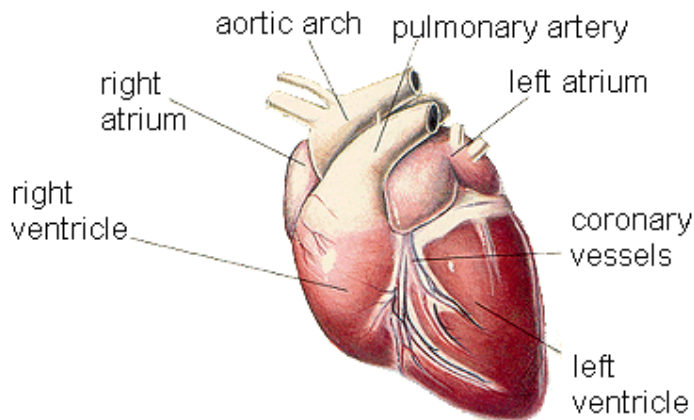


CARDIOVASCULAR SYSTEM OF THE DOG

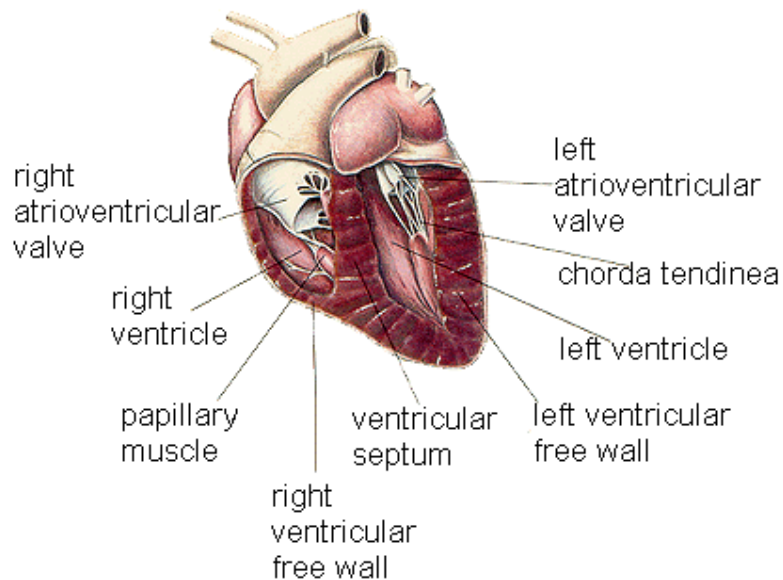
The cardiovascular system includes the heart and blood vessels and performs the function of pumping and carrying blood to the rest of the body. The blood contains nutrients and oxygen to provide energy to allow the cells of the body to perform work.

Pericardium: is a cone shaped fibro-serous sac surrounding the heart and its vessels at its base. It therefore has the shape of the heart. It has 2 layers i.e. the fibrous and serous layers

Outside View of the Heart



Inside View of the Heart



Where Is the Cardiovascular System Located?

The heart is located in the chest between the right and left lungs and is contained in a very

thin sac called the pericardial sac. The heart extends approximately from the 3rd to the 6th rib of the dog.

Blood vessels form a conduit system throughout the body and carry blood to all organs, tissues and cells.

What Is the General Structure of the Cardiovascular System?

The heart is the central organ that contracts rhythmically to pump blood continuously through the blood vessels. The heart consists of four chambers:

The right atrium. The right atrium is the collecting chamber for blood from distant parts of the body. Blood is carried back to this upper right chamber of the heart in various veins. The oxygen levels in the blood in this chamber are very low. As the right atrium contracts, blood flows through the tricuspid valve into the right ventricle.

The right ventricle. The right ventricle is the pumping chamber of the lower right heart. As the right ventricle contracts, it sends blood it has received from the right atrium into the pulmonary artery. The pulmonary valve sits at the opening of the pulmonary artery and prevents blood from moving backwards into the right ventricle after it contracts. The pulmonary artery carries the blood into the lungs where it picks up oxygen and gets rid of carbon dioxide. The carbon dioxide leaves the body during expiration (the action of breathing out) and oxygen is taken in during inspiration (the action of breathing in).

The left atrium. Blood that is high in oxygen returns to the heart from the lungs and enters the upper left chamber of the heart, the left atrium. The left atrium is a collecting chamber that sends this oxygenated blood to the left ventricle. The valve that separates the left atrium from the left ventricle is the mitral valve.

The left ventricle. The left ventricle is the major pumping chamber of the heart. This lower left chamber is responsible for pumping oxygen-rich blood to the rest of the body. The blood from the left ventricle enters the aorta through the aortic valve. The aorta and other arteries distribute this oxygen-rich blood throughout the body.

A muscular wall called the septum separates the left side of the heart from the right side of the heart. Because the heart is composed primarily of cardiac muscle, a tissue that

continuously contracts and relaxes, it must have a constant supply of oxygen and nutrients. The coronary arteries are the network of blood vessels that carry oxygen- and nutrient-rich blood to the heart itself.

Arteries are strong, muscular blood vessels that carry oxygen-rich blood from the heart to various parts of the body. The wall of an artery consists of an outer coat (tunica adventitia), a middle coat (tunica media), and an inner coat (tunica intima). Small blood vessels that branch off the arteries are called arterioles.

Veins are thin blood vessels that carry blood from various parts of the body or organs back towards the heart. Like arteries, veins have three coats, but the coats are not as thick. Because of their thin walls, veins are very compliant, and their volume and size vary with blood pressure. Veins also contain valves, which allow blood flow in only one direction, towards the heart. The valves stop blood from flowing backward towards the organs. Small blood vessels that lead from the capillaries to the larger veins are called venules.

Capillaries are the smallest of all blood vessels. Capillaries are so small, that in many instances only a few red blood cells can pass through the center of the capillary at a time. Capillaries usually lie between the arterioles and venules. Capillary walls act as a membrane that allows various substances to travel between the blood and the tissues. These substances include oxygen, carbon dioxide, water, electrolytes (e.g. sodium, potassium), nutrients, and minerals. The capillaries are the site of the greatest exchange of material between the blood and the tissues of the body.

What Are the Functions of the Cardiovascular System?

The circulatory system transports to the tissues and organs of the body the oxygen, nutritive substances, immune substances, hormones and chemicals necessary for normal function and activities. It also carries away waste products and carbon dioxide, helps to regulate body temperature, and helps to maintain normal water and electrolyte balance.