



Water intake requirements for human

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Water is an essential nutrient for all known forms of life and the mechanisms by which fluid and electrolyte homeostasis is maintained in humans are well understood. Water accounts for 70% of our body weight. It is a constituent of blood and other vital body fluids. Water plays a key role in elimination of body wastes and regulation of body temperature.

YouTube Video: https://www.youtube.com/watch?v=f8l-M7O9Z_E

Water Intake and Sources

Water intake includes that which is consumed as food and beverage, along with relatively small volumes of water created by oxidation of food (metabolic water) and breakdown of body tissue. Metabolic water is about 350 to 400 mL /d. Determining actual water consumption is difficult for a variety of reasons, one being that many of the published reports are for total water use (drinking water, water used for basic hygiene, etc.). Additionally, some reports on water intake report only tap water, and therefore, water provided as other beverages are not included in the calculations. Humans ingest water as plain drinking water, as beverages, and in food. Water in food can be inherent or added during preparation, and also produced by metabolism. All contribute to the "total water intake."

Water content of beverages varies. Plain drinking water and diet soft drinks are 100% water, whereas coffee and tea are 99.5%, and sport drinks are 95%. Fruit juices vary from 90 to 94% water. Skim milk, 2% fat milk, and whole milk are 91%, 89%, and 87% respectively.

The body loses water through sweat, urine and faeces.

Water requirement and factors affecting it

The minimum requirement for water is the amount that equals losses and prevents adverse effects of insufficient water, such as dehydration. Given the extreme variability in water needs which are not solely based on differences in metabolism, but also in environmental conditions and activity, there is not a single level of water intake that would ensure adequate hydration and optimal health for half of all apparently healthy persons in all environmental conditions.

However, it is generally accepted that a normal healthy person needs to drink about 8 glasses (2 litre) of water per day. The fact is that the true amount of water intake depends upon several factors, including gender, age, level of activity and environment. The adequate water intake is 30 ml/kg body weight in a person with normally functioning kidneys and heart.

As an individual grows older, the need for water intake decreases slightly, but adequate water intake is still just as vital to the body's functioning.

In presence of kidney diseases excessive water intake does not help prevent kidney disease. In fact, the doctor may recommend restriction of water intake. Sodium and intravascular volume balance are usually maintained via homeostatic mechanisms until the kidney functions fall below 10-15 ml/min. However, the patient with mild-to-moderate chronic kidney disease, despite being in relative volume balance, is less able to respond to rapid infusions of sodium and is therefore prone to fluid overload. In summer, such patients should therefore take extra salty water only after medical consultations. On the contrary, hypovolemia (such as vomiting, diarrhea, diuretic use) may cause potentially reversible declines in renal function. These patients need excess of fluids to replenish the amount lost in vomiting or diarrhea.

An individual's level of activity is one of the greatest indicators of the amount of water s/he should drink each day. As a person exercises, the body will begin to excrete more water through perspiration and require more water for proper replenishment. For a short bout of exercise (<30 minutes), 1-2 extra glasses will replenish the body. If exercising is for longer periods of time or in warmer climates, a person likely needs to drink at least three extra glasses of water per day to replace any liquid lost during the process.

The environment also affects the amount of water an individual should drink. Individuals in warmer climates should drink more water to compensate for liquid lost through perspiration. Individuals who live at high altitudes may also need to drink more water, as the lack of oxygen in the air prompts more rapid breathing and a

greater loss of moisture during respiration. Everyone, regardless of their environment, should drink more water during the summer months, as the heat and extra time spent outside can result in greater liquid loss.

Rules of thumb

- Arm pit test: The arm pit should always be wet, if dry indicated significant dehydration.
- Urine output measure: One must pass urine once in eight hours. If not consult your doctor.
- Know your kidney function: $14 - \text{age in years}$ multiplied by weight in kg and divided by 74 into serum creatinine levels. If the number is less than 100, talk to your doctor for the salt and water intake amount. In females, 85% of this number should be taken into account.
- All patients with heart and liver disorders should talk to their doctor about the fluid and salt intake measures.

Adverse Consequences of inadequate water intake

Dehydration is the adverse consequence of inadequate water intake. The symptoms of acute dehydration vary with the degree of water deficit. For example, fluid loss at 1% of body weight impairs thermoregulation and, thirst occurs at this level of dehydration. Thirst increases at 2%, with dry mouth appearing at approximately 3%. Vague discomfort and loss of appetite appear at 2%. The threshold for impaired exercise thermoregulation is 1% dehydration, and at 4% decrements of 20-30% is seen in work capacity. Difficulty concentrating, headache, and sleepiness are observed at 5%. Tingling and numbness of extremities can be seen at 6%, and collapse can occur at around 7% dehydration. A 10% loss of body water through dehydration is life-threatening.

Consequences of excess water intake

Excess of water in the body may cause water intoxication or hyponatremia as suggested by the studies done by researchers from Monash University, Australia. The conditions would range from nausea, vomiting to lethargy, convulsions coma and even death. A swallowing inhibition is being activated by the brain after excess intake of water, helping to maintain tightly calibrated volumes of water.

Sources

- [Water requirements, impinging factors and recommended intakes](#) 
- [How much Water should One Drink in Summer?](#) 



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