

Basics of Nutrition

Basics of Nutrition – Quick Reference Notes

1. What Is Nutrition?

- **Definition:** The process by which living organisms obtain, ingest, digest, absorb, transport, and utilize nutrients for growth, repair, and maintenance.
 - **Purpose:** Supplies energy, builds and repairs tissues, regulates body processes, and supports immune function.
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2. Major Nutrient Categories

Category	Primary Functions	Key Sources	Recommended Daily Intake*
Carbohydrates	• Main energy source (4 kcal/g) • Spare protein for tissue repair • Provide fiber for gut health	Grains, fruits, vegetables, legumes, dairy, sugars	45-65% of total calories
Proteins	• Build/repair muscles, enzymes, hormones (4 kcal/g) • Provide amino acids for cell functions	Meat, fish, eggs, dairy, legumes, nuts, soy	10-35% of total calories (0.8 g/kg body weight for adults)
Fats	• Concentrated energy (9 kcal/g) • Essential fatty acids (omega-3, omega-6) • Fat-soluble vitamin absorption	Oils, butter, nuts, seeds, fatty fish, avocado	20-35% of total calories (focus on unsaturated fats)
Vitamins	• Co-enzymes & regulators of metabolism • Antioxidant protection	Fruits, vegetables, dairy, fortified foods	Varies by vitamin (e.g., Vitamin C 75-90 mg, Vitamin D 600-800 IU)

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Minerals	• Structural (Ca, P) • Electrolyte balance (Na, K, Cl) • Enzyme cofactors (Fe, Zn)	Dairy, meat, whole grains, nuts, leafy greens	Varies by mineral (e.g., Calcium 1000mg, Iron 8-18mg)
	• Solvent for biochemical reactions • Temperature regulation • Transport of nutrients & waste	Water, soups, fruits, vegetables	~2.7L (women) / 3.7L (men) total water intake

*Percentages refer to total daily caloric intake; absolute gram/ milligram values depend on age, sex, activity level, and health status.

3. Energy Balance

- **Energy In = Energy Out**
 - **In:** Calories from food & beverages.
 - **Out:** Basal Metabolic Rate (BMR) + Physical Activity + Thermic Effect of Food.
- **Weight Management:**
 - **Positive balance** ? weight gain.
 - **Negative balance** ? weight loss.
 - **Equilibrium** ? weight maintenance.

4. Digestive Overview (How Nutrients Are Processed)

1. **Mouth:** Mechanical chewing + salivary amylase begins carbohydrate digestion.
2. **Stomach:** Acidic environment denatures proteins; pepsin begins protein breakdown.
3. **Small Intestine:**
 - **Duodenum:** Bile emulsifies fats; pancreatic enzymes (amylase, lipase, proteases) act.
 - **Jejunum & Ileum:** Nutrient absorption into bloodstream (carbs ? glucose, proteins ? amino acids, fats ? fatty acids & monoglycerides).
4. **Large Intestine:** Water reabsorption, fermentation of fiber by