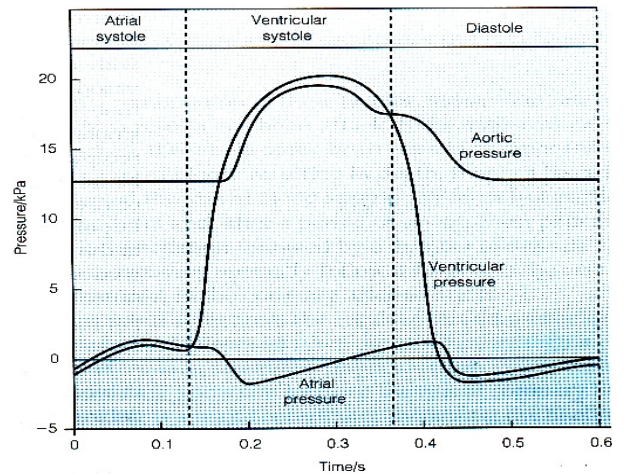


Biology Top-Up

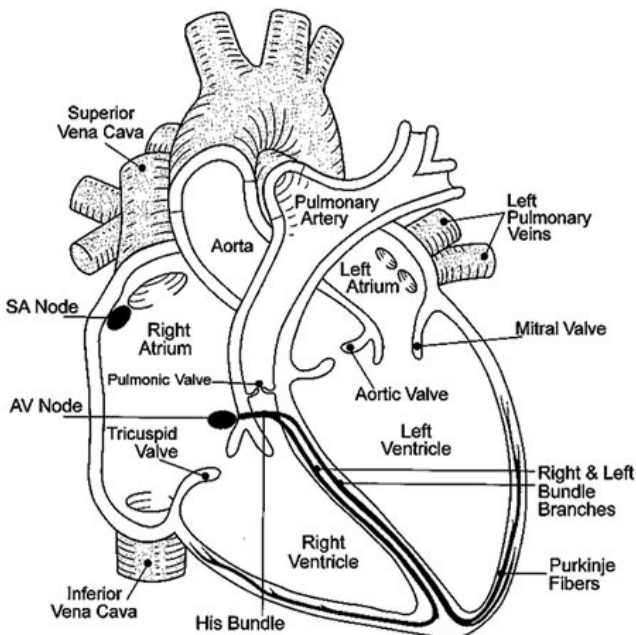
The Cardiac Cycle

The cardiac cycle is the sequence of events and movements of the heart during one beat. Both side of the heart follow this sequence at the same time. There are four stages to the cycle:

1. Blood flows into the atria
2. The atria contract, forcing blood into the ventricles
3. The ventricles contract, forcing blood into the aorta and pulmonary artery
4. The heart relaxes and blood flows into the atria



You will see this graph again - it's not as bad as it looks!



Blood flows through the heart and around the body due to changes in pressure. It always moves from an area of high pressure to an area of low pressure.

The valves in the heart maintain the flow of blood in the right direction. These work in a passive way (don't need energy) and operate entirely due to pressure changes. When the atria contract, the tricuspid & mitral valves open, and when the ventricles contract they close (contraction of the ventricles also causes the pulmonary and aortic valves to open)

Cardiac (heart) muscle is myogenic. This means that it does not need the central nervous system to send any impulses before it will start to contract. Instead, there is a group of cells in the right atrium called the sino-atrial node which generates its own electrical impulses. These impulses spread across the two atria and down into the ventricles, causing contraction.

Because the heart is a muscle, it requires a constant supply of oxygen and glucose for respiration. As in all organs, they is supplied by the blood. The coronary arteries branch off the aorta soon after it leaves the heart, and further divide into capillaries to supply the entire heart muscle.

