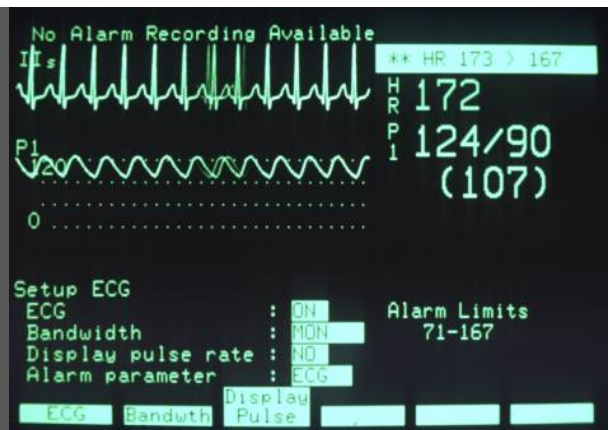
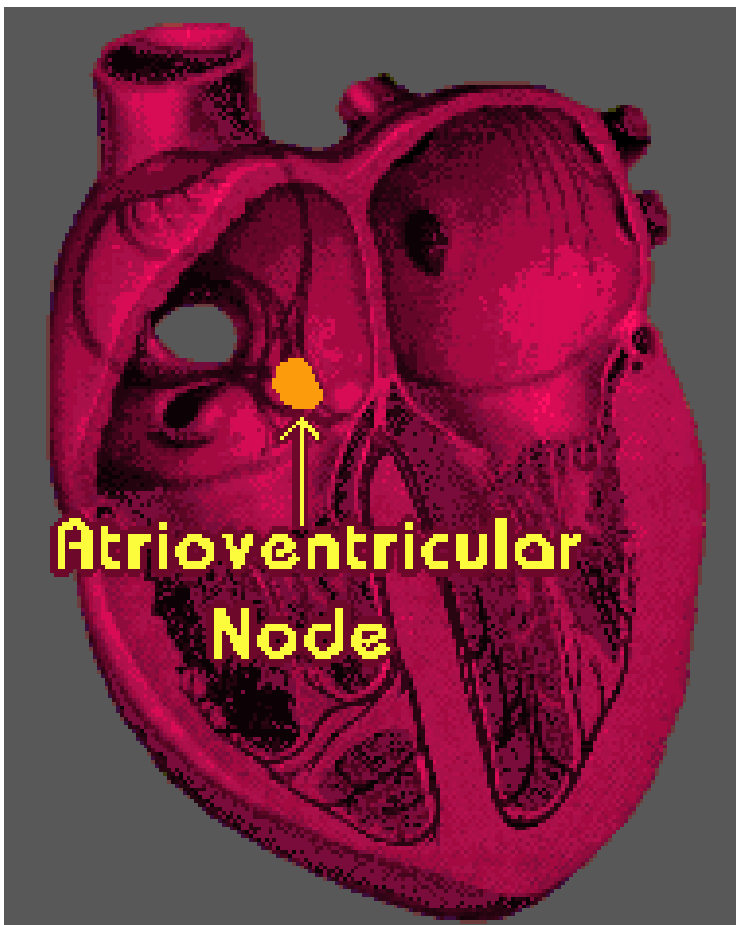


The Rhythm

The Heart is made up of myogenic muscle (muscle that has the ability to contract without external nerve stimulation). The SA node (sinoatrial) regulates the heartbeat. It is basically a pacemaker. It sets the beat. It causes the simultaneous contraction of the atria.



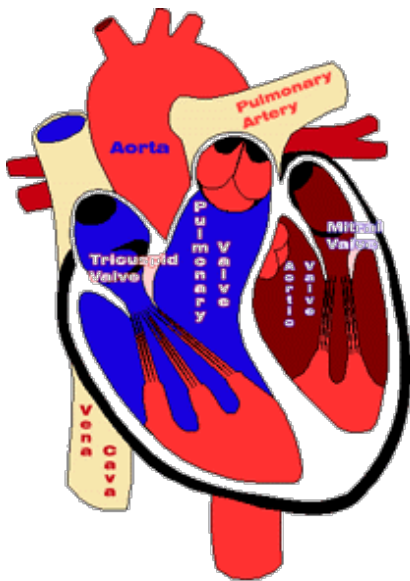
The AV node (Atrioventricular) causes the contraction of the ventricles. You can use an Electro-cardiograph to monitor the electrical activity of the heart.

Electrical system of the heart.

The Sound (Lubb-Dubb,
Lubb-Dubb, etc...)

The closing of heart valves causes the sound. When atria relax, they fill with blood. Diastole is when the heart relaxes and Systole is when the heart contracts. Both together force the blood out.





You can get a heart murmur when the valves do not close properly.

How Normal Heart Valves Work



Heart Valve Problems



Cardiac Output

The cardiac output refers to the amount of blood that flows from each side of the heart per minute. The left and right side should pump the same amount. Stroke volume is the quantity of blood pumped with each beat of the heart. The stronger the contraction, the greater the stroke volume. The heart rate is the number of times the heart beats per minute.

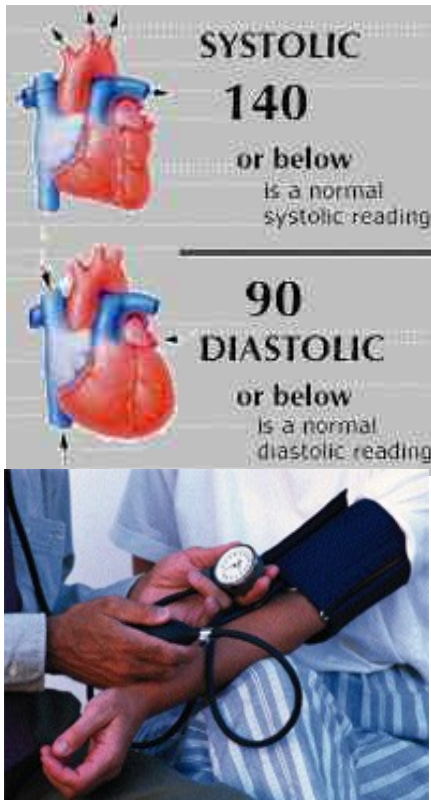
Check your heart rate.

By multiplying the heart rate by the stroke volume, you will find the cardiac output.

$$C.O. = H.R. \times S.V.$$



Small individuals require less blood and have lower cardiac output. During exercise, energy needs require the heart to pump faster in order to distribute more oxygen thus increasing the heart rate.



Blood Pressure

Blood travels through the arteries with every beat of the heart. The arteries expand and recoil like an elastic band to accommodate the increase in fluid pressure. Blood pressure can be measured using a sphygmomanometer. (The systolic blood pressure is a measure of pressure exerted during ventricular contractions (120 mm Hg). The diastolic blood pressure measures the pressure as blood flows into the arteries during ventricular relaxation (80 mm Hg).) Hg is Mercury and mm stands for millimeters. We refer to the optimum blood pressure as 120 over 80.

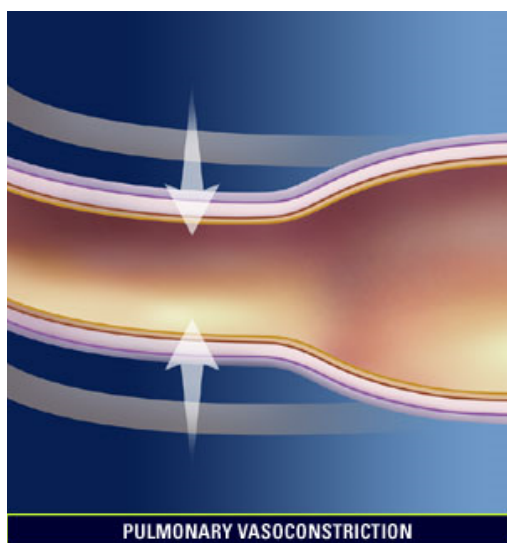


Nervous System and the Effect on Circulation

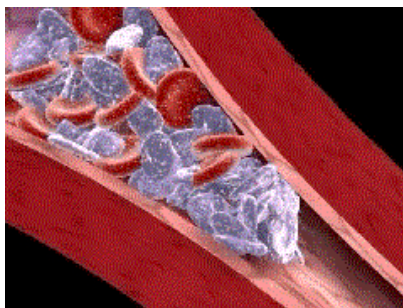
Epinephrine is a hormone, which is released from the adrenal glands in times of stress. It stimulates the release of red blood cells from the spleen. This release of red blood cells allows for greater oxygen delivery.

Epinephrine causes increased heart rate and breathing rate. Increased heart rate leads to faster oxygen transport. Increased breathing rate ensures high oxygen levels in the blood. Most of the active body tissues will require more oxygen. Epinephrine causes vessels leading to the heart, brain and muscles to vasodilate.

By Cody and Nick



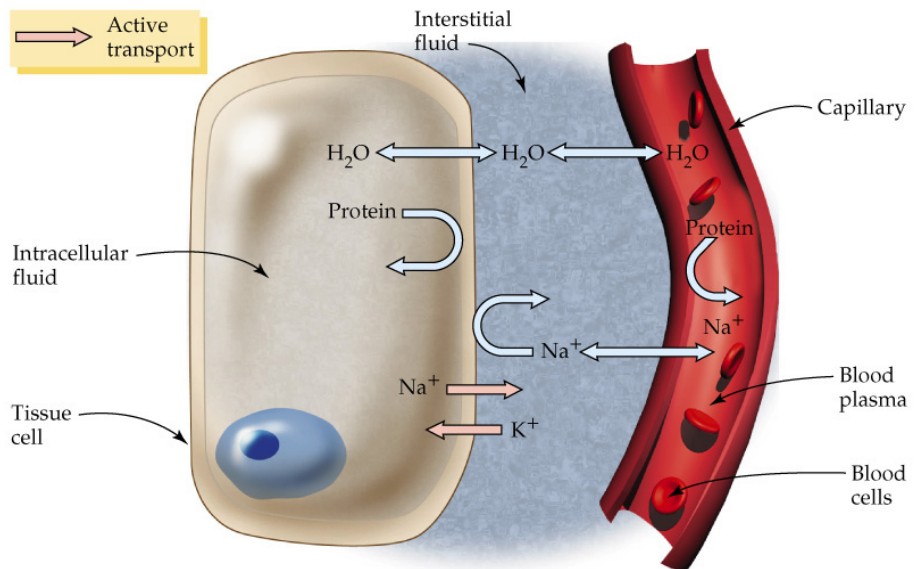
It also causes vasoconstriction of vessels leading to less active tissues such as the stomach, intestine and kidneys. Active tissues are the priority.



Capillary Fluid Exchange

Capillaries are associated with fluid exchange between blood and surrounding extracellular fluid (ECF). The capillary cell membranes are permeable to oxygen and carbon dioxide. Water and certain ions are thought to pass through the clefts between the cells of the capillary. Endocytosis or exocytosis exchanges larger molecules and proteins.

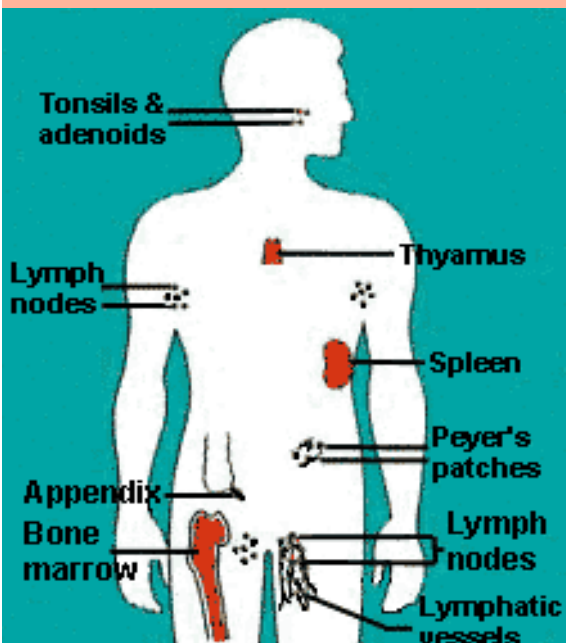
Fluid pressure and osmotic pressure regulate water movement. Pressure inside the vessels pushes the water to the ECF. Some water moves back due to osmosis.



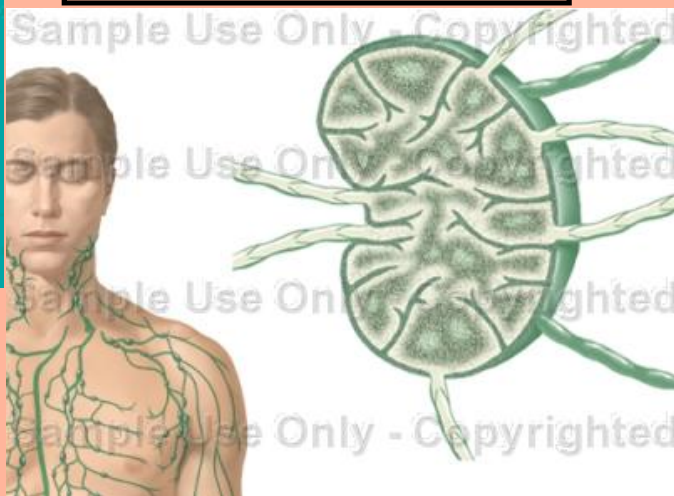



Swelling

Inflammation or Allergic Reaction
**TISSUES SWELL AND REDDEN AS
A RESULT OF FOREIGN
MICROBES. PROTEINS AND
WHITE BLOOD CELLS LEAVE THE
CAPILLARIES TO COMBAT THE
INVADERS AND IN DOING SO
ALTER THE OSMOTIC BALANCE.
FLUIDS ARE NOT ABSORBED BY
CAPILLARIES AND THE TISSUE
SWELLS (FIG. 6.25).**



Lymphatic System
Made up of Lymph vessels.
They are open ended and help drain proteins to the circulatory system. Lymph is a fluid that carries debris, bacteria and damaged cells. Lymph nodes are a filter center made up of lymph. They clean the fluid.





Word	Description
<input type="text"/>	This artery takes oxygenated blood from the heart to the rest of
<input type="text"/>	This vein brings deoxygenated blood to the heart from the rest of
<input type="text"/>	This artery takes deoxygenated blood from the heart to the lungs.
<input type="text"/>	This vein brings oxygenated blood to the heart from the lungs.
<input type="text"/>	These structures are present in veins and prevent the backflow of

pulmonary vein

vena cava

pulmonary artery


semi lunar valves

aorta

Check

Solve

Reset



?

Word	Description
<input type="text"/>	This valve separates the right atrium from the right ventricle.
<input type="text"/>	The blood enters these chambers from the pulmonary vein and the
<input type="text"/>	This separates the two halves of the heart.
<input type="text"/>	This valve separates the left atrium from the left ventricle.
<input type="text"/>	Blood from the atria is pumped here before being pumped out of

ventricles

bicuspid valve

atria

septum

tricuspid valve

Check Solve Reset

Attachments

drnickhi.wav