



## Sara Kirkham

sarakirkham@yahoo.co.uk  
+44 (0) 7919 110 440  
www.nutritionalsolutions.org.uk



## Hydration – how much is enough?

By Sara Kirkham BSc.(Hons) Nutritional Medicine, CNHC, MBANT

Adequate hydration is crucial for good health, and critical to mental and physical performance. The human body is over two-thirds water weight, and whilst 2% dehydration will begin to affect our mental performance, 4% dehydration can affect aerobic performance by up to 25%. Water is involved in almost every metabolic reaction in the human body. It lubricates the eyes and joints, facilitates digestion, keeps the skin healthy and flushes out waste and toxins through the kidneys and sweat. Surveys have reported that less than 1% of people meet fluid intake recommendations, and 20% of GP visits are with symptoms such as tiredness and headaches, which can be caused by dehydration.

But dehydration can be much more serious than a headache and lack of energy. BBC2's *Trust Me, I'm a Doctor* programme illustrated that dehydration was a potential cause of increased strokes in the winter months. Reduced body temperature causes blood to be directed away from peripheral tissues in an attempt to maintain core body temperature, but the increased amount of blood in the core stimulates fluid loss through urine formation as the body attempts to reduce blood pressure. If this increased fluid loss is not corrected with an increase in fluid intake, dehydration occurs. This link between stroke and dehydration was also illustrated in the THIRST study (Rodriguez et al, 2008).

### How the body copes with dehydration

The hypothalamus in the brain measures blood osmolarity, the measure of solid particles in the blood compared to fluid (plasma). Dehydration results in

the hypothalamus stimulating the posterior pituitary to release anti-diuretic hormone, which travels in the bloodstream to the kidneys and increases the porosity of the collecting ducts in kidney nephrons. This results in more water being reabsorbed back into the blood stream from the filtrate that is creating urine, elevating blood plasma (fluid) levels, decreasing osmolarity, and even correcting a previously reduced blood pressure in more extreme dehydration. At the same time, the hypothalamus sends a nervous impulse to the thirst centre in the brain, so feeling thirsty is an indication that blood osmolarity has already risen and body metabolism and performance have already been affected. Therefore, it is better to prevent this from happening in the first place!

### So how much should we be drinking?

The NHS Eat Well Guide states that we should drink six to eight glasses of fluid daily, based upon original recommendations from the Food and Nutrition Board (1945) that we consume one ml of water per calorie consumed. The Institute of Medicine recommends 3.7 litres for men and 2.7 litres for women. However, a more accurate guideline is based upon an individual's body weight. The Oxford Handbook of Nutrition and Dietetics (2012) recommends that we consume 35ml of fluid per kg body weight, but all of these recommendations are not taking account of the fluid consumed within our diet, from, for example, high water content fruit and vegetables, milk or soup. However, if your diet is not meeting the recommended five (to 10) portions of fruit and vegetables per day, your diet is less likely to be contributing much to your fluid requirements.