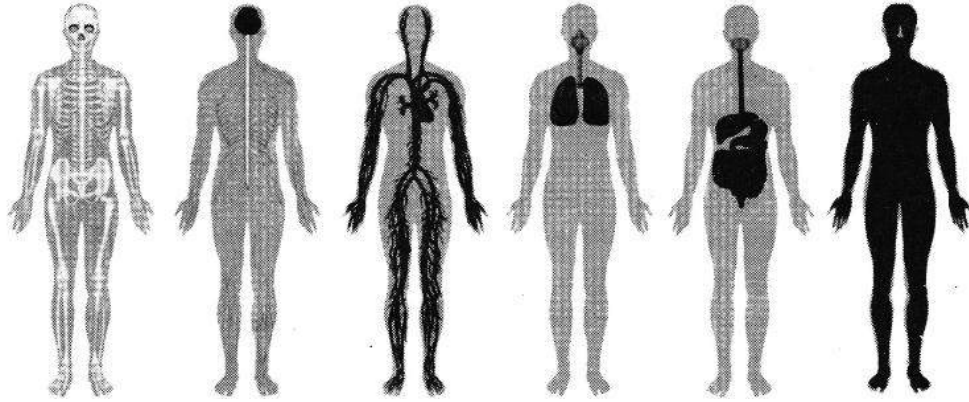


Human Body and Food



FUNDAMENTAL

Human body is a complex machine, made up of different organs and organ systems,

HUMAN BODY:

Different organ systems perform a specified function of the body in co-ordination with each other.

RESPIRATORY SYSTEM:

It is concerned with carrying oxygen from air to the tissue level for functioning.

DIGESTIVE SYSTEM:

Breaks the complex food into smaller substances after digestion which can be used for producing energy.

NERVOUS SYSTEMS

It controls and co-ordinates different organ systems with input from sensory organs.

MUSCULAR SYSTEMS

Helps in movement.

CIRCULATORY SYSTEMS

Helps in transportation of nutrients and other substances.

EXCRETORY SYSTEMS

End products or toxic products removal from the body.

SKELETAL SYSTEMS

Frame work of bones which gives support to the human body. Skeleton has 206 bones in adult.

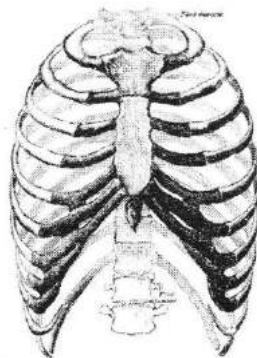
SKULL:

Skull consists of 28 bones which protects the brain. All bones of skull are immovable except the lower jaw which helps in eating and talking. In lower and upper jaw, we have teeth for cutting and chewing food.



RIB CAGE:

It is formed by the vertebral column, ribs, and sternum and encloses the heart and lungs. In humans, the rib cage, also known as the thoracic cage, is a bony and cartilaginous structure which surrounds the thoracic cavity and supports the pectoral girdle (shoulder girdle), forming a core portion of the human skeleton.



BACK BONES

It protects the spinal cord. It is not a single bone but made up of 33 small bones, called vertebral column. Higher animal e.g., Tiger, Frog, etc. have back bone and called vertebrates. Whereas lower animal e.g., snails and earthworms do not have a backbones and are called invertebrates Thigh bone (Femur) is the largest bone of the body.

STAPES

Stapes is the smallest bone of the body which is found in ear.

JOINTS

The place where two bones meet is called a joint. Joint can be movable or immovable. Except the lower jaw all other skull bones are connected through immovable joint. Movable joints provide a wide variety of movement at the joint. There are four kinds of joints in our body.

- **Hinge joint:** - These joints work like the hinge in the door. This kind of joint only allows back and forth movement in different directions. Bones in the knee, elbow, fingers and toes have these types of joints.
- **Pivot joint:** - This type of joint is found between the first two vertebrae of our back bone. It allows moving the head up, down and sideways.
- **Ball and socket joint:** - This type of joint allows movement in different directions. The shoulder joint and the hip joint are examples of ball and socket joint.
- **Gliding joint:** - This type of joint is found in the bone of the wrist and the ankles. It allows these bones to slide against each other in a sliding/gliding motion.

NERVOUS SYSTEM:

It consists of the brain, the spinal cord and the network of nerves. Neuron is the nervous cell

- **Brain:** Brain is the controlling center of all the activities that takes place in our body. It receives information from all parts of the body and sends instruction to muscles.
- Brain consists of the Cerebrum, Cerebellum and Medulla or Brain stem.
- **Cerebrum:** It is the largest part of the brain and is associated with learning, memory intelligence and logic.
- **Cerebellum:** It is situated below and behind the cerebrum and is responsible for muscle co-ordination and balance of the body.
- **Medulla or Brain stem:** It controls involuntary activities such as heartbeat, respiration, swallowing and sneezing.

SPINAL CORD:

It is the external prolonged of the brain, which is protected by vertebral column. It is responsible for the transfer of information between brain and the rest of the body. It even controls the actions without involving the brain through reflex action.

NERVES:

Network of nerves runs throughout the body. Sensory nerves pass through the spinal cord and carry messages to the brain. Motor nerves carry message back from the brain.

REFLEX ACTION:

Are automatic reaction of the body, that doesn't need thinking (involvement of brain) and deals at spinal level.

NUTRITION:

Nutrition is the process through which organism takes in and utilizes materials to support growth and repair of the body parts.

FOOD:

Food contains chemical substance known as nutrients that are required by all living organisms. Our body requires carbohydrates, proteins, fats, minerals and vitamins. In addition to the five nutrients our body also requires water and roughage (fibers).

BALANCE DIET:

A diet that contains adequate amount of different component in right proportion is called a balanced diet.

Food Components Functions and Sources and their Functions

Food Components	Functions	Sources
Carbohydrates	Energy giving foods	Rice, wheat, sugar, potato
Fats	Energy giving foods	Oil, butter, ghee, milk, cheese
Protiens	Body building foods	Eggs, meat, fish, milk, pulses
Vitamins	Protective foods	Fruits and Vegetables
Minerals	Protective foods	Fruits, vegetables, milk, eggs
Roughage	Prevent constipation	Cereals, fresh vegetables, fruits and salad

CARBOHYDRATE:

Consist of carbon, hydrogen, and oxygen atoms. They are major food source and key form of energy for most of the organisms. When combined together to form polymers chains), carbohydrates can function as long-term food storage molecules, as protective membranes for organisms and cells, and as the main structural support for plants.



FATS:

Fat also contains carbon, hydrogen and oxygen but it produces more than double energy than carbohydrates or protein.

PROTEIN:

It contains nitrogen, carbon, oxygen and hydrogen. These are made up of amino-acids. Proteins are required for growth and repair of our body.

VITAMIN:

Vitamins are required in very small quantity but are very much required for healthy function of the body and their deficiency may lead to different disease.

Different vitamins, their sources and deficiency/disease.

Vitamin	Function	Source	Deficiency/ Disease
A	Keeps eyes, hair and skin healthy	Spinach, carrots, pumpkins butter, sweet, potatoes, fish-liver oil,	Poor vision, night blindness
B1	Helps in proper functioning of digestive and nervous system	Egg, meat, all cereals, yeast, milk	Weakness, beriberi
B2	Keeps skin and mouth healthy	Egg, peas, beans, milk, green vegetables, fish, meat	Poor growth, bad skin mouth ulcer
B6	Keeps skin nourishing and digestive system healthy	Wheat and other cereals, potatoes tomatoes, meat, fish, peanuts	Pellagra
B12	Helps in the formation of blood and proper growth	Animal product such as meat, fish, liver, eggs, milk	Anemia
C	Keeping gums and joints healthy and building resistance to infections	All fresh fruits, especially citrus fruits, guava, amla, tomatoes	A disease called scurvy, bleeding gums, loose teeth and aching joints
D	Building strong bones and teeth	Fish-liver oil, milk, butter. Sunlight helps the body to produce this vitamin	Rickets in children and soft bones in adults
K	Clothing of blood	Green vegetables, tomatoes, yolk of egg	Excessive bleeding after injury

MINERALS:

Minerals are made of elements. Elements are simple substances that cannot be broken down into any other substance. The name of an element is written down as a combination of letters called symbol, e.g., sodium is Na; chlorine is Cl. Salt, a combination of sodium and chlorine is written as NaCl.

WATER:

It is very important constituent as it provides medium in which chemical reaction happen in the body.

ROUGHAGE:

It is required for smooth functioning of the digestive system. It retains water in intestine.

DISEASE:

Disease is a state in which a function or part of the body is no longer in a healthy condition. Disease could be of different type depending upon their causes.

DEFICIENCY DISEASE:

Due to deficiency of a particular food components such as protein, energy giving vitamins or minerals, e.g., Kwashiorkor, Marasmus, Pellagra, Goiter, Anemia.

COMMUNICABLE DISEASES

These are the disease which can spread from one person to another. They are spread by germs.
(e.g., bacteria, virus etc.)

NON-COMMUNICABLE DISEASE

These diseases don't spread from one person to another person, e.g., Hypertensions, Diabetes, etc.

Table showing disease caused by germs and their mode of transmission

Types of germs	Modes of transmission	Disease caused
Bacteria	Water	Cholera, typhoid
	Air	Tuberculosis
Viruses	Air	Common cold, flu, viral fever, measles and mumps
	Water	Dysentery
Protozoa	Insect bites	Malaria
Fungus		Ringworm

- **We can protect ourselves by taking vaccines, important vaccines available are-**

Vaccines	Related Disease
Oral Polio vaccine	Polio
BCG vaccine	Tuberculosis
DPT vaccine	Diphtherias, Pertusis, Tetanus
Measles vaccine	Measles
MMR	Measles, Mumps, Rubella
Oral Typhoid vaccine	Typhoid
Anti-Rabies vaccine	Rabies

- Proper sanitation and cleanliness protect us from diseases
- Mosquito bites should be prevented as it spreads malaria, dengue, and chikungunya and filarial. We can stop mosquito breeding by checking water collection and sanitation of nearby areas.
- Those whose suffer from diarrhea should be given solution of water, sugar and salt. (ORS solution) which prevents lack of water (dehydration) in the body.