exercise to reverse moderate-severe levels of dehydration. In these cases, an optimal sodium concentration is likely to be 50-80 mmol/L. Sodium may also be consumed from food sources. Refer to the *Electrolyte Replacement Supplements* fact sheet for further details.
- Dehydration increases the risk of gastrointestinal problems during exercise and is often the cause of complaints that 'the sports drink made me sick'. Athletes need to

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drink earlier to prevent dehydration rather than wait until a substantial fluid deficit has occurred.

- Practicing fluid intake strategies in training can also help to overcome problems such as dislike of the taste or mouthfeel of the drink, or gastrointestinal discomfort associated with use of sports drinks.

Last updated 3/1/07

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