

Body fluids homeostasis Tutorial

Fluids Compartments:

- What are the different fluid compartments of the body?
- What is the size of each compartment of the total body fluids?
- What is the percentage of each compartment of the total body weight?
- How body fluid compartments in a 75 kg man are distributed?
- How body fluid compartments in a 80 kg woman are distributed?

Fluid Compartments

≈ 60% of body weight

Extracellular fluid
(≈ 1/3)
≈ 33% of TBW
≈ **20% of body wt**

Intracellular fluid
(≈ 2/3)
≈ 67% of TBW
≈ **40% of body wt**

Plasma
≈ 25% of ECF
≈ **5% of body wt**

Interstitial fluid
≈ 75% of ECF
≈ **15% of body wt**

Transcellular fluid

CSF
Intraocular
Pleural
Peritoneal
Pericardial
Synovial
Digestive
secretions

Factors affecting body fluids

- Water intake & output
- Age:
 - infant: 73%
 - elderly: 45%
- Gender:
 - adult male: 60%
 - adult female: 40-50%
- Obesity
- Climate
- Drinking Habits
- Level of physical activity

THE HUMAN BODY

A shirtless male athlete is shown in a dynamic running pose, splashing water. The background is dark with a starry pattern. The image is overlaid with text labels for various body parts and their water content percentages. The labels are: BLOOD (83% Water), BRAIN (74.5% Water), KIDNEYS (83% Water), LIVER (86% Water), MUSCLES (76% Water), CONNECTIVE TISSUE (60% Water), BONES (22% Water), SKIN (70% Water), and FAT (20% Water).

BLOOD
83% Water

BRAIN
74.5% Water

KIDNEYS
83% Water

LIVER
86% Water

MUSCLES
76% Water

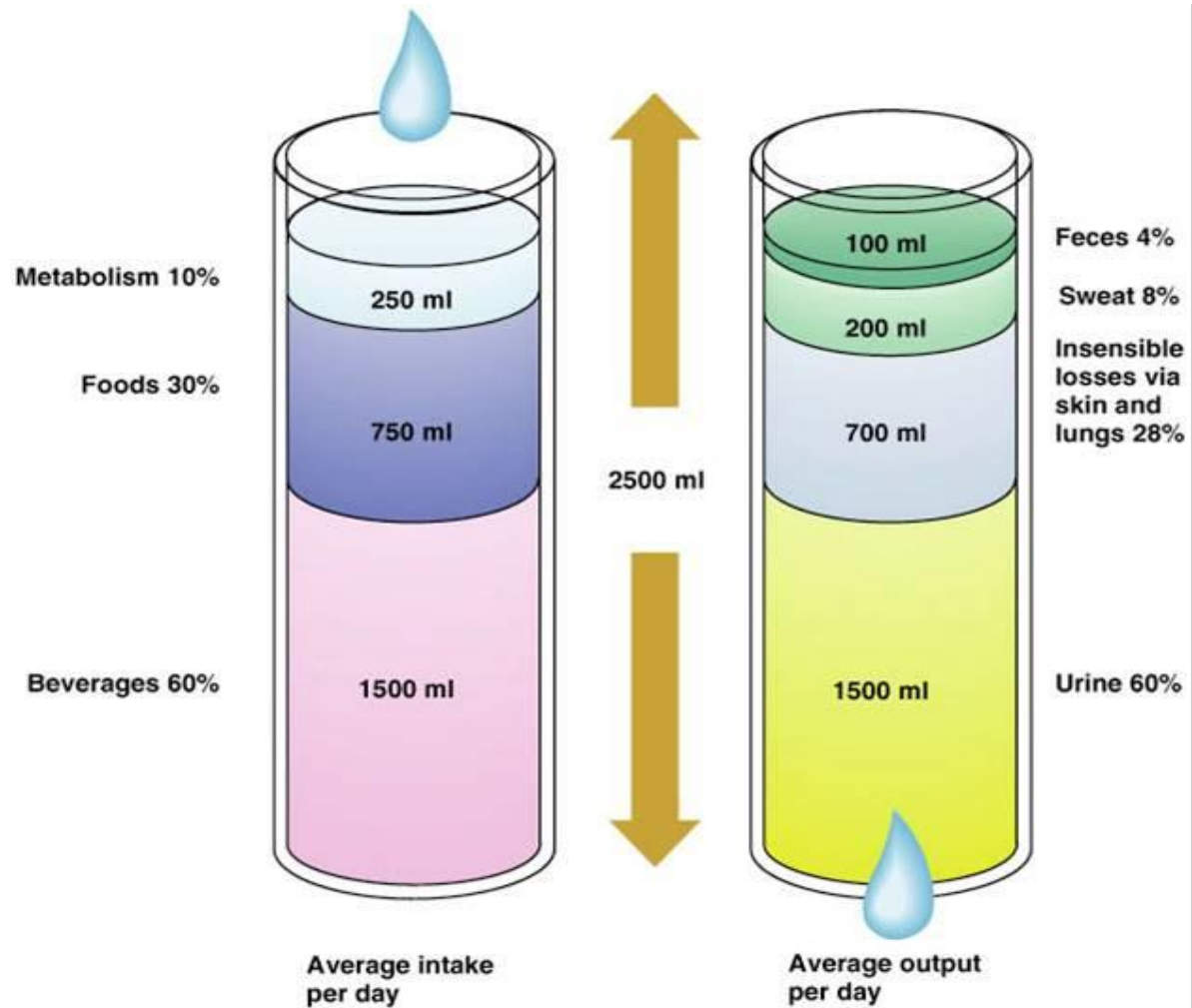
CONNECTIVE
TISSUE
60% Water

BONES
22% Water

SKIN
70% Water

FAT
20% Water

- Water intake and output:
- What are the sources of water for the body?
- How does the body lose water?
- Does the water intake match the water output in a normal person?



- Composition of body fluids:
- What is the major cation in ECF?
- What is the major cation in ICF?
- What are the major anions in ECF?
- What are the major anions in ICF?
- Why is there a difference in the composition of ECF and ICF?
- What is the difference between plasma and ECF?
- Why is there a difference between plasma and ECF?

COMPOSITION OF BODY FLUIDS

CATIONS (mmol/l)	Plasma	Interstitial	Intracellular
Na	142	139	14
K	4.2	4.0	140
Ca	1.3	1.2	0
Mg	0.8	0.7	20
ANIONS (mmol/l)			
Cl	108	108	4.0
HCO₃	24.0	28.3	10
Protein	1.2	0.2	4.0
HPO₄	2.0	2.0	11

- What will happen to ECF, ICF and the human cell size if:
 - We infuse water into his veins?
 - We infuse 0.9% saline into his veins?
 - We infuse 1.8% saline into his veins?

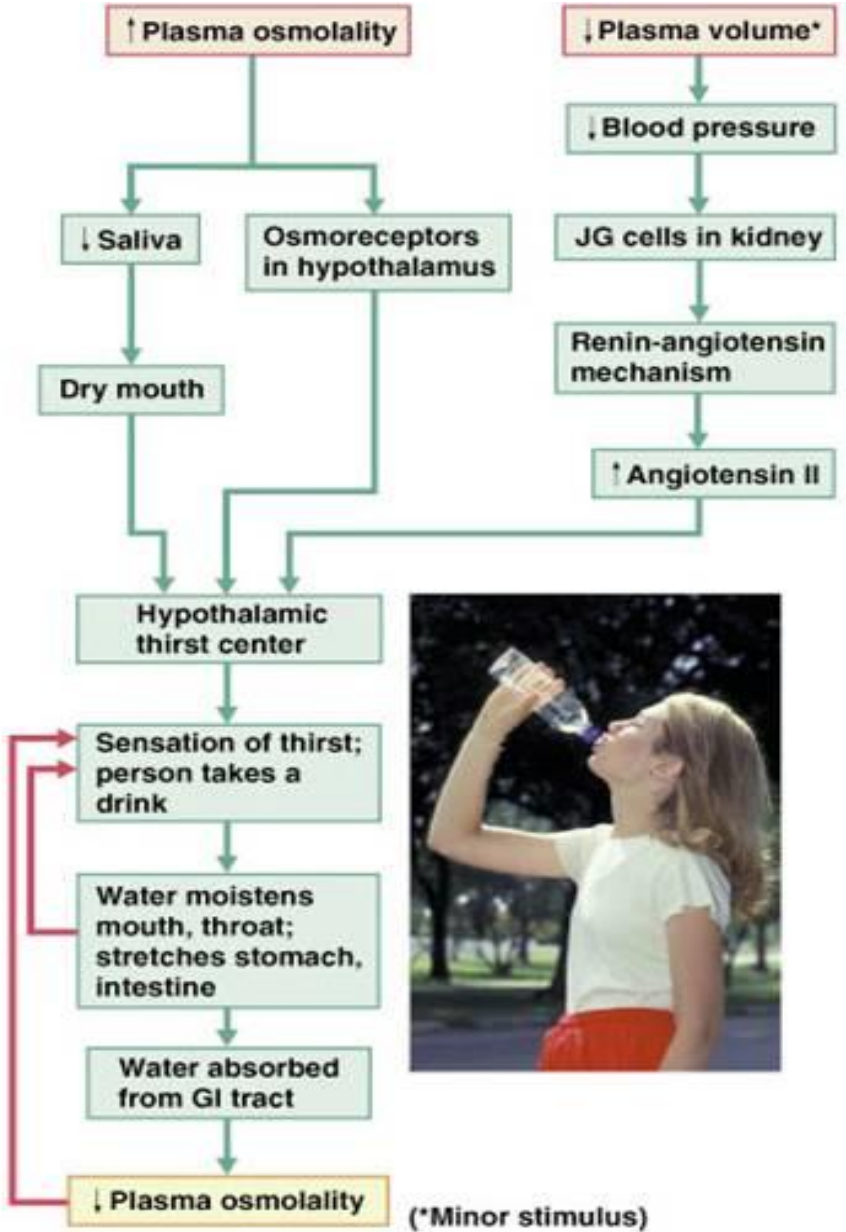
Dehydration

- What are the common causes of dehydration?
- What are the common clinical features of dehydration?
- How is dehydration classified?

Are you dehydrated?

Check your urine





Key:
 ← Increases, stimulates
 ← Reduces, inhibits
 □ Initial stimulus
 □ Physiological response
 □ Result

(*Minor stimulus)

Sign and Symptoms of Dehydration



- Dry or sticky mouth
- Lethargy
- Sunken eyes
- Weight loss
- Low or no urine input
- Dark yellow urine
- Poor skin turgor
- Delayed capillary refill
- Dizziness
- Confusion/changes in mental status
- Lack of tears/sweat
- Falls/difficulty walking
- Low blood pressure
- Rapid heart rate
- Abnormal labs/electrolytes

- Management of dehydration:
- What are the different methods used for rehydration?
- What are the substances used for rehydration?

Home Remedies for Dehydration



Increase Your Water Intake



Homemade ORS



Watery Fruits and Vegetables



Yogurt



Banana



Coconut Water

Additional Tips

- Rest in a cool place and avoid any further exertion.
- During dehydration, stick to bland foods for a couple of days.
- To prevent dehydration, take a refillable water bottle with you when going out.

To explore more, visit



www.Top10HomeRemedies.com