



7

PROCESS OF OUR BODY

Humans have made machines one after the other but the machine made by nature is matchless. Humans cannot make a machine that has power to grow after taking food externally and produce or give birth to offspring like him.

Every activity in human body is wonderful. To know and learn these activities is interesting and beneficial. This will help us in growing and remaining healthy.

There are many systems in our body - moving system, digestive system, respiratory system etc. let us know about these in detail.



OBJECTIVES

After reading lesson, you will be able to:

- Know the process of human walking
- Understanding digestive system and
- Explain the process of circulatory system



Notes

7.1 HOW CAN WE WALK?

We are movable. We are not static at one place. We move from one place to another. We can also move our hands, legs, head etc, all these movements are possible by the mixture of two systems in human body - bones and muscles. All bones together make skeleton system and all muscles together make muscle system.

a. skeleton system

Skeleton is a structure of bones which is hard and gives movement to many parts of body. These give support to the body. The main parts of skeleton are:

- Skull - box giving protection to human mind which starts from brain and ends at spinal cord.
- Ribs - these cover lungs and heart,
- Bones of shoulder and hips

The total number of bones in our body is 206. The longest bone is femur in thighs and the smallest bone is behind the ear drum smaller than a grain of rice.

Joints

Joints are those places where one bone gets connected to other bones. For example- knee and elbow joints are moveable and

static. Example - knee can be static like skull, bones. Moving joints is a structure that keeps two bones together is called tendon.

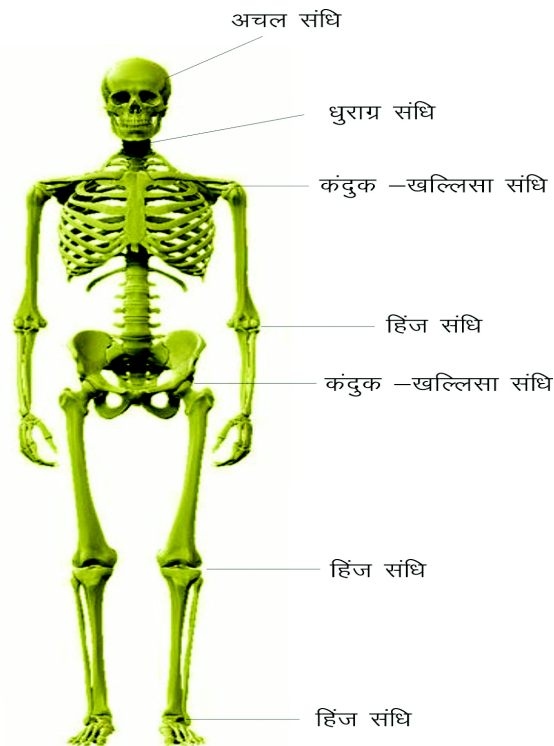


Fig. 7.1 skeleton system

Do you know how movements are connected? You must have seen the puppet game. There are threads attached to the puppets. These threads are pulled out to make the movement of puppets. There are muscles attaches to bones which move automatically.

There are three more functions of skeleton system

1. it gives shape and support to body.
2. it gives security of soft parts of body like skull to brain and rib makes lungs and heart secure.
3. bones give place to muscles join and helps in the movement



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b. muscle system

There are more than 600 muscles in human body. All these muscles provide movement to bones as well as soft body parts like heart, intestines etc.

Types of muscles

There are two types of muscles:

1. Voluntary muscles - these muscles work according to our wish. Example- muscles related to the movements of hands and legs. These muscles are connected to bones.
2. Non voluntary muscles - These muscles are not in our control and keep working automatically. Intestine muscles or stomach muscles work automatically and keeps on forwarding the food from time to time. Muscles are also found in the walls is of arteries and veins. Heart muscles are also different in their structures. Their structures are related to voluntary muscles but their work is non voluntary. This is also called heart muscles. All muscles are made up of fiber.

How does a muscle work?

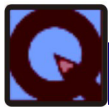
Muscles contract to do work. Voluntary muscles on one end are static or fixed and together are connected to moving bones, when a muscle contracts the movement of the bone happens as bone is pulled towards contracted muscles.

Contracted muscles get smaller and pulls its motion head giving way to movement. The moving end if muscle gets connected to bone by a skull. When contraction ends pulling of bones also ends and muscles come back to old form and moves in opposite direction.



Function of muscle system

1. muscles help us the movement of our body organs like walking, running or holding objects .
2. they help us in swallowing and chewing food.
3. they help in expansion and contraction of chest leading to our breathing system.
4. they make heart pace muscles etc.



INTEXT QUESTIONS 7.1

1. which two system of human body help in the movement?
2. write the names of some parts of our skeleton?
3. write the names of organs protecting by the following:
 - i. skull
 - ii. rib
4. write the name of muscles found in heart wall?
5. what are the special tissues joining one bone to other on movement called?

7.2 DIGESTION SYSTEM

Every organism needs food to live, there are five steps of nutrition or food intake to its usage.

**Notes**

1. the process of taking food inside by eating or drinking.
2. making food ready for energy absorption or digestion.
3. digested food passes through food pipe and gets absorbed in body through intestines.
4. Absorbed food is used in the necessary r required places of human body,
5. Non absorbed and non digested food comes out in form of waste from body.

a. parts of digestion system

1. mouth - teeth present inside our mouth cuts the food into pieces. Our salivary glands excrete saliva which softens the food, the enzyme present in saliva changes starch present in food to soluble maltose. There are two sets of teeth: temporary (milk teeth) (20) which falls down and permanent teeth (20 and 12) come out. Out of 12 temporary teeth every jaw has three teeth on both sides to chew the food. In the end one last wisdom tooth comes out around 16-17 year. A wisdom tooth does not come out in some people. There are many types of teeth in a jaw set which are used in chewing, cutting, grinding and mixing of food.
2. food is softened by mouth - saliva helps in chewing the food. This is secreted by the tongue. Tongue and teeth chew the food. Mostly the push of tongue helps the food to reach the food pipe.

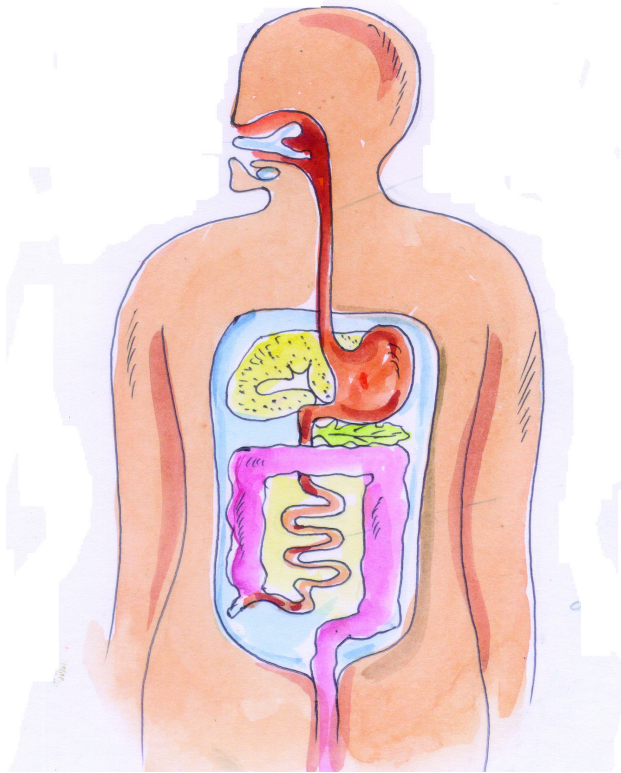


Fig. 7.3 digestive pipe in humans

3. Food reaches a bag like stomach from food pipe.
4. food stays in stomach for 3-4 hours. By this time the juice from the walls of stomach mixes with food, this gastric juice has pepsin enzyme which helps in digestion of protein. One more acid comes out from this juice called hydrochloric acid. This acid destroys any bacteria coming with the food. Food reaches small intestine from stomach.
5. small intestine is around 7 meter long with narrow structure. It has many spiral structures. Maximum food get digested here, protein, carbohydrates, maltose, sucrose etc and fats are digested by many enzymes. These enzymes come out from



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pancreas and even small intestine. Digestion is not needed from vitamins and mineral salts there are absorbed directly in intestine.

6. big intestine: small intestine is connected to big intestine, here maximum water of the left food is absorbed.
7. undigested food is waste which comes out of human body.



INTEXT QUESTIONS 7.2

1. how many teeth are there in the human mouth?
2. write the name of all the parts of human food digestion starting from mouth?
3. which part of digestion pipe absorbs maximum water?
4. which juice is excreted by the walls of stomach?

7.3 RESPIRATORY SYSTEM

You have learnt about the respiration process of plants. All living organisms including humans also breathe. Our body needs energy for many activities 24 hours a day. This energy is used inside the cells during breathing. It uses oxygen to disintegrate glucose from food.

a. parts of respiratory system

all the organs (nose, lungs etc) exchange blood and atmospheric air in between themselves. All these make respiratory system, all these organs in sequence are:



1. nose

Air outside from the world enters our body through two nostrils or nose holes. The three characteristics of nose are:

1. the hair inside the nose stops dust etc from air entering our body.
2. a sticky element (sheshma) excreted from nose sticks itself with virus and bacteria and other particles and stops them from entering body.
3. air going through nostrils keeps the temperature of body warm and moisture.

2. Food pipe

This is the back part of our mouth which takes air inside and

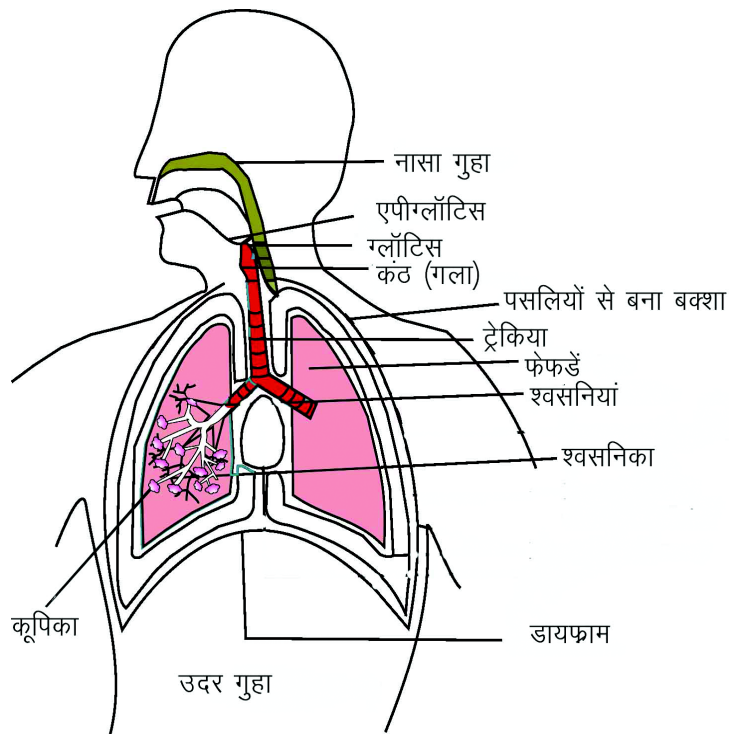


Fig. 7.3 parts of respiratory system in humans



food intake by our mouth is same. The bottom part of pipe is Larynx which opens in vocal cords which opens in breathing pipe. Remember it is a structure epithelium which protects the gates of vocal cords so that the food intake does not go inside the food pipe. But if it gets then food gets stuck in breathing pipe.

3. Respiration pipe

This is a straight pipe going to the centre of chest starting from vocal cords. There are cartilages (spiral in shape) in its walls which does not make it sticky.

Breathing cells and veins

Breathing pipe is divided in two parts - from back of head which is called swahashnitan, (breathing centre). Both the cells enter lungs from their sides. They get divided into small branches inside lungs which is called shawahansikayen (breathing cells).

Air passage (vayukosh)

Breathing cells are opened in the end point of closed air passage. These are lakhs in number and their total internal surface can be more than a big kabbadi stadium. they have a large surface so that they can exchange respiratory gases more and more. Those people who smoke cigarette and bidi have many side effects on their air passage. It gets closed and they suffer from respiratory diseases.

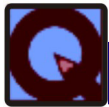
Lungs

These are a pair of sponge bag like structure which are close to the walls of chest. Blood having more carbon dioxide and less

oxygen reach lungs. Many minute branches of blood cells cover air passage and they became blood veins (lung veins) after many movements. These lung vein join together to form a primary lung veins which reaches heart. Blood reaching heart from lungs is full of oxygen.



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INTEXT QUESTIONS 7.3

1. Which way of food and breathing is similar and which part?
2. Fill in the blanks:
 - i. Division of breathing cells make _____.
 - ii. Blood entering lungs is full of _ but when it comes out of lungs it is full of _____.

7.4 CIRCULATORY SYSTEM

Have you ever thought that how digested food from food pipe and absorbed food from body reaches every cell? Carbon dioxide from all body parts and other waste elements related to waste materials (kidney, lungs etc)? All these works are done by a pump (heart and artery coming out and reaching there. Blood flowing from there also helps in its functioning.

1. Heart

If you keep our hand at a slight left side you will hear or feel heart beat. This sounds like dhak dhak. This happens with every human heart beat.



Heart is a small (equal size of a fist), muscular organ and is established between the lungs in a cage. This is made up of tight muscles which work throughout life and does not get tired.

1. Functions of heart

The heart of a healthy adult person beats 60-80 times per minute (average 72 beats per minute). There are four chambers of heart - two in upper side right -left atria and bottom left -right ventricles. Right side of heart side has less oxygen blood and more carbon dioxide blood which reaches lungs. The pumped blood from lungs which has less amount of carbon dioxide and more oxygen reaches to the left side of heart where blood vessels take this blood to every cell of human body.

2. Blood carrier cells or vessels

These are of three types:

1. Arteries - these take blood containing oxygen to various parts of the body from heart. Their walls are thick and muscular.
2. Veins - they bring oxygen less blood from many parts of body to heart, then this blood is sent to lungs.
3. cells - Arteries are divided in many branches and they join again together to form veins, this is a cage of veins. Minute blood cells in this system are called cells.

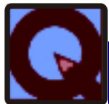


Blood

Blood is a shining red coloured liquid which flows in arteries and veins. Our blood has red blood cells and white blood cells. White blood cells are actually colourless, it also has very minute blood plattes.

Functions of blood

1. it takes oxygen from lungs to various parts of the body.
2. it also takes absorbed food from intestine to many parts of whole body.
3. blood also takes waste material from body cells to kidney so that they come out as a part of urine.
4. it also protects our body from infection.
5. it also controls body temperature and keeps it static.
6. if there is any injury or cut then blood clotting happens and stops the flowing of blood.



INTEXT QUESTIONS 7.4

1. What is the importance of muscles present in the walls of heart?
2. how many times a heart beats in one minute of a normal adult human?
3. what is the real color of white blood cells present in blood?



Notes

**WHAT HAVE YOU LEARNT**

- " The organ system of our body does not function alone but all together with coordination.
- " The movements of our body are the dynamic system and controls bones and muscles.
- " The main function of skeleton system is to give shape to body, support it , contribute in movements and protecting soft organs etc.
- " All the muscles of a body together form muscular system. muscles give body movement and produces beating in heart.
- " Digestion system makes food easily digestible and absorbs nutritional elements.
- " There are two types of breathing - first breathing from lungs (both - intake and exhale) in which oxygen is taken inside and carbon dioxide is released and second type blood sends absorbed oxygen to body cells for making energy which is used for cell breathing.
- " Circulatory system sends nutrients and oxygen to their useful organs and takes carbon dioxide and other wastes from various parts of human body. This work is done by heart, arteries and blood.
- " Heart is a small muscular organ. It has string muscles and creates or produces heartbeat throughout life.
- " Human blood contains red blood cells, white blood cells and blood plattes.



TERMINAL QUESTIONS

A. Tick the correct option from the following:

1. what are the organs of moving system?
 - a. skin and muscles
 - b. bones and blood
 - c. bones and skin
 - d. bones and muscles
2. how many bines are there un adult human>
 - a. 138
 - b. 120
 - c. 356
 - d. 206
3. what are the tissues joining muscles and bones together called?
 - a. stomata
 - b. skull
 - c. nerves
 - d. cell
4. which type of muscles are joined together for form a skeleton?
 - a. voluntary
 - b. non voluntary



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- c. mixed
 - d. linear
5. what is the process of making energy by the oxidation of called?
- a. digestion
 - b. excretion
 - c. exhalation
 - d. respiration
6. what is the common chamber of food and air behind mouth called?
- a. pipe
 - b. vocal chords
 - c. breathing pipe
 - d. respiration
- B. Answer the following questions briefly:
1. Write any three functions of muscle system and Skeleton system?
 2. write the four parts of human skeleton?
 3. what is the difference between voluntary and non voluntary muscles?
 4. write the steps from food intake to food digestion in body?
 5. write any two parts of human digestive system?

6. write only four parts of respiratory system?
7. which organ system takes digestive food to our whole body?
8. write any three types of main structure of circulatory system of human body?



Notes



ANSWERS TO INTEXT QUESTIONS

7.1

1. Skeleton system and muscular system
2. Skeleton, back bone, rib, bones of shoulder and hips, bones of legs and arm
3. (i) Brain, (ii) lungs and heart
4. muscles of stomach, heart muscles
5. involuntary muscles

7.2

1. 32 teeth
2. mouth, teeth, tongue, pipe, stomach, liver, small and big intestine, saliva, glands, stomach, liver
3. small intestine
4. gastric juice

CLASS-V



Notes

7.3

1. food pipe
2. i. veins
ii. carbon dioxide, oxygen

7.4

1. these muscles work throughout life and never get tired.
2. 72 times a minute
3. colourless

