

What Happens to Our Body When We Exercise ?

There are many different systems involved in when we exercise, the three main ones are the Respiratory system which is involved in breathing the circulatory system which is about circulation of blood around the body and finally the muscular system and finally the Muscular system which is about how we move.

The Respiratory System

The system that helps you breathe when you exercise is the respiratory system. The Respiratory system helps us to get the oxygen into our body and get rid of carbon dioxide.

BREATHING

The respiratory system is an important process. The first thing that happens in the respiratory system is when we breathe in oxygen and breathe out carbon dioxide. Your body needs oxygen to stay alive. Your body automatically breathes until you die.

After we breathe in, the air travels down a windpipe called the Trachea. The trachea is connected from the nose and mouth to the lungs. Cilia tiny hairs in the trachea catch mucus and dirt it also moves gently while you are breathing.

A muscle that helps us breathe is the diaphragm. The diaphragm is located under the lungs; it is a dome shaped muscle. When we breathe in the diaphragm contracts and when we breathe out it relaxes, the diaphragm expands the lungs to allow more oxygen in the lungs deflate and push carbon dioxide out.

LUNGS

The next thing in your respiratory system is the lungs. The lungs are located in your chest behind your rib cage which protects your lungs. The rib cage protects the lungs by going over it. The lungs rest on top of the diaphragm.

The lungs are pink and squishy like a sponge; the left lung is smaller than the right, which makes room for the heart.

When the trachea splits into it is called the bronchus. The bronchus is the main tube to the lungs, and the plural for bronchus is called the

bronchi. The bronchus allows air to enter each lung.

The bronchus is connected to the bronchioles' which are tiny tubes. The bronchioles' are the size of a hair.

There are 30,000 bronchioles' in each lung in each lung and they keep on getting smaller and smaller which allows oxygen to pass to and your alveoli.

Another part of your lungs is the alveoli. The alveoli are tiny clumps of air sacks and there are 600,000,000 alveoli in the lungs. Alveoli can be found at the end of each bronchiole. The alveoli fill up with air when you breathe in, which allows oxygen to pass through your blood. They are surrounded by tiny blood vessels called capillaries.

BLOOD

The next part that is important to the respiratory system is the blood; capillaries which are tiny blood vessels are small enough for blood cells to be in single file. First the oxygen is transferred onto the blood cells. Next the blood takes the oxygen around the body. Finally carbon dioxide is transferred into the lungs to breathe out.

EXERCISE

When we are exercising our respiratory system accelerates this is because our body needs more oxygen. Our body breathes faster and deeper and uses 3 litres or more of air a minute.

The Circulatory System

The next system involved in exercise is the circulatory system. The circulatory system related to the heart which pumps blood around the body.

HEART

When we exercise we use an organ called the heart. The heart is to the left, middle of your chest, it is close to all your important organs. The heart is the size of its of its owners clenched fist . The heart is a muscle called the myocardium that pumps blood around the body and is like a hollow bag. The heart's fibres have a special pattern , it is different to all the other r muscle fibres makes it easier to pump and squeeze .

The heart has four chambers. The right side of the heart has an atrium , the atrium receives deoxygenated blood from the body. The right side also includes the tricuspid valve, the tricuspid valve is located between your atrium and ventricle. It allows blood into the ventricle from the atrium. The right side of the heart pumps blood tho the pulmonary artery.

The left side of the heart also has an atrium which receives blood from the lungs. The bicuspid valve is the valve that is between the atrium and the ventricle. The left side pumps blood to the aorta, then is sent around the body.

Another part of the heart is the nerves. The sympathetic nerves which receives impulses from the brain and the heart to beat. It also tells the heart's rate and force to increase when needed. The next is the parasympathetic nerves, these nerves tells the heart to slow down when needed, it is like your braking system. The nerves are connected to our nervous system called the autonomic nervous system, this works automatically.

3 CIRCULATION

The circulatory system has types of three circulations. The first one is coronary circulation, this is the circulation to the cardiac muscle which is the heart. Coronary vessels carry blood around the heart and give it oxygen and nutrients.

The second is pulmonary circulation. This carries blood to and from the lungs. Bronchiole circulation supplies blood to the tissue of the larger airways in the lungs.

The third is systemic circulation, this sends blood around the body and supplies body cells with oxygen and nutrients.

BLOOD VESSELS

The next important part in the circulatory is blood vessels. There are three types of blood vessels and they have different parts. The first one is called the arteries. The arteries have four layers the tunica adventitia this is the outer layer has nerve cells and contains blood vessels to supply the vessel with oxygen and nutrients. The tunica media which is a muscular layer is thicker in an artery than a vein because the artery pumps at a higher pressure than a vein. The tunica media are

like elastic so they can move. Next is the tunica intima this is an lining and is made out of endothial cells . After that is the lumen , the lumen is the hollow centre this is not as wide as the vein's lumen. This creates a higher pressure which makes blood get around the body quicker.

The next blood vessel is capillaries. The capillaries are small and don't have three tunica layers. They only have one layer of endothial cells.

The last blood vessel is the vein, veins have the same structure as arteries, but there are some differences . it has a wider lumen and is a lower blood pressure system, it also has a thinner tunica media. The veins contain valves which act as reservoirs this allows blood to pool. The veins have a muscle pump to help the blood to flow along.

In the body, blood vessels are a whitish colour. The reason they appear blue under the skin is because light can't penetrate the skin. In text books arteries are red and the veins are blue to show the difference.

Arteries are a part of the arterial system, they are deep inside the body which protects them. Arteries transport oxygenated blood from the heart, because there is high blood pressure coming from the heart the blood inside your body +will squirt if you cut one artery, each artery pulses with each heartbeat. Arteries keep on getting smaller and smaller until they become arterials. Arteries are the position in all people .

After arteries is the capillaries. The arterioles filter blood in the capillaries. Capillaries allow blood to deposit oxygen and nutrients to cells it also transfers waste and carbon dioxide to the blood.

The last blood vessel is the veins. The veins are the part of the venous system. It has a lower blood pressure than the arteries and if you cut one it will only dribble. The veins also carry deoxygenated blood back to the heart. Veins keep getting bigger from the capillaries, become venules then veins. many veins lie just under your skin so that is why you can see them. The minor veins vary from person to person, but the main ones are in the same position. There are several vessels around the heart. The first is pulmonary

artery, this carries deoxygenated blood from the right ventricle to the lungs. The pulmonary veins carries oxygenated blood from the lungs to the heart. Your Aorta is the largest artery in your body it takes oxygenated blood from the left ventricle to the body. Your superior Vena Cava returns blood from the upper body to the heart.

BLOOD

Another part in the circulatory is the blood and it is very important. Our blood takes heat from busier parts the heart, lungs and liver then it spreads it evenly around the body so blood heats our body! The blood has four main parts the first one is the red blood cells which is what makes the blood red. The red blood covers half volume of your blood and there are billions of them. The red blood cell transports things, it carries oxygen to the cells in the body it also carbon dioxide away. The second part white blood cells which is the biggest blood cell in the body, they clean the blood and it also fights diseases and germs .

The third part is the platelets, these are the smallest thing in the blood and there are billions too. The platelets helps blood to clot when you have a cut.

The next last part is plasma. Plasma is a watery substance that other parts float in. Plasma is what makes blood a liquid, it carries nutrients to the cells and it also carries physical waste to the kidneys the plasma carries substances that controls your emotions called hormones.

KIDNEYS

The Kidneys are the part of the urinary system but plays an important part in the circulatory system. They dispose waste through urine, they get this waste from when they clean the blood.

You have two kidneys, but you can live with one. Your kidneys are located in your back just below the middle, they are the shape of a bean.

In your kidneys there are 1,000,000 tiny filters called nephrons, they are located in your cortex. Your Ureter is a tube trickles to your bladder.

EXERCISE

When you exercise the circulatory system accelerates and your sympathetic nerve tells your heart to pump faster and harder because it needs

to pump blood around the body quicker. When you exercise your body cells need more oxygen and nutrients, it also disposes of more waste.

The Muscular system

The last system that is involved in exercise is the muscular system. Our muscles help us move.

TYPES

There are three different types of muscles the first one is voluntary which is called skeletal muscles. Skeletal muscles are very adaptable they are used in different situations such as writing ,exercising and moving the body when needed. Skeletal muscles are connected to bones, your biceps, triceps and thighs are examples of this. Voluntary muscles move with thought. When you want to move it an impulse is sent from the brain to tell the muscle you want to move it.

The second muscle is involuntary muscles which are the smooth muscles. The smooth muscles move without thought, they are controlled by the

autonomic nervous system. Smooth muscles are the walls of hollow structures in the body, the intestines and stomach are examples of this.

Involuntary muscles are involved in vital body processes like the heart, breathing and digesting because we need to survive.

The last muscle is the cardiac muscle which is the heart. The heart is classified as an involuntary muscle, but it is smooth on the inside, and it is like a skeletal muscle outside.

APPEARANCE

Each of the muscles are different, skeletal muscles are red in colour because of the blood in the muscle fibres. There are more than 640 skeletal muscles in the body, so they take half the body's weight. Skeletal muscles have different layers, the layer that is just under the skin is the superficial layer, next there is the deeper layer and some muscles have a third layer called the medical layer. Some muscles are different shapes, pectorals are a fan shaped muscle. Some are broad and wide, like the abdominal walls they are shaped like flat sheets. Your gluteus maximus is the biggest muscle in your body and your thighs

muscle is 30cm in length. Smooth muscles have a smooth surface and they have a reddish appearance like the skeletal muscles.

PARTS

All of the muscles have different parts which help them work in different ways. Skeletal muscles have fibres and tendons like every muscle, but the smooth and cardiac muscle. Their fibres are bundled together, each of them are slightly smaller than a hair. Each fibre is made out of dozens of smaller parts called fibrils. The fibres are bond together by a connective tissue called the epimysium. They are divided into groups by a sheath called perimysium, within these groups each group is surrounded by epimysium. Groups of fibres have blood vessels around them. Bigger muscles have more fibres. Skeletal muscles are striated at microscopic level.

Skeletal muscle tendons attach the muscle to the bone, there is a bone at each end of the muscle. Tendons are strengthened by strong thick fibres of collagen . Muscles get thinner and tapers away when they get closer to connecting to tendons. Tendons stronger than super glue.

The smooth muscle fibres are not striated which makes them smooth. They are made out of groups of smaller muscle cells which helps them move differently. Smooth muscles don't have tendons because they don't have to move bones, if smooth muscles did have tendons it wouldn't help the movement of hollow structures in the body.

The cardiac muscle fibres are a special form of striated fibres which are only found in the heart and adjoining vessels. They are arranged in a special pattern, which helps to squeeze blood through. The cardiac muscle don't have tendon as it is constantly moving.

MOVEMENT

Each muscle moves differently. Skeletal muscles move with conscious thought and is controlled by the brain. When you think you want to move a part of your body, an impulse is sent from the brain to tell the muscle to move. When muscles contract they can't get longer, it shortens the length to 70 per cent. Skeletal muscles are very adaptable, they can exert great small force and exert a great force. They tire easily and then need a long period of rest, they use glucose as fuel.

Skeletal muscles react to certain things almost instantly.

Smooth muscles move without thought, they are controlled by the autonomic nervous system and are involved in the regulation of your body's internal environment. They contract in a gradual synchronised manner. Smooth muscles are much slower than skeletal muscles. They do things like regulate the size of the lumen in blood vessels, and move in a wave of motion in some organs. Smooth muscles never tire they keep a contraction for long periods of time and they are working all the time . Smooth muscles are used in the eye by controlling the size of the pupil, for digestion and on the skin, it reacts to hairs and skin and feelings. Smooth muscles also respond to stress, it changes body functions for different situations.

The cardiac muscle is involuntary like smooth muscles even though it is striated like skeletal muscles. It is striated like skeletal muscles. It is a tireless muscle and works all the time. The cardiac muscle speeds up and slows down when needed. It contracts like a wave to push blood and has the ability to contract spontaneously.

Interestingly the heart still beats for a short time after it is removed from the body.

EXERCISE

When we exercise our muscular system accelerates. Muscles need more glucose as they are using more energy. Muscles tire and if they over tire they can cramp.

When you damage muscle fibres build more muscles. When muscle fibres tear they heal, when they heal they become thicker and stronger. Other systems accelerates as your body is using energy and oxygen quicker. Your heart beats faster, blood vessels transport ,ore oxygen and nutrients and you breath quicker because of this.

These systems are the three main ones involved in exercise however there are more systems involved. When we exercise the Nervous system, the Integumentary system and the Skeletal system are examples of the many other systems involved when we exercise.

