
Water – a vital nutrient

Summary

- Water is essential to most bodily functions.
 - The body has no way to store water and needs fresh supplies every day.
 - Dehydration is life threatening to a baby and requires urgent medical attention.
 - Adult women should consume around two litres (eight cups) and adult men 2.6 litres (about 10 cups) of fluids a day to prevent dehydration.
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The human body can last weeks without food, but only days without water. The body is made up of 50 to 75 per cent water. Water forms the basis of blood, digestive juices, urine and perspiration, and is contained in lean muscle, fat and bones.

As the body can't store water, we need fresh supplies every day to make up for losses from the lungs, skin, urine and faeces (poo). The amount we need depends on our body size, metabolism, the weather, the food we eat and our activity levels.

Water in our bodies

Some facts about our internal water supply include:

- Body water content is higher in men than in women and falls in both with age.
- Most mature adults lose about 2.5 to 3 litres of water per day. Water loss may increase in hot weather and with prolonged exercise.
- Elderly people lose about two litres per day.
- An air traveller can lose approximately 1.5 litres of water during a three-hour flight.
- Water loss needs to be replaced.

Importance of water

Water is needed for most body functions, including to:

- maintain the health and integrity of every cell in the body
- keep the bloodstream liquid enough to flow through blood vessels
- help eliminate the byproducts of the body's metabolism, excess electrolytes (for example, sodium and potassium), and urea, which is a waste product formed through the processing of dietary protein
- regulate body temperature through sweating
- moisten mucous membranes such as those of the lungs and mouth
- lubricate and cushion joints
- reduce the risk of cystitis by keeping the bladder clear of bacteria
- aid digestion and prevent constipation
- moisturise the skin to maintain its texture and appearance
- carry nutrients and oxygen to cells
- serve as a shock absorber inside the eyes, spinal cord and in the amniotic sac surrounding the fetus in pregnancy.

Water content in food

Most foods, even those that look hard and dry, contain water. The body can get approximately 20 per cent of its

total water requirements from solid foods alone.

The digestion process also produces water as a byproduct and can provide around 10 per cent of the body's water requirements. The rest must come from liquids.

Recommended daily fluid intake

Approximate adequate daily intakes of fluids (including plain water, milk and other drinks) in litres per day include:

- infants 0–6 months – 0.7 l (from breastmilk or formula)
- infants 7–12 months – 0.9 l (from breastmilk, formula and other foods and drinks)
- children 1–3 years – 1.0 l (about 4 cups)
- children 4–8 years – 1.2 l (about 5 cups)
- girls 9–13 years – 1.4 l (about 5-6 cups)
- boys 9–13 years – 1.6 l (about 6 cups)
- girls 14–18 years – 1.6 l (about 6 cups)
- boys 14–18 years – 1.9 l (about 7-8 cups)
- women – 2.1 l (about 8 cups)
- men – 2.6 l (about 10 cups).

These adequate intakes include all fluids, but it is preferable that the majority of intake is from plain water (except for infants where fluid intake is met by breastmilk or infant formula).

Sedentary people, people in cold environments, or people who eat a lot of high-water content foods (such as fruits and vegetables) may need less water.

Some people need higher fluid intake

People need to increase their fluid intake when they are:

- on a high-protein diet
- on a high-fibre diet, as fluids help prevent constipation
- pregnant or breastfeeding (the fluid need is 750-1,000 ml a day above basic needs)
- vomiting or have diarrhoea
- physically active
- exposed to warm or hot conditions.

Risks of inadequate fluid intake

Not drinking enough water can increase the risk of kidney stones and, in women, urinary tract infections. It can also lower your physical and mental performance, and salivary gland function, and lead to dehydration.

Dehydration

Dehydration occurs when the water content of the body is too low. This is easily fixed by increasing fluid intake.

Symptoms of dehydration

- thirst
- headaches
- lethargy
- mood changes and slow responses
- dry nasal passages
- dry or cracked lips

- dark-coloured urine
- weakness
- tiredness
- confusion and hallucinations.

If dehydration is not corrected by fluid intake, eventually urination stops, the kidneys fail and the body can't remove toxic waste products. In extreme cases, dehydration may result in death.

Causes of dehydration

There are several factors that can cause dehydration including:

- not drinking enough water
- increased sweating due to hot weather, humidity, exercise or fever
- insufficient signalling mechanisms in the elderly – sometimes, they do not feel thirsty even though they may be dehydrated
- increased output of urine due to a hormone deficiency, diabetes, kidney disease or medications
- diarrhoea or vomiting
- recovering from burns.

Dehydration in the elderly

Elderly people are often at risk of dehydration due to:

- changes to kidney function, which declines with age
- hormonal changes
- not feeling thirsty (because the mechanisms in the body that trigger thirst do not work as well as we age)
- medication (for example, diuretics and laxatives)
- chronic illness
- limited mobility.

Dehydration in babies and children

Children are susceptible to dehydration, particularly if they are ill. Vomiting, fever and diarrhoea can quickly dehydrate a baby.

Dehydration can be a life-threatening condition in children. If you suspect dehydration, take the child immediately to the nearest hospital emergency department.

Some of the symptoms of dehydration in a child include:

- cold skin
- lethargy
- dry mouth
- depressed fontanelle (the soft spot on top of a baby's skull where the bones are yet to close)
- a blue tinge to the skin as the circulation slows.

Risks of excessive water intake

Drinking too much water can also damage the body and cause hyponatraemia (water intoxication). Hyponatraemia is rare in the general population.

Hyponatraemia occurs when sodium in the blood drops to a dangerously low level. Sodium is needed in muscle contraction and for sending nerve impulses.

If large amounts of plain water are consumed in a short period of time, the kidneys cannot excrete enough fluid. Hyponatraemia can lead to headaches, blurred vision, cramps (and eventually convulsions), swelling of the brain,

coma and possibly death.

For water to reach toxic levels, you would have to consume many litres in a short period of time. Hyponatraemia is most common in people with particular diseases or mental illnesses (for example, in some cases of schizophrenia), endurance athletes and in infants who are fed infant formula that is too diluted.

Water fluoridation

Tap water in many cities also contains fluoride, which is good for teeth and bones. Bottled water does not usually have good levels of fluoride. An additional benefit of drinking reticulated (mains) water in Victoria is that, in most areas, fluoride is added to the water and this provides dental health benefits for the community.

Water fluoridation helps prevent dental decay, and is a safe and effective way of allowing everybody access to the benefits of fluoride. [Find out if your area has water fluoridation.](#)

Water and sports performance

Fluid needs of athletes during training and competition vary greatly depending on many factors. For smaller athletes exercising in mild conditions, less fluid may be needed. Well-trained athletes competing at high intensities in warm conditions may need more fluid.

Fluid retention

Many people believe that drinking water causes fluid retention. In fact, the opposite is true. Drinking water helps the body rid itself of excess sodium, which results in less fluid retention.

The body will retain fluid if there is too little water in the cells. If the body receives enough water on a regular basis, there will be no need for it to conserve water and this will reduce fluid retention.

Sources of fluid

Fluids include fresh water and all other liquids like milk, coffee, tea, soup, juice and even soft drinks.

Fresh water is the best drink because it does not contain kilojoules and is best for hydrating the body.

Milk (particularly low-fat varieties) is an important fluid, especially for children, and is about 90 per cent water. Tea can be an important source of fluid. Tea can help you meet your daily fluid recommendations, and is a source of antioxidants and polyphenols, which appear to protect against heart disease and cancer.

Fresh fruit is preferable to fruit juice because it has more fibre and nutrients, and less sugar.

Avoid sugary and artificially sweetened drinks

The Australian Dietary Guidelines recommend that all Australians limit their intake of drinks containing added sugar, including sugar-sweetened soft drinks and cordials, fruit drinks, vitamin-style waters, flavoured mineral waters, energy and sports drinks.

Consumption of sugary drinks provides additional energy (kilojoules) to the diet, but no other essential nutrients. There is strong evidence of the association between the consumption of sugary drinks and excess weight gain in both children and adults, as well as reduced bone strength and tooth decay.

Artificially sweetened drinks add very little energy (kilojoules) to the diet and therefore do not contribute directly to weight gain. However, artificially sweetened drinks still maintain the 'habit' of drinking sweet drinks, may lead to decreased bone density (as people may drink less milk) and can contribute to tooth decay due to their acidity.

Tips for increasing water intake

- Add a squeeze of lemon or lime juice to plain water to add variety.
- Keep a bottle or glass of water handy on your desk or in your bag.
- Add ice cubes made from fresh fruit to a glass of water.

Limit mineral water intake

Commercially bottled mineral water contains salt, which can lead to fluid retention and swelling, and even increased blood pressure in susceptible people. Limit the amount of mineral water or choose low-sodium varieties (less than 30 mg sodium per 100 ml).

Where to get help

- In an emergency, call triple zero (000)
- The emergency department of the nearest hospital
- Your doctor
- **Dietitians Association of Australia** Tel. 1800 812 942

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