

Effects of exercise on Respiration, Blood Circulation, Muscles and Excretory System

Respiration

Respiration is that process by which Oxygen is inhaled inside the body and carbondioxide is exhaled from the body. To respire is to make the human life going and in this process; nose, air, ear, larynx, wind pipe, wind veins and lungs help. Respiration is the combination of two activities. First activity in which we take the air inside is called inspiration and the second in which we take out air is called expiration. Man can survive without food for some time but if he does not get air, he cannot survive for a few moments.

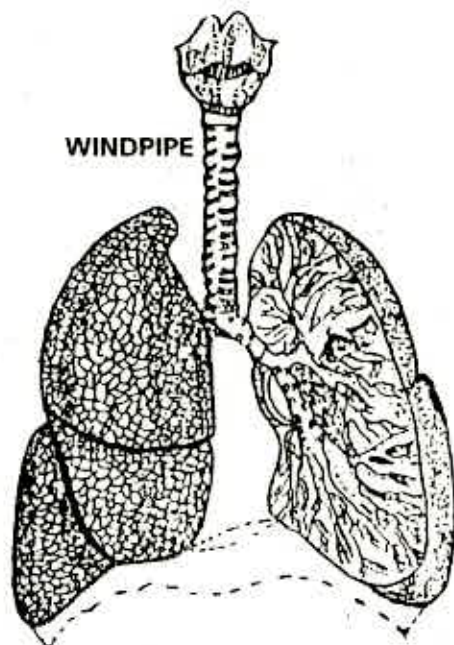


Fig. 10

Mechanism of Respiration

By inspiration, the diaphragm contracts and chest

expands. Thus the lungs get more space for expanding and the air is inhaled. When the diaphragm expands, the air is expired. Thus the contracting and expanding of the diaphragm determines inspiration and expiration. This activity goes on continuously and generally in a healthy person, this is repeated 18 times per minute but in a newly born child, this happens 40 times per minute.

Vital Capacity

The activity by which air is inspired by deep breathing and expired the same way is known as vital capacity. In normal condition, we inspire 500 cc. of air and expire about 1500 cc. air but if we expire forcefully, we can expire another 1500 cc. of air. By doing so, our lungs don't get empty instead they retain about 500 c.c. of air. This capacity of the lungs can be measured by an instrument-spirometer.



Fig. 11

Effect of Vital Capacity

By these activities, the chest of a man becomes broad because it gets more capacity and power to fill oxygen. Thus because of the capacity of the lungs to retain more oxygen, problem does not come in breathing while playing games for a longer period of time and participating in long races.

While taking exercise, more oxygen gets mixed in the different cells of the body. In this way, the gases get exchanged in the cells and they get more nutritious diet. Consequently the body remains healthy and strong.

Because of the vital capacity, the body keeps throwing out useless matter and carbon dioxide as a result of which the body gets more energy to work and gets less fatigued.

When we take exercise, the body comes into motion and because of this activity, poisonous matters get thrown out through sweat excreta and urine. As a result of this excretion, poisonous germs do not get collected in the body and the body remains free from germs.

Exercise enhances the capacity of lungs to retain more oxygen in them consequently, the lungs become more flexible and the lungs remain free from the breathing problems.

Exercise helps to purify the blood more quickly in the body through oxygen. In this way, by respiration more quantity of blood is sent to different cells of the body.

Blood Circulation

Blood is a sort of liquid which keeps flowing in veins and arteries of the body day and night and helps the body to survive. It is a thick salty matter which is $\frac{1}{12}$ or $\frac{1}{13}$ of the weight of the human body. It gets formed from eatables and drinks and the yellowish matter in it is called plasma in which the blood corpuscles keep floating. These blood corpuscles are of three types i.e. red, white and platelets. On the whole, blood has 91% water, 8% protein and 1% plasma.

Plasma is a yellow coloured salty matter which has the reaction of Alkaline. It is equal to $\frac{1}{20}$ or $\frac{1}{25}$ of the human

weight. It has food matter, of the human weight. It has food matter, waste material and water. Plasma helps to carry the formative matters to different organs and while coming back throws the waste matter out. Its main characteristic is to safeguard the body from the attack of poisonous germs.

Blood corpuscles are red and white. The age of red corpuscles are of 115 days and then the new ones from the Bones replace them. The white corpuscles defend the body from the attack of diseases. The matter in the platelets helps the blood to clot.

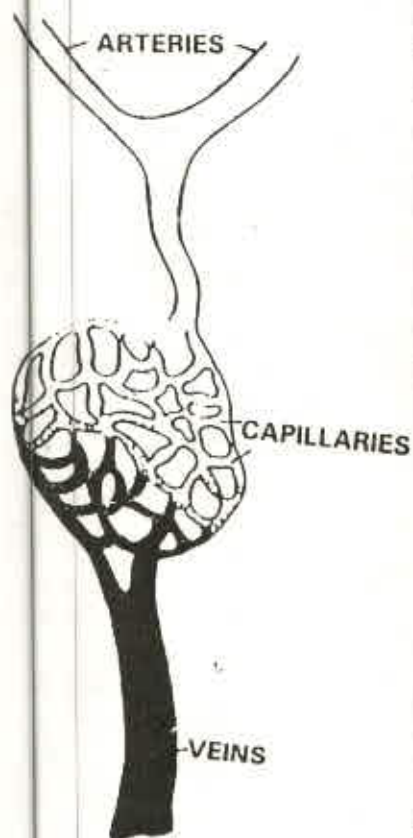


Fig. 12

Blood Pressure

Veins, arteries and capillaries help in taking the blood to different parts of the body. Pure blood always keep circulating in arteries and impure blood in veins. This blood circulation keeps striking against the walls of blood arteries and veins

which increases the pressure. When the pressure decreases the blood moves on. This action of increasing and decreasing is known as blood pressure. To measure this pressure, an instrument known as Sphygmomono meter is used.

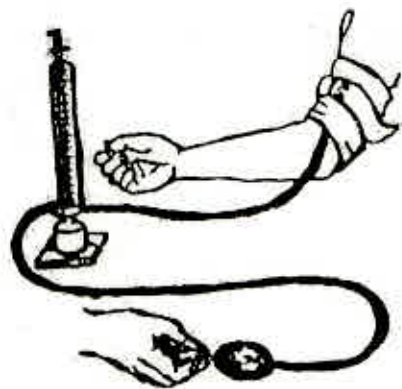


Fig. 13

Pulse

Because of the fast speed of blood, the walls of the blood arteries and veins keep increasing and decreasing. This activity of increasing and decreasing is known as Pulse. It beats in a healthy person from 70 to 80 times per minute. It can be soon located by placing hand on the wrist.

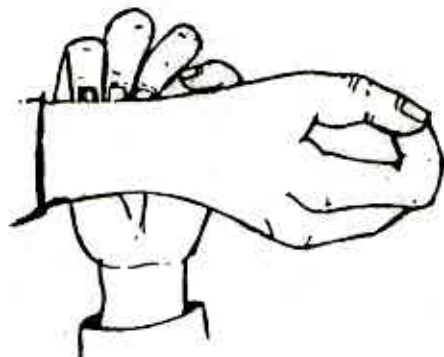


Fig. 14

Heart

It is the main organ of the blood circulation and is on

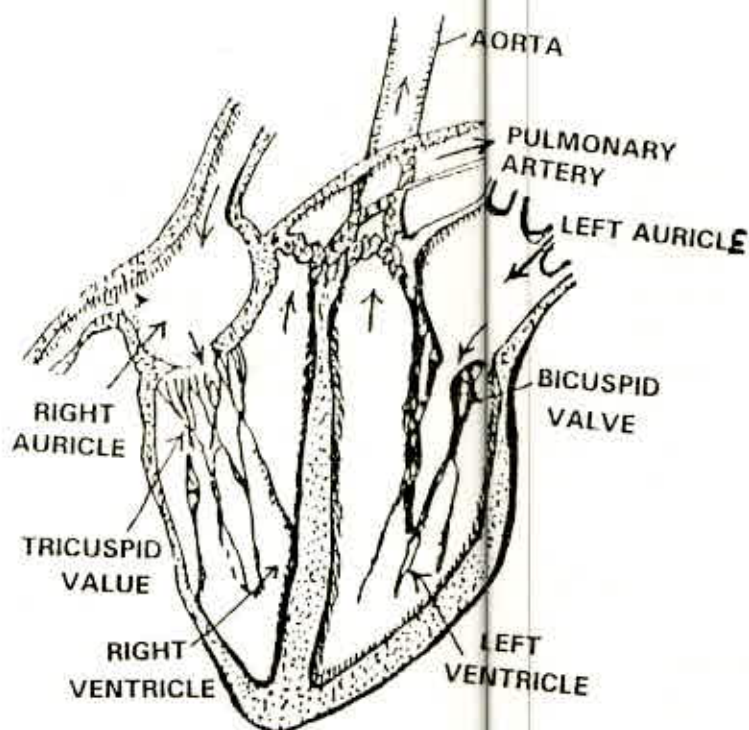


Fig. 15

the left side of the chest of a person. This organ is shaped like a closed fist and is divided into two parts length wise. Each part is again divided into two parts-upper and lower. Upper part is called auricle and lower part ventricle. The impure blood from the body from different organs reaches the right auricle of the heart through veins and goes into the ventricle from upper side through tricuspid valve and then it cannot go back to upper side.

It goes to lungs for purification through pulmonary artery from the right ventricle and on return, the purified blood mixed with oxygen comes to the left auricle of the heart then it goes

to left ventricle from left auricle through bicuspid valve . Then from left ventricle, it is taken to different part of the body by Aorta. In this way, heart helps to supply time and again the purified blood to different parts of the body.

Effects of Exercise

Muscles of the heart are supplied more blood because exercise as a result of which small blood veins and capillaries are increased.

A person who takes exercise in his body, the exchange of pure and impure blood gets rapidly done as a result of which the body receives more quantity of nutritious material and oxygen and the waste matter in the form of carbondioxide sweat and urine get thrown out of the body. In this way poisonous gases are not accumulated in the body and the body remains safe from the attack of poisonous germs.

Different organs of the body of a person who takes exercise have to work as a result of which more quantity of oxygen is needed . Thus the speed of blood circulation of person who takes daily exercise is double than a normal person.

The speed of working of the heart of a person who takes exercise is increasing. Thus the muscles of the heart get strengthen and consequently in the state of rest, the heart beat is slowed down but the speed of blood circulation is increased.

The quantity of oxygen is needed more to a person who takes exercise. In this way consumption of oxygen increases and its ration is increased in blood. Because of the increased ratio of oxygen, lactic acid does not increase and the body does not feel fatigue. Thus, the players can participate in games and athletics for a longer duration of time without getting tired.

The blood pressure of a person does not go high who takes daily exercise. His muscles contract and expand fast and

consequently the blood keeps getting purified fast.

While taking exercise, the ends of the blood vessels keep opening and closing. Consequently the ratio of oxygen at the time of exercise and races goes up to 35000 cubic milliliter which is normally from 5000 to 8000 cubic milliliter.

The veins and arteries of a person who takes exercise have to work more. Consequently their walls get strengthened. The blood stroke volume of a person who takes exercise is more than a normal person.

The waste matters get thrown out regularly from the body because of daily exercise and the body temperature remains static consequently

Effects of Exercise on Muscles

The biggest boon of human body is movement. In this movement, bones work as a pivot. Muscles are joined with

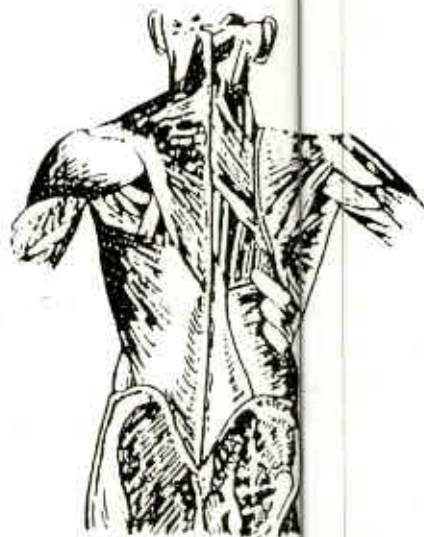


Fig. 16

the bones and are of different shapes like bones . There is a proper combination of muscle cells in them . Each muscle is fixed with the bone. When the muscles contract, the bones are also get pulled and come into motion . Muscles have 75% water, 18 % protein and the rest are fat and salts. These muscles get blood supply through veins and messages through spinal nerves

Muscles give shape to the body and besides help in the body motion. All the functions of the body like walking, moving , jumping , running, breathing etc., all are done as a result of the muscular motion.

Muscles are of two types voluntary and Involuntary

Voluntary muscles move according to the wish of a person. They are fixed over the skeleton of bones and are found in legs and arms. They act according to the message. Their function is to give movement to the body, to safeguard the skeleton of body and to produce heat in the body.

Involuntary muscles are not in the control of a person and they keep working without the desire of a person. This type of muscles are found in heart , liver and intestines. They keep working when a person is even asleep. Their function is to circulate the blood, help in digestion and to maintain the pulse rate .Their characteristics are to contract, expand and become flexible.

Fatigue

The lack of stamina in muscles is called fatigue . It is two types physical and mental. Physical fatigue is caused by prolonged playing walking or by doing heavy work and it could be removed by sleep, rest , massage and recreation.

Mental fatigue is caused by excessive reading and writing, calculations or by giving a long sitting. It can be overcome by walking, sleep, recreation and exercises.

Effect of Exercise

Muscles work more by taking exercise. They get more nutritious food by through oxygen as a result of which they become heavy and their tendons and ligaments get strong and long.

Muscles of persons who take regular exercise have more co-ordination.

By taking exercise, the muscles become strong and consequently fatigue is not felt till prolonged working.

Exercise makes the muscles work more, therefore more work increases the consumption of oxygen thus, the blood reaches the muscles fast.

Exercise makes the body move. Because of this movement, the muscles get more oxygen and waste matters are thrown out and it makes the body temperature uniform.

Because of exercise, the muscles get more chemical substances like glycogen, phosphoeritine and potassium by way of a nutritious diet. These organic materials make the blood circulation fast.

Exercise makes the muscles fast and flexible as a result of which the body remains strong, healthy and flexible. As a result of this flexibility and activity, balance remains increasing for body activities.

Effect of exercise on excretory system

Excretory system is that system of the body through which waste and harmful matters are thrown out of body. These

harmful and waste matters which get produced due to internal breakage of the body give birth to many diseases if they are retained in the body. These matters are thrown out through lungs

kidneys, skin and intestines. These waste matters are mainly urea, carbendioxide, sweat and water.

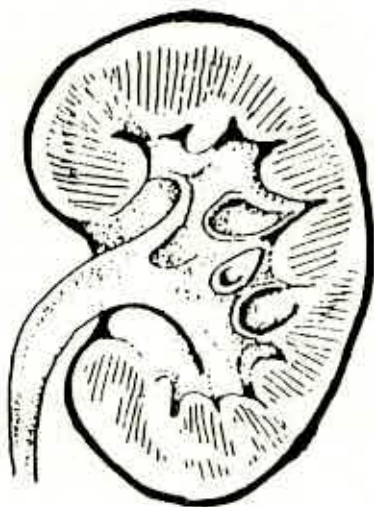


Fig. 17

Skin

This is a covering for the body which covers the inner

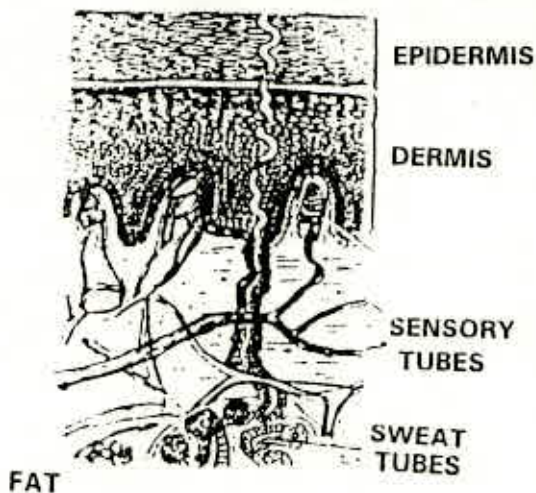


Fig. 18

muscles and organs. It is of two types. Epidermis and Dermis. Epidermis is hard and soft and has small pores through which sweat gets thrown out of the body. Dermatic is made up of connective Tissues and it has fat which helps to generate heat. It has two types of sweat and fat glands which help to keep the body temperature uniform

Kidneys

These are two in number and are placed at the back side. Their shape is like soyabean. They help to pass out urine through urinary tube from the body and through them, urea, uric acid, mineral salts come out of the body in the form of urine. Kidneys maintain the ration of water in blood as a result of which the ratio of acid and alkaline remain uniform.

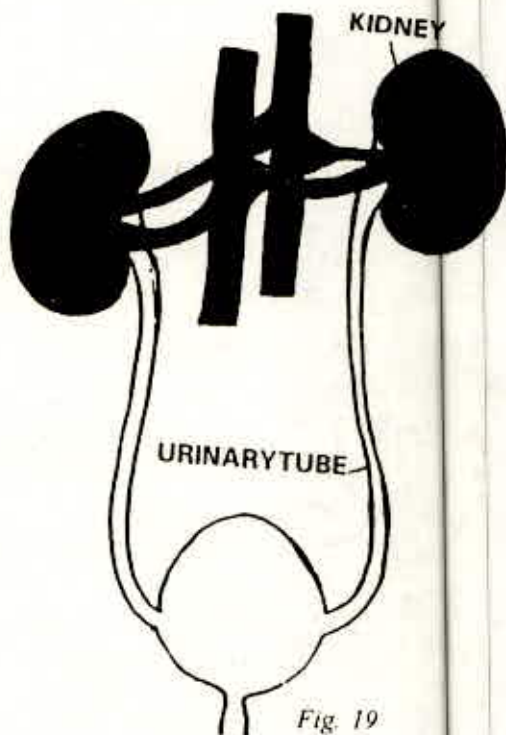


Fig. 19