



# Sports & Physical Education

## Human Anatomy

### Circulatory System



# Circulatory System

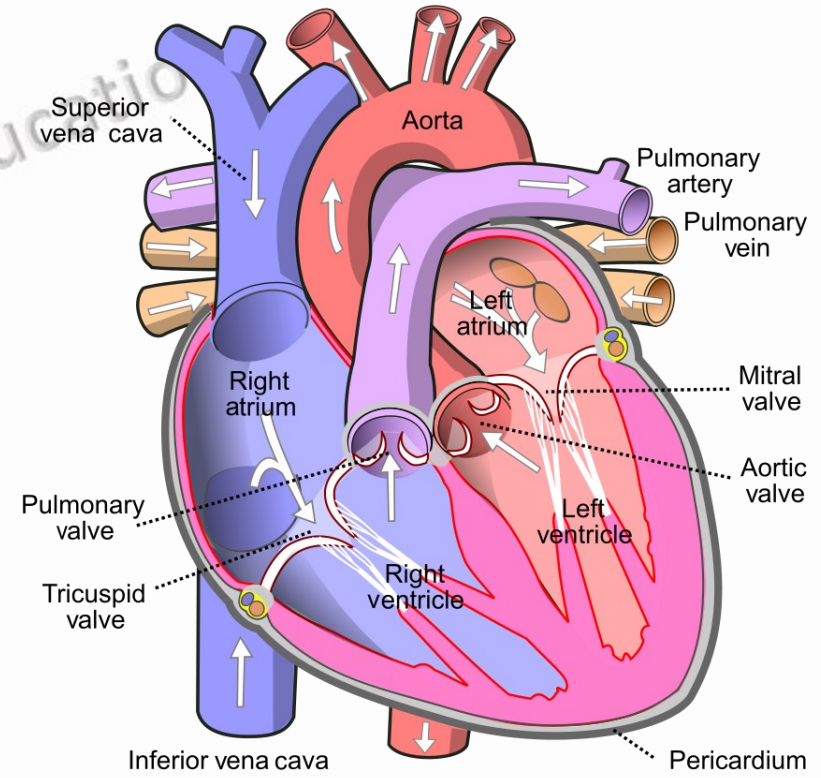
- 1. Open Circulation**
- 2. Closed Circulation**
- 3. Mixed Circulation**



# Human Blood Circulation

There are mainly Three Type of Blood Circulation -

1. Systemic Circulation
2. Pulmonary Circulation
3. Portal Circulation





# Human Blood Circulation

- **Heart**
- **Blood vessels**  
*(arteries, veins, and capillaries)*
- **Blood**

# Heart

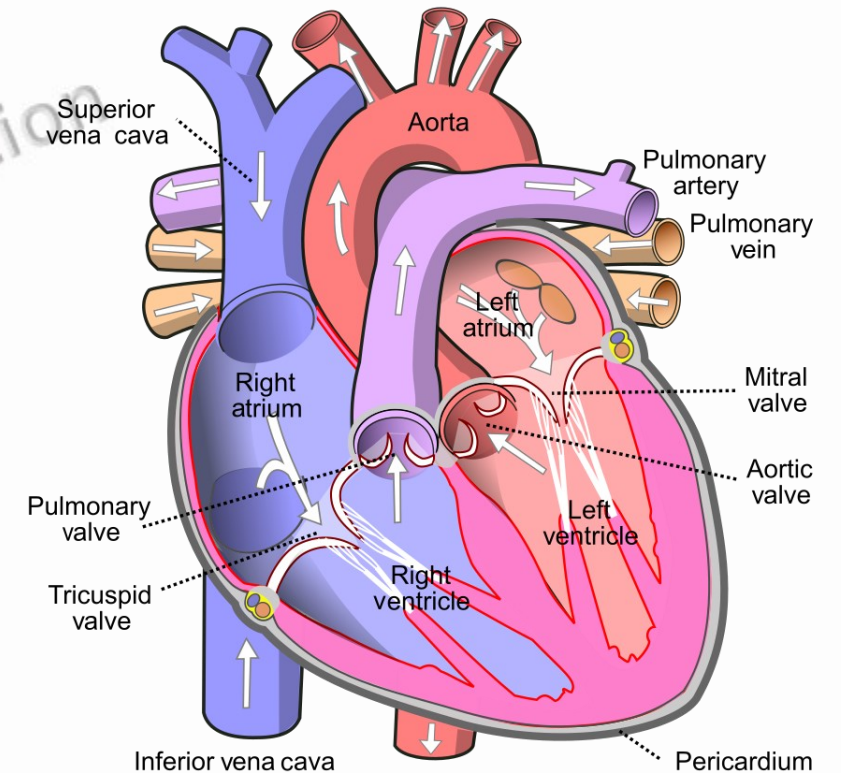


The heart is a muscular structure that is situated in the front of the chest. The human heart is located between the lungs in the thoracic cavity, slightly towards the left of the sternum (breastbone).

- Heart is a **fist-sized** organ
- Heart Weight-250-300g

4 chambers

- Right Atrium
- Left Atrium
- Right ventricle
- Left Ventricle





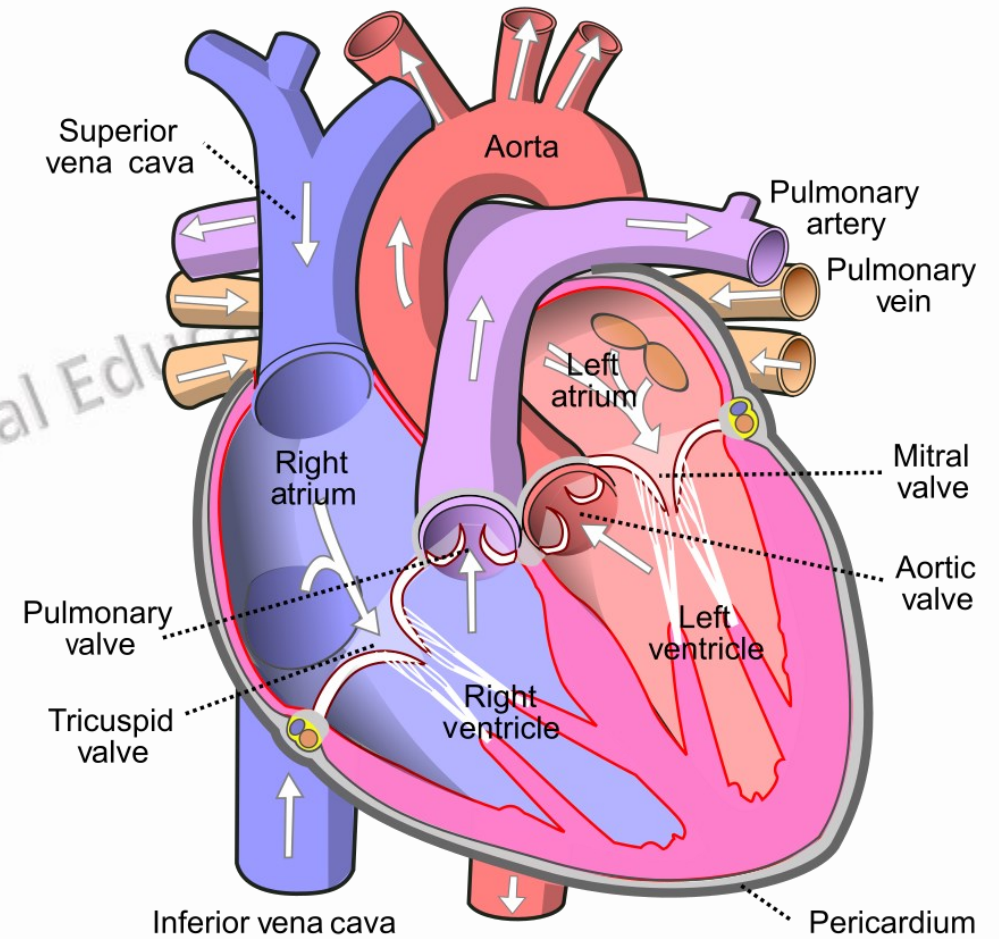
# The Function of Heart

- Pump blood throughout the body.
- Blood delivers oxygen, hormones, glucose and other components to various parts of the body, including the human heart.
- The heart also ensures that adequate blood pressure is maintained in the body



# Heart Valves

- **Tricuspid valve**
- **Bicuspid Valve/Mitral Valve**
- **Pulmonary Valve**
- **Aortic Valve**





# Blood Vessels



## ■ Arteries –

- Carry oxygenated blood
- Heart → Body Part
- Thick
- Red Colour
- Pressure-High(120)
- The exception is your **Pulmonary Arteries.**

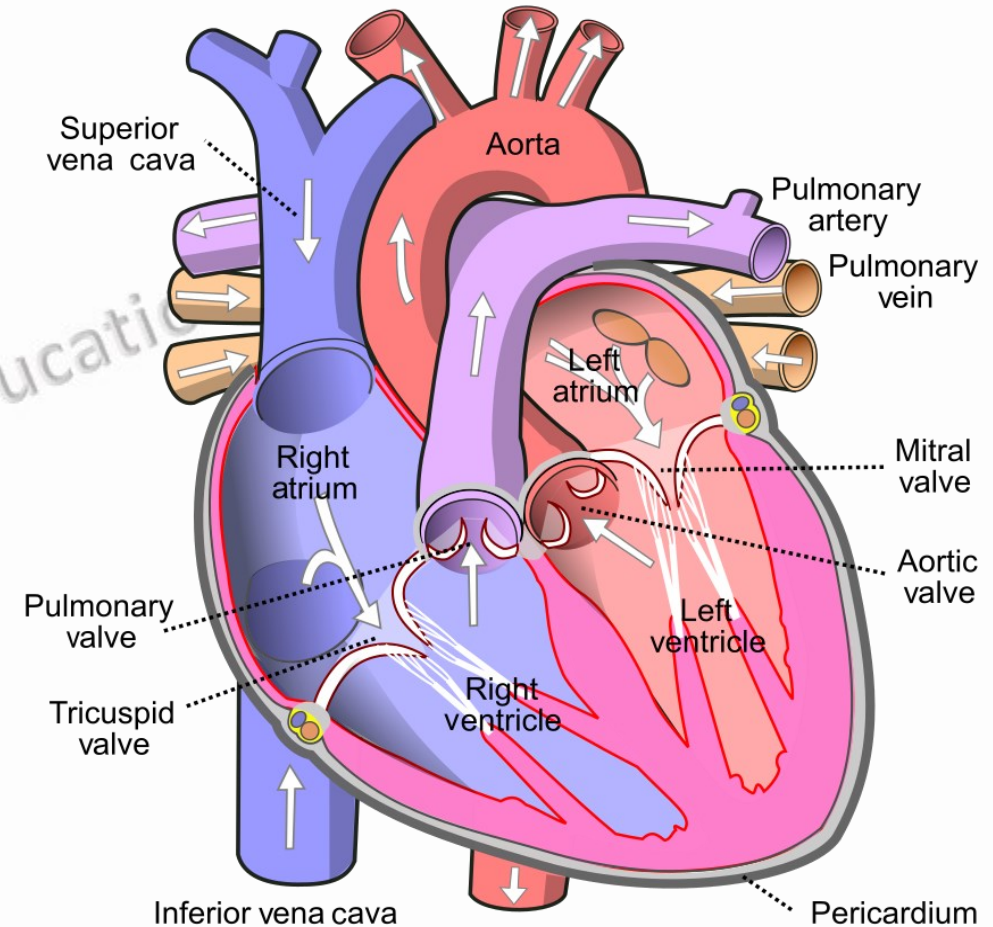
- ↓
- **Impure blood**
  - **Heart to lungs**

## ■ Veins -

- Carry Deoxygenated blood
- Body part → heart.
- Pressure- Low(80)
- Thin
- Blue Colour

The exception is your **Pulmonary vein.**

- ↓
- **Pure blood**
  - **Lungs to Heart**

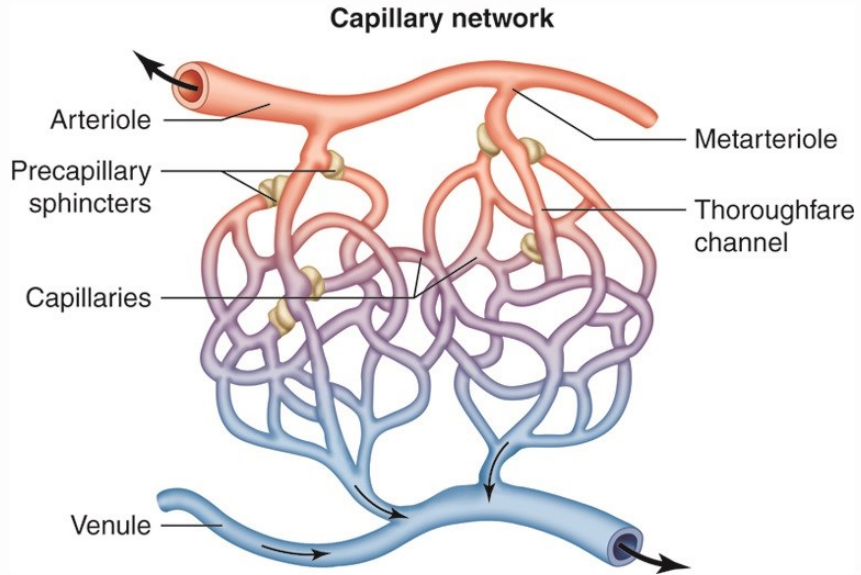




# Blood Vessels

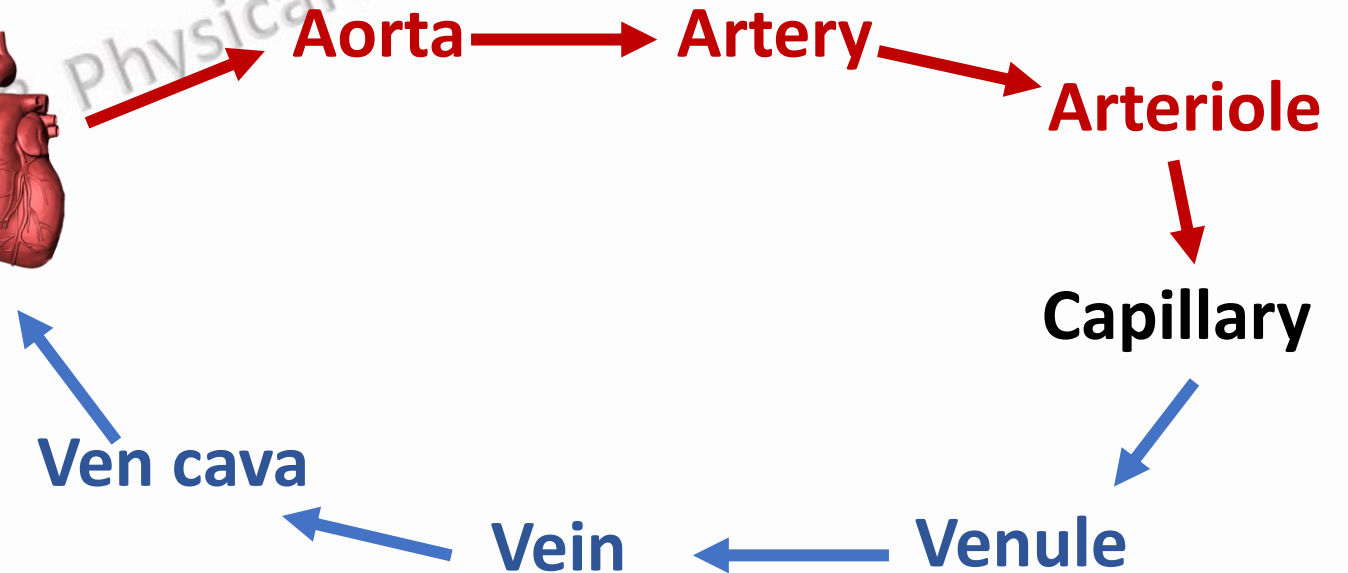
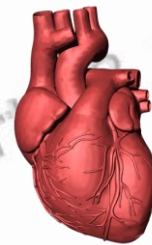


## Capillaries



Capillaries are small blood vessels where your body exchanges oxygen-rich and oxygen-poor blood.

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# Coronary arteries

Your heart receives nutrients through a network of coronary arteries. These arteries run along your heart's surface. They serve the heart itself.

**Left coronary artery:** Divides into two branches (the circumflex artery and the left anterior descending artery).

**Circumflex artery:** Supplies blood to the left atrium and the side and back of the left ventricle.

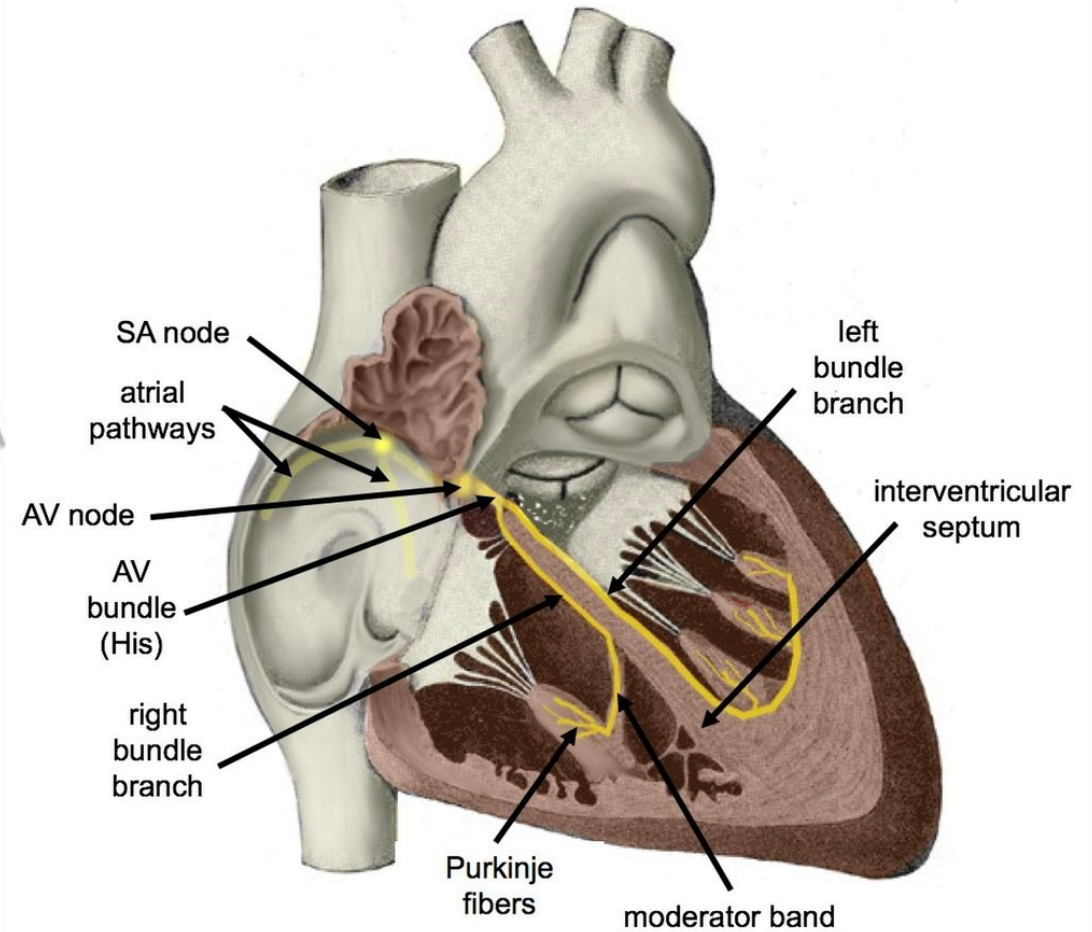
**Left anterior descending artery (LAD):** Supplies blood to the front and bottom of the left ventricle and the front of the septum.

**Right coronary artery (RCA):** Supplies blood to the right atrium, right ventricle, bottom portion of the left ventricle and back of the septum.

# Electrical conduction system



- Your heart's conduction system **controls the rhythm and pace of your heartbeat.**
- **Sinoatrial (SA) node:** Sends the signals that make your heart beat.
- **Atrioventricular (AV) node:** Carries electrical signals from your heart's upper chambers to its lower ones.



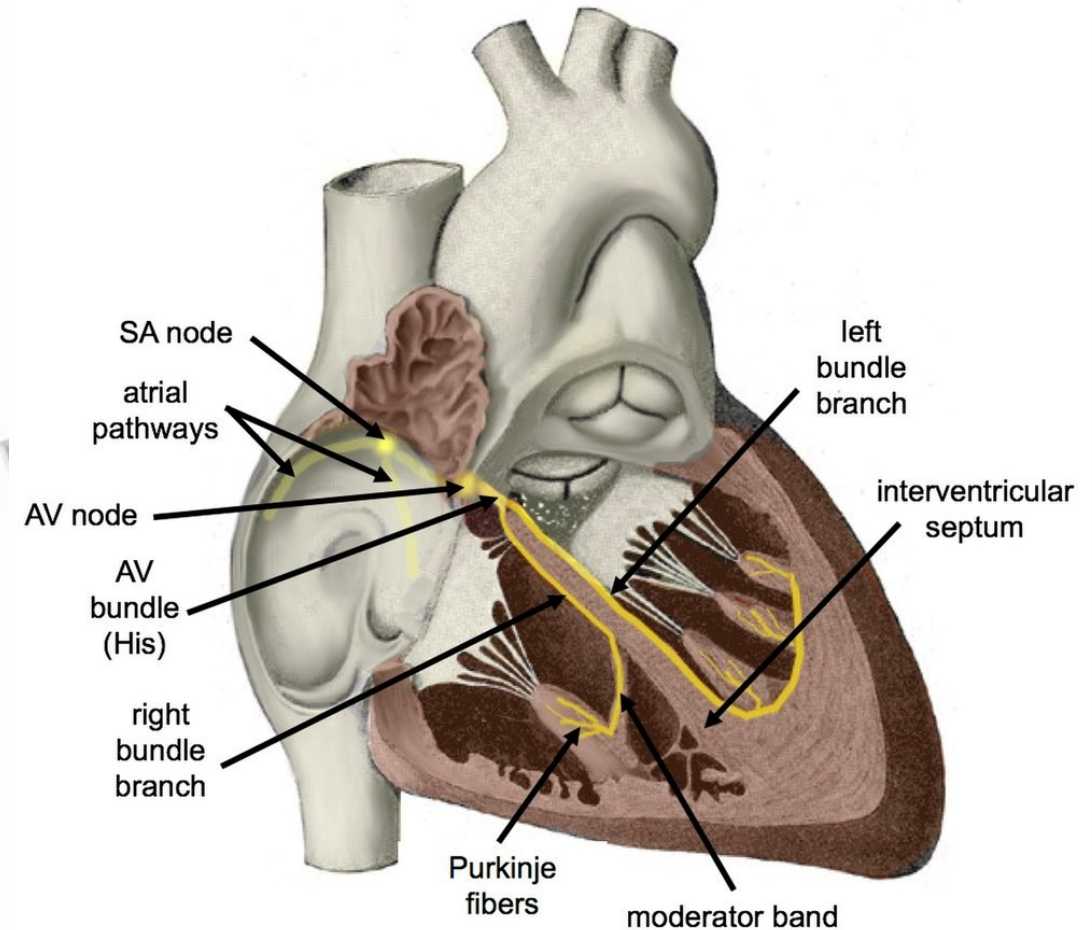
# Electrical conduction system



Heart also has a network of electrical bundles and fibers.

This network includes:

- **Left bundle branch:** Sends electric impulses to your left ventricle.
- **Right bundle branch:** Sends electric impulses to your right ventricle.
- **Bundle of His:** Sends impulses from your AV node to the Purkinje fibers.
- **Purkinje fibers:** Make your heart ventricles contract and pump out blood.





# Layers of Heart Muscle

3 layers

## Epicardium

Epicardium is the outermost layer of the heart. It is composed of a thin-layered membrane that serves to lubricate and protect the outer section.

## Myocardium

This is a layer of muscle tissue and it constitutes the middle layer wall of the heart. It contributes to the thickness and is responsible for the pumping action.

## Endocardium

It is the innermost layer that lines the inner heart chambers and covers the heart valves. Furthermore, it prevents the blood from sticking to the inner walls, thereby preventing potentially fatal blood clots.



# Thank You for Watching



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