

Overview of Nutrition

Overview of Nutrition – Study Notes

1. What Is Nutrition?

Aspect	Definition
Nutrition	The process by which living organisms obtain, assimilate, and use food substances to support growth, repair, maintenance, and energy production.
Nutrient	A chemical compound in food that the body needs to function (e.g., carbohydrates, proteins, fats, vitamins, minerals, water).
Diet	The habitual pattern of food and drink consumption.
Malnutrition	Any deviation from optimal nutrition, including under?nutrition (deficiencies) and over?nutrition (excesses).

2. Major Classes of Nutrients

Nutrient Class	Primary Functions	Key Sources	Recommended Intake (Adults)
Carbohydrates	• Main energy source (glucose)	Whole grains, fruits, vegetables, legumes, dairy	45?65?% of total calories
	• Spare protein for tissue repair		
	• Provide dietary fiber for gut health		
Proteins	• Build & repair tissues	Meat, fish, eggs, dairy, soy, beans, nuts	0.8?g/kg body weight (?46 ?g for women, 56?g for men)
	• Enzymes, hormones, antibodies		
	• Transport molecules		

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Nutrient Class	Primary Functions	Key Sources	Recommended Intake (Adults)
Fats	- Concentrated energy (9kcal/g) - Essential fatty acids (omega3, omega6) - Fat-soluble vitamins absorption, cell membranes	Olive oil, nuts, seeds, fatty fish, avocados	20-35% of total calories (10% from saturated fats)
Vitamins	- Co-enzymes & regulators of metabolism - Antioxidant protection (e.g., vitamin C, E)	Fruits, vegetables, dairy, fortified foods	Varies by vitamin (e.g., vitamin C 75-90mg/day)
Minerals	- Bone & tooth structure (Ca, P) - Fluid balance, nerve transmission (Na, K, Cl) - Oxygen transport (Fe)	Dairy, meat, leafy greens, nuts, whole grains	Varies by mineral (e.g., calcium 1000mg/day)
Water	- Solvent for biochemical reactions - Temperature regulation, joint lubrication - Transport of nutrients & waste	Drinking water, beverages, high-water foods (cucumber, watermelon)	2.7L (women) / 3.7L (men) total water intake

3. Energy Balance

Concept	Description
Energy Intake	Calories supplied by foods (carbohydrate=4kcal/g, protein=4kcal/g, fat=9kcal/g).

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Energy Expenditure	Sum of basal metabolic rate (BMR), thermic effect of food (TEF), and physical activity energy.
Positive Balance	Intake > expenditure ? weight gain (potentially adipose tissue).
Negative Balance	Intake < expenditure ? weight loss (utilization of stored energy).
Neutral Balance	Intake ? expenditure ? weight maintenance.

4. Digestive & Absorptive Pathway (Simplified)

1. **Mouth** – Mechanical breakdown; salivary amylase begins carbohydrate digestion.
2. **Stomach** – Protein denaturation; pe