

KEY TIPS ON HYDRATION

SHOULD THIRST BE YOUR GUIDE?

FOR HEALTHCARE PROFESSIONAL
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Everyone agrees that good hydration is important but not always on how best to achieve it. Some experts advocate that thirst should be the main guide to how much fluid we drink and when. Others suggest that thirst is unreliable and we should plan to drink regularly, aiming to achieve the EFSA Adequate Intake but recognising that adjustments are required for individual characteristics and for climatic conditions and physical activity levels.



Our water intakes are typically made up of about **20-30% from foods and 70-80% from beverages**^{1,2}

So, what does it mean to be thirsty?

Let's look at water balance within the body and what factors influence this. Water is normally the largest single component of our bodies. Two-thirds of the water is present inside cells (intracellular) while one-third is outside cells (extracellular), e.g. in blood plasma, in the spaces between cells and in lymph. The two compartments are linked so water can pass between them when required.

HOW THIRST DEVELOPS

Sodium concentrations are vital in the development of thirst as sodium is the most common ion in extracellular water. The ideal solute concentration inside our bodies is around 280-300 mosmol/l, which equates to nearly 9g of sodium chloride in a litre of water. Our bodies will take action to defend that level when it's challenged, as outlined below:

Normal water loss (e.g. sweating) or eating salty foods increases the sodium content of the extracellular compartment.

Water moves from less salty intracellular fluid to dilute the extracellular fluid, which leads to a decrease in intracellular water.

Specialised receptors in the brain (osmoreceptors) detect this and stimulate the thirst mechanism (i.e. the process of searching for and ingesting water).

Antidiuretic hormone (ADH) is also produced to conserve fluid by acting on the kidney to reduce the amount of water lost in urine.

Drinking water rebalances the sodium concentrations in the intra and extracellular fluid so ADH levels fall and urine output increases.

However, if thirst is ignored, ADH continues to be produced resulting in concentrated, dark-coloured urine – a common sign of dehydration³.

THE PHYSIOLOGY IS THE SAME FOR EVERYONE SO WHY DO SOME PEOPLE FAIL TO RESPOND TO THIRST?

Reasons⁴ may include:

- Limited access to water, e.g. in hospitals, nurseries or schools
- Forgetting to drink, e.g. due to mental health problems
- Disliking the taste of water
- Reduced sensation of thirst, e.g. due to age or medications
- Lack of awareness about the benefits of good hydration
- Fear of incontinence or inconvenient toilet visits (e.g. at work or in social situations)
- Consciously overriding the thirst mechanism leading to depression of the sensation

GROUPS WHO CANNOT RELY ON THIRST ALONE:

1. Children⁵, due to poor access to water at school, higher physical activity, resistance to drinking water and limited toilet access.

2. The elderly, due to reduced thirst sensation, poor access to water in care homes and hospitals, reduced mobility making toilet visits problematic.

3. People on medications that block the production of angiotensin and/or inhibit its specific receptor e.g. for hypertension, heart failure, diabetes or cancer⁶.



For most people, thirst is an adequate stimulus to drink and results in sufficient fluid intake over the day to replace water losses and maintain adequate water and salt balance. However, the available evidence suggests that significant numbers of apparently normal, healthy people are chronically dehydrated, so thirst is evidently not a sufficient stimulus for these individuals.

The most reliable sign of dehydration is a low urine output, with infrequent visits to the bathroom and the production of only small volumes of dark-coloured urine. If you are one of these individuals, then you should perhaps consider finding ways to drink a little more throughout the day.

1. Manz F, Johner SA, Wentz A, Boeing H, Remer T. Water balance throughout the adult lifespan in a German population. *Br J Nutr* 2011; 107: 1673-1681.
2. EFSA Panel on Dietetic Products, Nutrition, and Allergies (NDA); Scientific Opinion on Dietary reference values for water. *EFSA Journal* 2010; 8(3):1459. [48 pp.]. doi:10.2903/j.efsa.2010.1459. Available online: www.efsa.europa.eu
3. Armstrong LE, Pumerantz AC, Fiala KA, Roti MW, Kavouras SA, Casa DJ, Maresh CM. Human hydration indices: acute and longitudinal reference values. *Int J Sport Nutr Exerc Metab.* 2010; 20(2):145-53.
4. McCauley LR, Dyer AJ, Stern K, Hicks T, Nguyen MM. Factors influencing fluid intake behavior among kidney stone formers. *J Urol.* 2012; 187(4):1282-6.
5. Bonnet F, Lepicard EM, Cathrin L, Letellier C, Constant F, Hawili N, Friedlander G. French children start their school day with a hydration deficit. *Ann Nutr Metab.* 2012; 60(4):257-63.
6. Thornton SN. Angiotensin inhibition and longevity: a question of hydration. *Pflugers Arch.* 2011; 461(3):317-24.