

FLUID & HYDRATION

Tips on hydration

To prevent dehydration, it is essential to ensure your body is adequately hydrated before commencing any exercise. Develop a fluid intake plan that allows you to replace most of your sweat losses during exercise. It is best to begin drinking early in the session and adopt a pattern of drinking small volumes regularly. If you can't replace all of the necessary fluid, you should drink as much as is practical and comfortable.

Drinks need to be cool, palatable and conveniently available or they will not be consumed. Sports drinks are recommended for high intensity 'stop-n-go' activities and endurance sports of 60 minutes or greater. The tolerance to the type and amount of fluid we drink varies greatly with each person. To prevent discomfort in competition, trial your fluid plan during training to see what works best for you. Remember, when your body tells you its thirsty, you're already dehydrated!

During recovery you continue to lose fluids through ongoing sweat and urine losses. As a rough guide, **for every 1kg of body weight lost, 1.5 litres of fluid needs to be replaced** within 2-6 hours

The truth about sports drinks

Research has proven that consumption of sports drinks during exercise increases voluntary intake and improves performance compared to water. They are designed to provide the right balance of carbohydrate and fluid to ensure they are emptied quickly from the stomach preventing discomfort. The carbohydrates provide a top-up fuel for the brain and working muscles.

They also contain electrolytes such as sodium and potassium. Sodium is lost in our sweat and inadequate levels may cause muscle cramps. Sodium increases fluid absorption and retention, and can also enhance fluid intake by driving the thirst mechanism. This is especially important in those with large or salty sweat losses.



Choose sports drinks that have 4-8% carbohydrate, 10-20 mmol/L sodium, are affordable, come in a convenient package and taste good. Trial a variety of drinks in training before you decide what is best for you in competition.



Information included in this document was obtained from Sports Dietitians Australia and the Australian Institute of Sport

You continue to lose fluid even after exercise therefore, you need to replace 150% of total fluid loss

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Water is vital for the regulation of body temperature and muscle contractions. It is essential to keep hydrated during exercise to preserve body functions and support exercise performance. Dehydration increases body temperature, heart rate and fatigue leading to a higher perceived exertion. A decrease is seen in mental function, including decision making and concentration, and gastric emptying, resulting in stomach discomfort. Negative impacts have been detected when fluid deficits are as low as 2% (e.g. 1.4L in a 70kg athlete).

Factors influencing sweat rate

Individual sweat rates and fluid losses vary widely due to genetics, body size, gender, exercise intensity, aerobic fitness and environmental conditions. Sweat rates increase with a rise in temperature, humidity and exercise intensity, therefore increasing the need for fluid intake. Sweat loss can occur with any exercise, even in water events and sports such as cycling where sweat is evaporated quickly by the air flow.



Measuring fluid loss

The most practical way to monitor your sweat loss is to measure changes in body mass, with corrections made for fluid/food intake, as well as urine losses before and after exercise. Record your weight in minimal clothing before you begin your session and then again when you are finished. Be sure to be wearing the same clothes and towel dry any excess sweat on the body. **Each kilogram of weight loss is equal to ~1 litre of fluid deficit.** Adding on the weight of any fluid or food consumed during the exercise session and subtracting urine output will provide an estimate of total fluid loss for the session. Divide that by the duration of exercise to provide a rate of sweat loss.

For example: an athlete weighed 55kg before exercise and 53.5kg at the end. During the 2 hour session he consumed 1L of fluid and lost 500ml in estimated urine losses.



$$\begin{aligned} \text{Weight deficit (kg)} &= 55\text{kg} - 53.5\text{kg} = 1.5\text{kg} \\ \text{Total sweat loss (L)} &= 1.5\text{kg} + 1\text{kg} - 500\text{ml} = 2\text{kg} \\ \text{Sweat rate (L/h)} &= 2\text{kg}/2\text{hr} = 1\text{L/hr} \\ \text{Fluid deficit (L)} &= 1.5\text{kg} - 1\text{kg} + 500\text{ml} = 0\text{L} \end{aligned}$$