

Tea and Hydration

Introduction

The Tea Council's Healthy Drinks Survey revealed that a third of all adults in the UK are not meeting their fluid requirements by failing to replace the fluid that is lost daily by their bodies. Fluid is vital to life, and whilst humans can survive weeks without food, they can only survive a few days without fluid. It is vital for a number of bodily functions including:

- Transportation for essential nutrients and oxygen (blood)
- Excretion of waste products (urine and faeces)
- Lubrication (joints and eyes)
- Regulation of body temperature

As a result, maintenance of an optimal fluid balance is important for general health and well being.

Body Fluid

Approximately 50-70% of our body weight is made up of water, which varies depending on age (higher in infants than adults) and gender (lower in women than men due to a higher composition of body fat containing no water). This fluid is distributed amongst the extracellular (blood and other fluids) and intracellular (within the cells) compartments of the body.

Fluid Balance

Fluid balance is based on:

- the amount of water that is lost in the urine, faeces, skin and lungs and
- the intake of water coming from food, drinks and metabolism.

Table 1 shows the water balance of a sedentary individual with a body weight of 70-75kg living in a temperate climate.¹

Table 1¹

	Water (ml/day)
<i>Intake</i>	
Food	1000ml
Drinks	1200ml
Metabolism	350ml
	2550ml
<i>Output</i>	
Urine	1250ml
Faeces	100ml
Skin	850ml
Lungs	350ml
	2550ml

The regulation of this fluid balance is very tightly controlled by various homeostatic mechanisms e.g. a water deficiency causes a fall in blood volume and consequently an increase in osmolality of all body fluids, which stimulates the thirst centre and the osmoreceptor in the brain. This results in thirst (leading to conscious drinking behaviour) and the release of the antidiuretic hormone vasopressin (acts on receptors in the kidney to increase water absorption and reduce urinary volume). When the body contains an excess of water the reverse occurs.

Fluid Depletion

The tight regulation of the body's fluid balance generally results in variations of total body fluid levels of less than 1%. However, changes as little as 1-2% can result in dehydration.

Chronic dehydration may occur in situations where there is a continual low intake of fluid and particular populations at risk include

- Children – maybe less aware of the need of increased drinking and have a relatively insensitive thirst mechanism²
- The elderly - possibly due to a reduced thirst response³, chronic physical and/ or mental impairment⁴⁻⁵

The effects of chronic dehydration include constipation, lethargy, headaches, mental confusion (in the elderly), increased risk of urinary tract infections and renal stones. In addition, there does appear to be some evidence of a link between a habitually low fluid intake and certain cancers eg colon⁶⁻⁷ and breast.⁸

Acute dehydration may be as a result of increased fluid losses such as

- Diarrhoea and vomiting
- Pyrexia
- Burns
- Undiagnosed Diabetes Mellitus
- Prolonged use of diuretic drugs
- Physical activity

Severe dehydration is associated with compromised cardiovascular function, renal impairment, weakness and lethargy, headaches and nausea.

Fluid Requirements

Individual requirements for fluid vary considerably as the amount of fluid lost will depend on various factors such as the environmental temperature, humidity, individual metabolism, activity levels, general state of an individual's health and diet.

However, as a general rule most healthy adults should aim for a daily intake of 35ml of fluid per kg body weight per day⁹ and the British Dietetic Association recommends that most healthy adults should drink at least 1.5-2.0 litres of liquid every day (more in hot weather and if physically active).

Unfortunately the thirst mechanism is rather insensitive in humans¹⁰ and so thirst should not be relied on as the main stimulus or reminder to drink, and for this reason it is important to maintain fluid intake throughout the day.

Tea and fluid replacement

In the past it has been widely believed that tea should be avoided as a fluid replacement due to the diuretic action of the caffeine present.

An extensive review of the medical and scientific literature¹¹, carried out by Professor Ron Maughan and Jane Griffen, concluded that 'there is no evidence base for the assumption that all caffeine containing drinks should be avoided in situations where fluid balance is, or might become, precarious.' It was found that tea does not have a diuretic effect due to caffeine unless the amount of tea consumed at one sitting contains more than 250-300mg of caffeine, equivalent to between 5 and 6 cups of tea.¹²⁻¹⁷

In fact, due to the volume of fluid that is drunk whilst enjoying a cup of tea, the British Dietetic Association advises that tea can contribute towards the daily-recommended fluid intake of 1.5 to 2 litres.

In Summary...

About 70% of the UK population drink tea on a regular basis, drinking on average three to four cups of tea a day.¹⁸ At this intake tea can make a positive contribution to the body's hydration status, helping to promote health and well being.

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