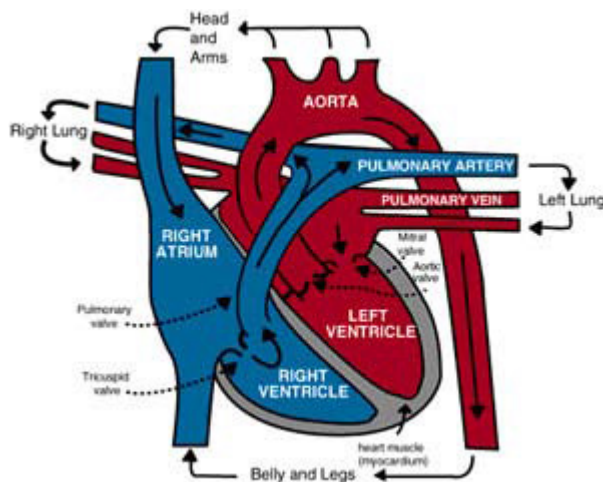


## How the Heart Works

The human heart has four chambers. The two upper chambers are called the atria. The two lower chambers are called the ventricles. The atria receive blood returning to the heart, and then push it downward to the ventricles. The ventricles, which are larger and stronger, give departing blood a push outward towards its destination.

The heart is in fact two pumps. The right side receives de-oxygenated blood from the body and pumps blood to the lungs to pick up oxygen. The much stronger left ventricle takes oxygenated blood coming back from the lungs and circulates it to the rest of the body. Blood flows through the body in an endless, figure-eight loop.

- The right ventricle pumps blood to the lungs so it can get oxygen.
- Blood returning from the lungs arrives in the left atrium, which pushes it downward to the left ventricle.



- The left ventricle pumps blood out to rest of the body, taking the oxygen out where it will be used by muscles and other tissues to do their work.
- Blood returning from various parts of the body arrives in the right atrium. From there it goes to the right ventricle for another trip through the lungs so it can get more oxygen, and the cycle continues.

Blood circulates in two loops as it flows through the heart.

- Your heart has four chambers:

**The right atrium:** Receives venous blood from the body

**The right ventricle:** Pumps venous blood to the lungs for oxygen

**The left atrium:** Receives oxygenated blood from the lungs

**The left ventricle:** Pumps blood out to the body through the arteries

Normally, the right side pumps blood only to the lungs. The left side pumps blood to the rest of the body. For that reason, the left side needs to pump harder; generally, there's three to four times as much pressure on the left side.

Valves control the direction of blood from the atrium to the ventricle, and from the ventricles into the main arteries.

Heart defects like Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD), or Patent Ductus Arteriosus (PDA) allow blood to escape from the left to the right side through an abnormal hole or passageway. Doctors call this a "left to right shunt". The exception is Patent Foramen Ovale (PFO); which is a right to left shunt.

The heart is made of strong muscle, called myocardium, and sits in a sac of fibrous tissue - the pericardium. The heart's inner surface, which is in contact with the blood being pumped, is called the endocardium.

## **CORONARY ARTERIES**

The coronary arteries supply blood to the heart. They arise just distal to the aortic valve in the Sinuses of Valsalva and traverse the heart's outer surface.

The right coronary artery supplying the right side of the heart, contains only one major branch, while left coronary artery contains two branches, the left anterior descending branch (LAD) and the circumflex branch. Smaller branches from the major branches penetrate the myocardium. About 4 - 5% of the total circulating blood flows through the coronary arteries.

## **HEART FACTS**

- In a healthy, resting adult, the heart beats 60 to 100 times per minute. This amounts to 104,000 beats in 24 hours, or about 2.5 billion beats in an average lifetime of 70 years.
- A normal heart recirculates the 5 to 6 litres of blood in the body every 1-½ minutes. This amounts to over 7,000 litres pumped each day.
- During strenuous activity, a healthy heart must pump four to seven times its normal output