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Water



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Water Balance

- Largest constituent in the body (60-70%)
- Body water is distributed as
 - Inside the cells of tissue (intracellular water – 50%)
 - Outside the tissue cells (extracellular)



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Water intake

- Water is consumed in the following ways:
 - Food and water
 - Formed in the tissues by the oxidation of hydrogen present in fats, carbohydrates, and proteins
- Water intake varies widely depending on the climate (tropical vs temperate)
- In a normal individual, water intake is approximately equal to water lost from the body



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Water Loss

- Water is lost in the following ways:
 - kidneys
 - Skin
 - Lungs
 - Large intestine
- Water loss from the body varies – depends on the climate (tropical vs temperate)



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Water Exchange

- Water is absorbed rapidly from the small intestine to the general circulation and rapidly passes to the tissue space as tissue fluid
- Majority of water is excreted through kidneys
- Water exchange between plasma and interstitial fluid:
 - Controlled by the osmotic pressure (less) of proteins in the plasma, arterial capillary pressure (greater) – (hence, fluid passes from capillaries to tissue space) and capillary pressure at the venous end (less) than protein osmotic pressure (hence fluid passes from tissue space to capillaries)



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Water balance

- 2L of water consumed is rapidly distributed throughout the body
- Excreted by kidneys within 30 min
- 1500 ml/hour
- In temperate climate, output is almost equal to the water ingested
- Tropical climate, majority is lost in the form of sweat



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Water Balance

- Constantly lost in the form of urine, sweat, expelled air, and faeces
- Reduced intake will result in change in body fluids
- Reduction in volume of the extracellular fluid (ECF) and intracellular fluid (ICF) occurs
- Urine output is reduced and a state of dehydration of cell occurs
- Leads to circulatory failure
- Loss of 5-10 L will result in serious illness and loss of about 15 L will cause death