

CARDIOVASCULAR SYSTEM.

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→ Constituents - • Heart

- Blood Vessels → (a) Arteries
- (b) Capillaries
- (c) Veins

The heart is a hollow muscular organ made of specialized cells that allows it to act as a pump with in the circulatory system.

CVS and lymphatic systems make up the circulatory system a

vast network of organs and vessels responsible for the flow of :

- Blood
- Nutrients
- Hormones
- Oxygen & other gases

→ To and from the cell of the body.

The lymphatic system - lymph,
lymph nodes,
lymph vessels.

The circulatory system -

- Blood
- Blood vessels
- Heart

HEART → located b/w the lungs in the centre and to the left of the midline.

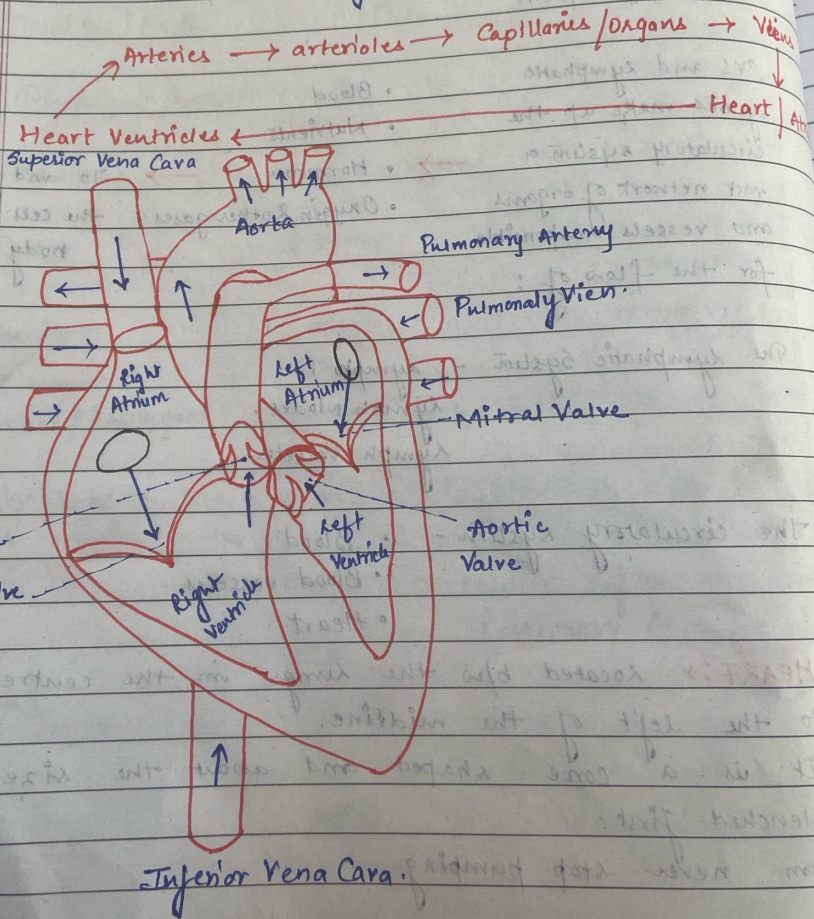
- It is a cone shaped and about the size of your clenched fist.
- Can never stop pumping.

Primary functions → It is to drive blood through the cardiovascular system delivering:

- (i) Oxygenated blood to the tissues and organs of the body sufficient for their metabolic needs.
- (ii) De oxygenated blood to the lungs for gaseous exchange.

The avg. human adult has 4-6 lit. of blood repeating cycle through out the body in a closed circulatory system.

It is called a closed system because the blood is contained within the heart and blood vessels at all time and blood always flows in a forward direction.



HEART

Human heart is divided into 4 chambers

- 2 Atria and 2 ventricles. - These are hollow chambers which receives blood.

- They are surrounded by myocardial cells which are able to relax and contract.

The CVS system consist of circuits :-

- (i) Pulmonary circuit provides blood flow b/w the heart and lungs
- (ii) Systemic circuit allows blood to flow to and from the rest of the body.
- (iii) Coronary circuit provides blood to the heart.

The heart valves ensure the blood flows in one direction through the system.

- (iv) There is wall b/w the two atria called the atrial septum. There is another wall b/w the two ventricle and it is called ventricular septum.

→ Arteries and veins are blood vessels, and they carry blood into and out of the heart. Arteries carry blood away from the heart, while veins carry blood to heart. The superior vena cava and inferior vena cava are two main veins that bring blood back to the heart. These pulmonary artery and aorta are the main arteries that carry blood to the lungs and rest of the body. The flow of blood through the blood vessels and chambers of the heart is controlled by valves. The four main valves are -

1. Tricuspid valve: This separates the right atrium and right ventricle.
2. Pulmonary valve: This separates the right ventricle and pulmonary artery.
3. Mitral Valve: This separates the left atrium and left ventricle.
4. Aortic valve: This separates the left ventricle & aorta.

The heart pumps blood to all parts of the body. Blood provides oxygen and nutrient to the body and also removes CO_2 and waste. The blood picks up oxygen from the lungs. When blood has oxygen, it is called oxygen-rich. Oxygen gets used by muscles and tissues as it travels through the body. When blood loses oxygen, it is called oxygen-poor.

→ Blood flow through the heart -

1. Oxygen-poor blood returns from the body to the heart through the superior vena cava and inferior vena cava and into the right atrium.

2. From the right atrium, blood flows through the tricuspid valve into the right ventricle.

3. The right ventricle pumps oxygen-poor blood through the pulmonary valve into the main pulmonary artery.

4. Blood flows through the right & left pulmonary arteries into the lungs.

5. In the lungs, oxygen is put into the blood & carbon dioxide is taken out of the blood during the process of breathing. The blood is then oxygen-rich.

6. Oxygen-rich blood flows from the lungs back to the heart through four pulmonary veins.

7. Blood enters into the left atrium.

8. Blood then flows through the mitral valve into the left ventricle.

9. The left ventricle pumps the oxygen-rich blood through the aortic valve into the aorta and out to the rest of the body.

* Body tissue - Superior & Inferior → Right - Tricuspid → Right Vena cava Atrium Valve. Ventricle

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Pulmonary valve → Pulmonary arteries → Lung tissue → Pulmonary veins → Left atrium → Mitral valve → Left ventricle → Aortic valve → Aorta → Body Tissue *