

Overview of Nutrition

Overview of Nutrition – Study Notes

1. What Is Nutrition?

- **Definition:** The science that examines how food and drink affect the body's growth, maintenance, and overall health.
 - **Key Goals:**
 1. Provide energy for daily activities.
 2. Supply building blocks for tissue repair and growth.
 3. Support physiological functions (immune response, hormone production, etc.).
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2. Major Nutrient Categories

Category	Primary Function	Key Sources
Carbohydrates	Quick energy; spare protein for tissue building	Grains, fruits, vegetables, legumes, sugars
Proteins	Tissue repair, enzyme & hormone synthesis, immune function	Meat, fish, eggs, dairy, beans, nuts, soy
Fats (Lipids)	Concentrated energy, cell?membrane structure, absorption of fat?soluble vitamins (A, D, E, K)	Oils, butter, nuts, seeds, fatty fish, avocado
Vitamins	Co?enzymes & regulators of metabolic pathways	Fruits, vegetables, fortified foods, dairy
Minerals	Structural (e.g., calcium for bone), electrolyte balance, enzyme cofactors	Dairy, leafy greens, meat, whole grains, nuts
Water	Solvent for biochemical reactions, temperature regulation, transport of nutrients & waste	Plain water, beverages, high?water foods (cucumber, watermelon)

3. Energy Balance

Concept

Description

Overview of Nutrition

Caloric intake	Energy supplied by foods (kcal or kJ).
Caloric expenditure	Energy used for basal metabolism, physical activity, thermic effect of food.
	Energy In – Energy Out = Change in Body Stores.
Energy balance equation	• Positive balance ? weight gain • Negative balance ? weight loss • Neutral balance ? weight maintenance

4. Macronutrient Recommendations (Adults, general guidelines)

Nutrient	% of Total Daily Calories	grams per 2,000?kcal diet
Carbohydrates	45–65%	225–325?g
Protein	10–35%	50–175?g
Fat	20–35%	44–78?g
• Saturated fat	<10% of total calories	–
• Trans fat	As low as possible	–
• Added sugars	<10% of total calories	–

Adjustments are needed for athletes, pregnant/lactating women, older adults, and people with specific health conditions.

5. Micronutrient Highlights

Vitamin / Mineral	Major Role	Typical Deficiency Signs
Vitamin?A	Vision, immune function	Night blindness, dry skin
Vitamin?C	Antioxidant, collagen synthesis	Scurvy (bleeding gums, fatigue)
Vitamin?D	Calcium absorption, bone health	Rickets/osteomalacia, muscle weakness
Vitamin?E	Antioxidant, membrane protection	Neuromuscular problems
Vitamin?K	Blood clotting	Excessive bleeding
Calcium	Bone & teeth mineralization	Osteoporosis, muscle cramps

Overview of Nutrition

Vitamin / Mineral	Major Role	Typical Deficiency Signs
Iron	Hemoglobin formation, oxygen transport	Anemia, fatigue
Zinc	Immune function, DNA synthesis	Growth retardation, impaired wound healing
Iodine	Thyroid hormone production	Goiter, hypothyroidism

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