Water and Hydration: How much water is TOO much?

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Introduction

Water makes up 50-70% of the human body, with lean tissue containing ~73% water and adipose tissue containing ~20% water. Making up such a huge component of the body, water is essential for survival, playing several key roles in the physiological processes of the body. This article is going to briefly discuss the functions of water in the body, daily water needs and requirements, and water deficiency and toxicity.

Functions of Water

Water is involved in many of the body's chemical processes, actively participating as either a reactant or product in the following:

- Temperature regulation - through skin perspiration and lung respiration
- Removal of waste products - through urine and feces
- pH maintenance
- Metabolism of food - especially protein metabolism
- Joint lubricant
- Basis for amniotic fluid, bile, and saliva

Water Needs

Based on typical total daily water intakes from a combination of fluids and food, a minimum daily intake for water has been established in order for the body to replaces daily water losses (i.e. lung respiration, skin perspiration, urine, and feces).

Adequate Intake for total daily water intake is set at:

- Men - 3.7 litres
- Women - 2.7 litres

To replace fluid losses, the minimum amount of water intake required per day for an adult is 1 to 3 litres.

The simplest way for an individual to determine if they are consuming an adequate amount of water is to observe the colour of their urine. Concentrated urine with a dark yellow colour and a strong odour is indicative of the requirement to drink more; whereas n odourless, clear or pale yellow urine indicates adequate hydration.

Water Deficiency

Thirst is an indicator of dehydration (i.e. not drinking enough). Fluid losses must be replaced and for safety ~0.75 litres of water is recommended to be consumed for each pound of weight loss caused by water loss.

The effects of dehydration vary from mild to severe, with a 1 to 2 percent loss of body weight in fluids simply causing thirst, to a 20% loss in body weights in fluids causing coma and possible death.

Water Toxicity

Although not as common as dehydration, water toxicity from *too* high an intake of water can occur, and is just as dangerous. When this happens the kidneys are unable to excrete the excess water, which can lead to serious side effects, including but not limited to blurred vision, cramps, convulsions, headaches, and ultimately death. Hyponatremia is the term given to the electrolyte disturbance caused by the imbalance of water to sodium in the body, and can be contributed to one of three things - one of which is the consumption of too much water.

How much water is *too* much is dependent upon the individual, as certain populations require more water than others. For example, an athlete has a higher water loss than a sedentary individual and therefore requires more water than the latter, and sometimes the Adequate Intake is not adequate enough for such a person.

Conclusion

Water makes up 50 to 70% of the human body and is essential for survival. Water is a daily active reactant or product of many of the body's chemical and physiological processes, and the Adequate Intake for total daily water intake has been set at 3.7 litres for men, and 2.7 litres for women. The Adequate Intake guidelines are set in place to prevent water deficiency and water toxicity, both which can be dangerous and in extreme circumstances, lead to death.

REFERENCES

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