

Anatomy and Physiology

FOR ENGLISH LANGUAGE LEARNERS

Chapter 9: The Cardiovascular System

Heart Structures

The heart contains four valves which separate the heart's four chambers. The AV (atrioventricular valves) separate the atria (the upper two chambers) from the ventricles (the lower two chambers). The other two valves are called semilunar valves. The semilunar valves separate the ventricles from the arteries which carry blood out of the heart.

Path of Blood

Blood enters the right atrium from the superior and inferior vena cavae. These are large blood vessels. Then this poorly oxygenated blood falls into the right ventricle. From there, it goes to the lungs via pulmonary arteries. The blood gets oxygenated in the lungs and returns to the left atrium of the heart via pulmonary veins. From the left atrium blood falls into the left ventricle and is then pumped out through the aorta, the largest artery in the body. Blood is being brought into the heart and pumped out of the heart simultaneously.

The Sinoatrial Node

The heart beats on its own without any neural messages from the spinal cord or brain. A special node called the sinoatrial (SA) node is responsible for making the heart beat. The SA node sends an electrical message along a conduction system, tightly woven cardiac muscle fibers to the other cardiac muscle fibers that comprise each chamber.

Blood Pressure

Blood pressure is the pressure of blood against blood vessel walls. It is monitored by baroreceptors, sensory receptors located in many large arteries. When baroreceptors detect that blood pressure is too high or too low, they send a message to the medulla and the medulla corrects the condition by causing the heart beat to speed up or slow down and blood vessel walls to constrict or dilate. This reflex is called a baroreceptor reflex.

Blood Vessels

There are five kinds of blood vessels. Going from largest to smallest They are: artery, arteriole, veins, venules and capillaries. The function of arteries and arterioles is to carry oxygenated blood to the body. Capillaries are where gas, nutrient and waste exchange occurs. Venules and veins carry blood which is low in oxygen back to the heart.



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