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Basics of Nutrition

Concepts & Definitions

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Keys to Health

FOOD	MEDICINE	EXERCISE	SUPPLEMENT
Nutrition	Therapy	Wellbeing	Conditional
Daily	During illness	Daily	Daily
			

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Dietary Supplement

Products in powder, tablet or liquid form that provide essential nutrients such as vitamins, minerals, proteins, herbal ingredients or similar nutritional substances.

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Nutraceutical

Nutrition

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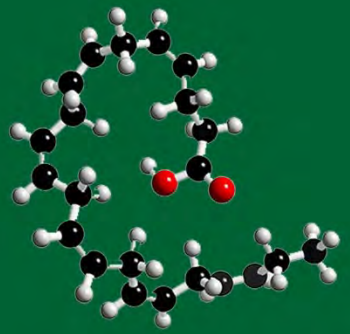

Pharmaceutical

The word nutraceutical is coined by combining the words nutrition and pharmaceutical.

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Energy

Capacity to do work

Provided by Nutrients from food

Utilised for all voluntary and non-voluntary activities

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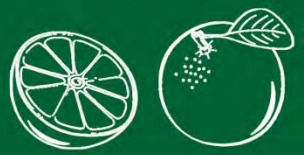
Nutrients

Carbohydrates

Proteins

Vitamins



Fats

water

Minerals

Substances that required for Growth and Maintenance of normal Cells.

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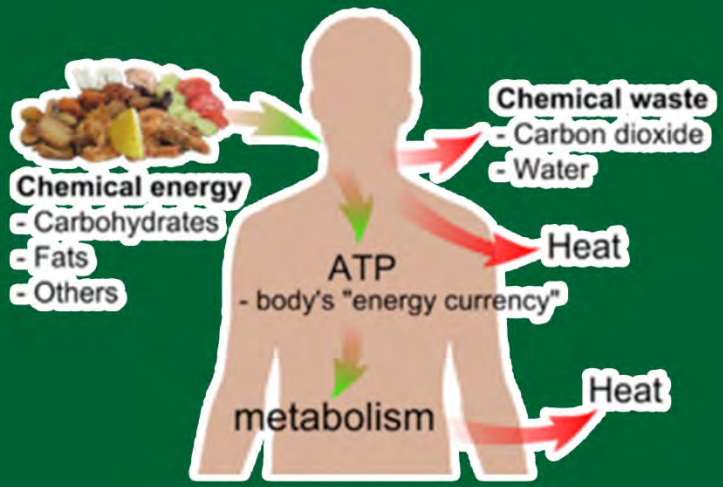
Nutrition

Process of making components of food available to meet the energy requirements.

FOOD DIGESTION ENERGY

Involves process of digestion, absorption and metabolism of biochemical substances by individual chemical reactions.



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Clinical Nutrition

Medical specialty dealing with relationship between disease and nutrition.

Acute and chronic illnesses are caused either by deficiency or by excess.

Condition Specific Nutrition

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Growing Child

Pregnant Women

Senior Citizens

Nutrition required for a specific state of body condition as per the nutrient needs.

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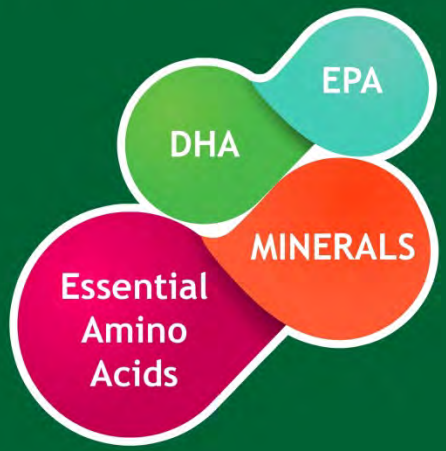
Nutrition

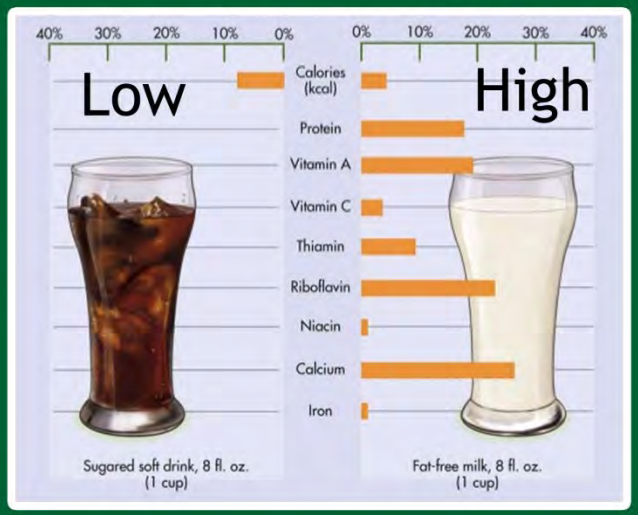
Essential Nutrients

These nutrients should be from dietary source since we lack ability to manufacture or adequately manufactured in the body.



Nutrient Density

Expressed as quality of food in relation to its content of specific nutrient. Concentration of nutrient per unit of energy.



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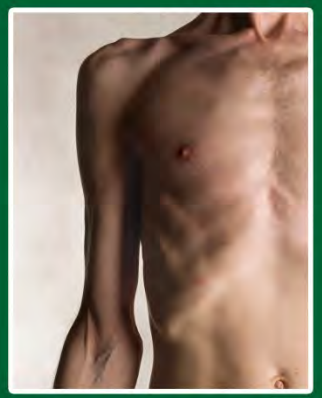
Malnutrition

Inappropriate quality, quantity of digestion, absorption or utilization of ingested nutrients

Under Nutrition

Calorie deficiency leading to growth suppression and other deficiency signs



Over Nutrition

Too much of single or multiple nutrients leading to toxicities.

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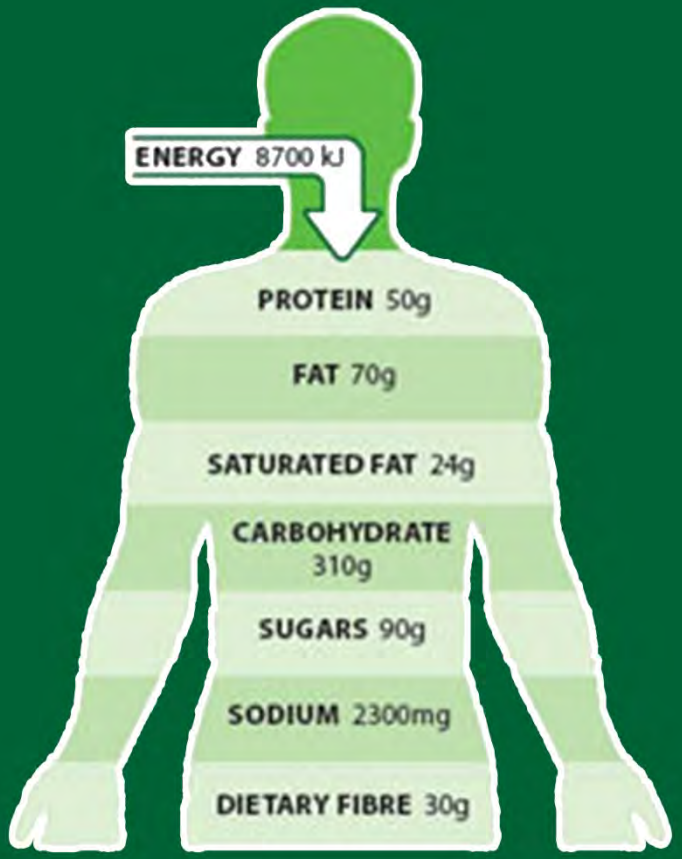
Nutrition Standards

RDA (Recommended Dietary Allowance)

RDI (Reference Daily Intake) and RNI (Reference Nutrient Intake) are the various methods of expressing dietary requirements.

DRV (Daily Referrence value)

DRV s a suggested amount of a substance that a 2000 Kcal diet should contain.



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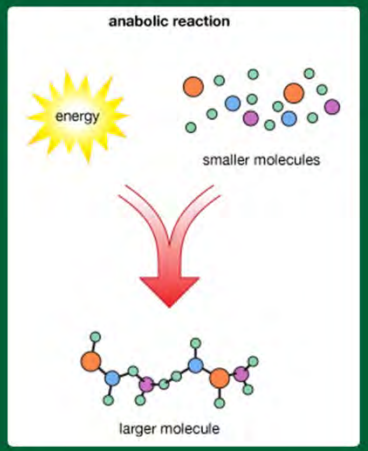
Metabolism

The process of generation and Utilization of energy for growth and maintenance.

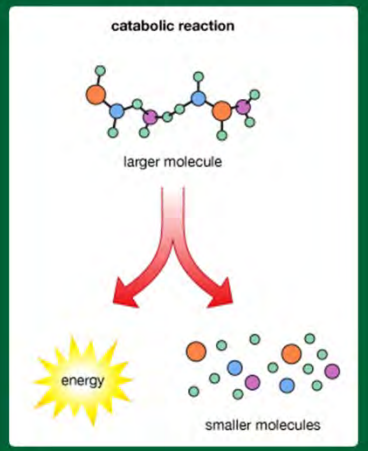
Anabolism

Large molecules such as proteins are biosynthesized - This requires energy.



Catabolism

Degradation of large molecules to small molecules - This serves to capture chemical energy.



Basal Metabolic Rate

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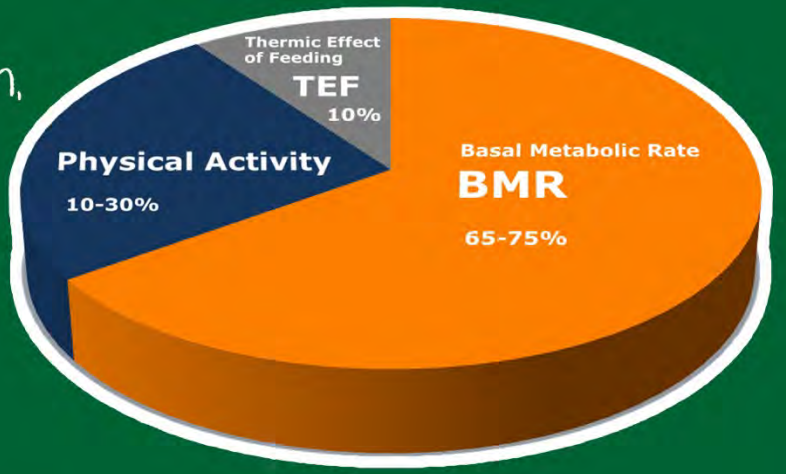
Energy used by the body at complete rest.

Used for activities like breathing, circulation, regulation of body temperature.

Used in synthesis of new tissue - Highest in children.

Higher in Hospitalized patients and stress.



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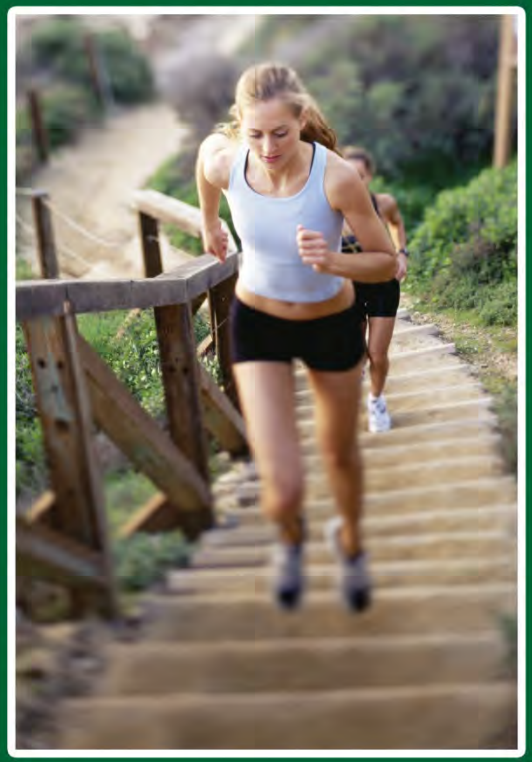
Energy Expenditure

Activity	Kcal / min.
Sleeping	1.2
Sitting	1.3
Eating	1.5
Standing	1.5
Dressing	2.6
Driving Car	2.8
Riding Motor Cycle	3.4
Gardening	5.6
Walking Down Stairs	7.1
Cycling	10.0
Walking Up Stairs	13.0



Thermic Effect of Food (TEF)

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The amount of energy spent on processing of nutrient for use and storage.

	Protein	Carbohydrates	Fat
 Heat (TEF)	30%	6%	4%
 Energy	70%	94%	96%

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Respiratory Quotient

the molar ratio of CO2 produced to O2 Consumed

Nutrient + O_2 ⇨ CO_2 + Energy + Byproduct

	Protein	Carbohydrates	Fat
O_2 Oxygen — Oxygen consumed	1.0 mole	1.0 mole	1.0 mole
CO_2 Carbon dioxide — Co_2 Produced	0.8 mole	1.0 mole	0.7 mole
RQ	0.8	1.0	0.7

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Energy Measurement

Physical Method : Calorimetry

Biological : O_2 consumption vs CO_2 production

Proteins	Carbohydrates	Fats
		
4 kcal / g	4 kcal / g	9 kcal / g

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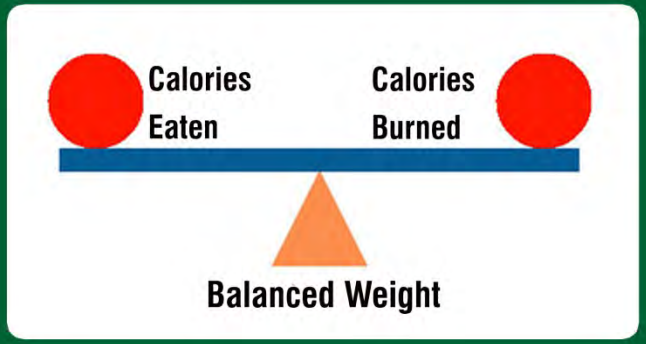
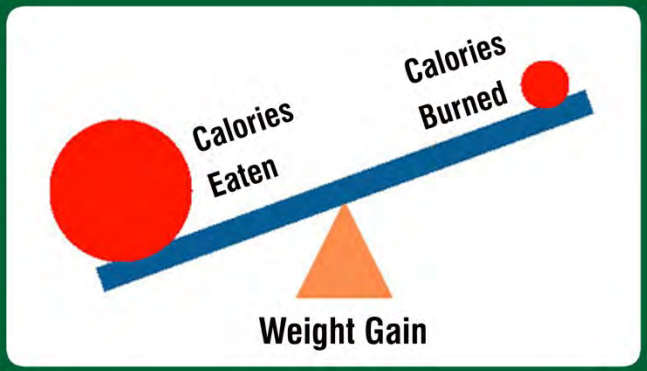
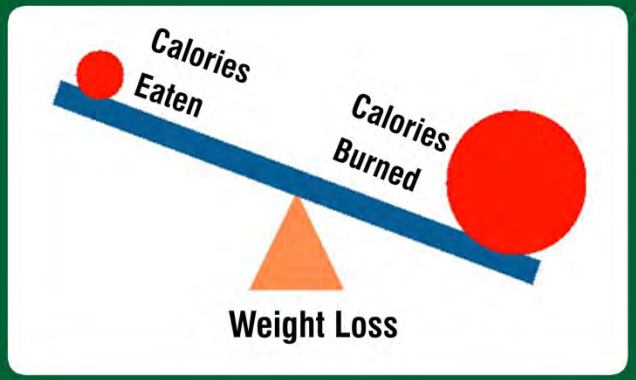
Energy Balance

Energy requirement = BMR+TEF+Physical Act







Homeostasis

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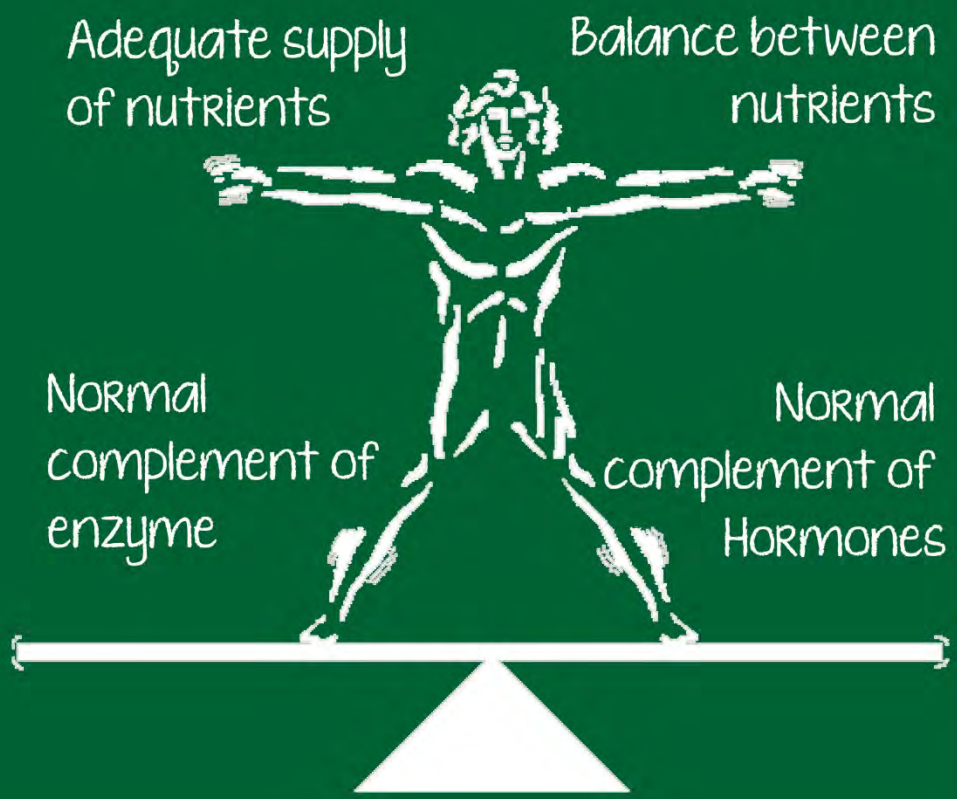
Maintenance of equilibrium in the internal environment.

It is vital because organs and tissues function efficiently only in a narrow range of conditions.

Homeostasis governed by



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Balanced Nutrition

- Adequate supply of nutrients.
- Balance between nutrients.
- Normal complement of enzyme systems.
- Secretion of hormones that regulate metabolic rates.