Water in the Body

Functions of Water

Water Balance
Mineral Bioavailability

Factors that affect bioavailability of minerals:
- Phytate
- Polyphenols
- Fiber
- Other minerals competing for absorption
- Acidity of intestinal environment
- Person’s need

Semi-Permeable Membrane

- Water (H₂O)
- Carbon dioxide (CO₂)
- Oxygen (O₂)
- Lipids
- Calcium ions (Ca²⁺)
- Magnesium ions (Mg²⁺)
- Hydrogen ions (H⁺)
- Glucose (sugars)

Sodium (Na⁺)

- Cannot flow through phospholipid bilayer

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Potassium (K+)

Chloride (Cl-)

Action Potential
Calcium (Ca^{2+})

Muscle Contraction Overview

1. Action potential triggering release of Ca^{2+}
2. Ca^{2+} activates myosin
3. Actin-myosin cross-bridges form
4. Myofibrils slide past each other
5. Muscle shortens

6. ATP binds to myosin
7. Actin-myosin cross-bridges break
8. Muscle lengthens

Contractions and relaxation

Overview of muscle contraction mechanism.