

## Water - a vital nutrient

The human body can last weeks without food, but only days without water. The body is made up of 55–75 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 lungs, skin, urine and faeces (poo). The amount we need depends on our metabolism, the weather, the food we eat and our activity levels.

### Facts about water in our bodies

Some facts about our internal water supply:

- Body water is higher in men than in women and falls in both with age.
- Most mature adults lose about 2.5–3 litres of water per day. Water loss may be more 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.
- Foods provide about one litre of fluid and the remainder must be obtained from drinks.

### Water is needed for most body functions

Water is needed 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 by-products 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.
- Keep mucous membranes moist, 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.
- Work as a moisturiser to improve the skin's 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 about half of its water needs from food alone. The digestion process also produces water as a by-product and can provide around 10 per cent of the body's water requirements. The rest must come from liquids.

### Dehydration

Dehydration occurs when the water content of the body is too low. This is easily fixed by increasing fluid intake. Symptoms of dehydration include headaches, lethargy, mood changes and slow responses, dry nasal passages, dry or cracked lips, dark-coloured urine, weakness, tiredness, confusion and hallucinations. Eventually urination stops, the kidneys fail and the body can't remove toxic waste products. In extreme cases, this may result in death.

Causes of dehydration include:

- Increased sweating due to hot weather, humidity, exercise or fever.
- Not drinking enough water.
- 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.

## When you need to increase fluids

If you regularly don't drink enough water there is some increased risk of kidney stones and, in women, urinary tract infections. There is also limited evidence to suggest an increased risk for some cancers including bladder cancer and colon cancer. It can also lower your physical and mental performance and salivary gland function.

People who need more water in their diet include those who:

- Are on a high protein diet
- Are on a high fibre diet, as fluids help prevent constipation
- Are children
- Have an illness that causes vomiting or diarrhoea
- Are physically active
- Are exposed to warm or hot conditions.

## Dehydration in elderly

Elderly people are often at risk of dehydration. This is due to:

- Changes to kidney function, which declines with age
- Hormonal changes
- Not feeling thirsty (because the mechanisms in the body that trigger thirst don't 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. This can be a life-threatening condition. 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 (a fontanelle is soft spot on a child's skull)
- A blue tinge to the skin as the circulation slows.

## Water intoxication (or hyponatremia)

Drinking too much water can also damage the body and cause hyponatremia. This is when sodium in the blood drops to a dangerously low level. Sodium is needed in muscle contraction and for sending nerve impulses.

If too much water is consumed, the kidneys cannot excrete enough fluid. Water intoxication 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 a day. Water intoxication is most common in people with particular diseases or mental illnesses (for example, in some cases of schizophrenia) and in infants who are fed infant formula that is too diluted.

## **Water and sports performance**

Fluid needs of athletes during training and competition vary greatly depending on many factors. So, the following is a general suggestion. Athletes are advised to drink 500ml of water two hours before an event, and up to 300–500ml every 30 minutes during the event (depending on individual thirst, surrounding temperature and exercise intensity).

For smaller athletes exercising in mild conditions, less fluid may be needed. Well-trained athletes competing at high intensities in warm conditions may prefer more fluid. A maximum limit of 1500ml of fluid per hour is advised to avoid the ill-effects of water intoxication.

## **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.

## **Recommended daily fluids**

Approximately six to eight glasses (at least 150ml each) of a variety of fluids can be consumed each day. More than eight glasses may be needed for physically active people, children, people in hot or humid environments, and breastfeeding women (who need an extra 750–1,000ml per day). Less water may be needed for sedentary people, older people, people in a cold environment or people who eat a lot of high water content foods.

## **Sources of fluid**

Fluids include fresh water and all other liquids like juice, soft drinks, coffee, tea, milk and soup. Fresh water is the best drink because it does not contain kilojoules and has fluoride that is good for the teeth. Milk is important (especially for children) and tea can be a source of antioxidants, 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. Sweet drinks should be limited because they add calories without nutrient value.

## **Mineral water contains salt**

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 30mg sodium per 100ml).

## **Where to get help**

- Your doctor
- An Accredited Practising Dietitian, contact the Dietitians Association of Australia
- In an emergency, the emergency department of the nearest hospital.

## **Things to remember**

- 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.
- It is recommended that you consume around eight glasses of water a day to prevent dehydration.

**This page has been produced in consultation with, and approved by:**

Deakin University - School of Exercise and Nutrition Sciences

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