

## The Cardiovascular System

A closed system of the \_\_\_\_\_

The heart pumps blood

Blood vessels allow blood to circulate to all parts of the body

The function of the cardiovascular system is to \_\_\_\_\_ and to \_\_\_\_\_

### Heart

**Location** - Thorax between the lungs in the inferior mediastinum, About the size of your \_\_\_\_\_

**Coverings** - \_\_\_\_\_—a double-walled sac

Fibrous pericardium is loose and superficial

Serous membrane is deep to the fibrous pericardium and composed of two layers

\_\_\_\_\_ - Next to heart; also known as the \_\_\_\_\_

\_\_\_\_\_ - Outside layer that lines the inner surface of the fibrous pericardium

Serous fluid fills the space between the layers of pericardium

### Heart Wall

\_\_\_\_\_ - Outside layer, This layer is the visceral pericardium, Connective tissue layer

\_\_\_\_\_ - Middle layer, Mostly cardiac muscle

\_\_\_\_\_ - Inner layer, Endothelium

**Chambers** - Right and left side act as separate pumps

Atria - \_\_\_\_\_

Right atrium

Left atrium

Ventricles - \_\_\_\_\_

Right ventricle

Left ventricle

### Septa

\_\_\_\_\_ - Separates the two ventricles

\_\_\_\_\_ - Separates the two atria

### Valves

Allow blood to flow \_\_\_\_\_ to prevent backflow

**Atrioventricular (AV) valves—between atria and ventricles**

\_\_\_\_\_

\_\_\_\_\_

**Semilunar valves—between ventricle and artery**

\_\_\_\_\_

\_\_\_\_\_

**AV valves**

Anchored in place by \_\_\_\_\_ (“heart strings”) \_\_\_\_\_ during heart relaxation and \_\_\_\_\_ during ventricular contraction

**Semilunar valves**

\_\_\_\_\_ during heart relaxation but \_\_\_\_\_ during ventricular contraction  
Valves operate opposite of one another to \_\_\_\_\_ of blood through the heart

**Systemic and Pulmonary Circulations**

Systemic circulation

Blood flows **from** the **left side** of the heart through the **body tissues** and back **to the right side** of the heart

Pulmonary circulation

Blood flows from the **right side** of the heart **to the lungs** and back **to the left side** of the heart

**Associated Great Vessels**

- \_\_\_\_\_ – “away” from the heart
- \_\_\_\_\_ - Leaves left ventricle – goes to the body
- \_\_\_\_\_ - Leave right ventricle – goes to the lungs
  
- \_\_\_\_\_ – “to” the heart
- \_\_\_\_\_ Enter right atrium – from the body
- \_\_\_\_\_ Enter left atrium – from the lungs

Blood Flow through the Heart

**Coronary Circulation**

The heart has its own nourishing circulatory system consisting of

- \_\_\_\_\_ - branch from the aorta to supply the heart muscle with oxygenated blood
- \_\_\_\_\_ - drain the myocardium of blood
- \_\_\_\_\_ - receives blood from cardiac veins

Blood empties into the right atrium via the coronary sinus

## Conduction System

Intrinsic conduction system (\_\_\_\_\_)

Heart muscle cells contract, without nerve impulses, in a regular, continuous way

Special tissue sets the pace

**Sinoatrial node** = SA node (\_\_\_\_\_), is in the right atrium

\_\_\_\_\_ = AV node, is at the junction of the atria and ventricles

**Atrioventricular bundle** = AV bundle (\_\_\_\_\_), is in the interventricular septum

\_\_\_\_\_ are in the interventricular septum

\_\_\_\_\_ spread within the ventricle wall muscles

## Heart Contractions

Once \_\_\_\_\_ starts the heartbeat, impulse spreads to the AV node and the atria contract

At the \_\_\_\_\_, the impulse passes through the AV bundle, bundle branches, and Purkinje fibers

Blood is ejected from the ventricles to the aorta and pulmonary trunk as the ventricles contract

\_\_\_\_\_ — rapid heart rate over 100 beats per minute

\_\_\_\_\_ — slow heart rate less than 60 beats per minutes

## The Heartbeat

Atria contract simultaneously, Atria relax, then ventricles contract

\_\_\_\_\_ = contraction (systolic pressure)

The first number in blood pressure (120/80)

\_\_\_\_\_ = relaxation (diastolic pressure)

## The vascular System

Carry blood away from the heart: \_\_\_\_\_

Exchanges between tissues and blood: \_\_\_\_\_

Return blood toward the heart: \_\_\_\_\_

## Blood Vessels

Three layers (tunics)

\_\_\_\_\_ - Endothelium

\_\_\_\_\_ - Smooth muscle, Controlled by sympathetic nervous system

\_\_\_\_\_ - Mostly fibrous connective tissue

## Differences Between Blood Vessels

Arteries	Veins

## Movement of Blood Through Vessels

Most arterial blood is \_\_\_\_\_ by the heart

Veins use the milking action of \_\_\_\_\_ to help move blood

Capillary beds consist of two types of vessels

- \_\_\_\_\_ — vessel directly connecting an arteriole to a venule
- \_\_\_\_\_ — exchange vessels, Oxygen and nutrients cross to cells, Carbon dioxide and metabolic waste products cross into blood

Major Arteries of Circulation

- \_\_\_\_\_ - Largest artery in the body, Leaves from the left ventricle of the heart
- \_\_\_\_\_ —leaves the left ventricle
- \_\_\_\_\_ —arches to the left

Major Veins of Circulation

- \_\_\_\_\_ - enter the right atrium of the heart
- Superior vena cava drains the \_\_\_\_\_, Inferior vena cava drains \_\_\_\_\_

Pulse -

- Monitored at “ \_\_\_\_\_ ” in arteries where pulse is easily palpated
- Pulse averages \_\_\_\_\_ beats per minute at rest

Blood Pressure - Measurements by health professionals are made on the pressure in large arteries

- \_\_\_\_\_ —pressure at the peak of ventricular contraction
- \_\_\_\_\_ —pressure when ventricles relax
- Write systolic pressure \_\_\_\_\_ and diastolic \_\_\_\_\_ (120/80 mm Hg)

***Pressure in blood vessels decreases as distance from the heart increases***

Blood Pressure: Effects of Factors

- Temperature
  - Heat -
  - Cold -
- Chemicals -
- Diet

Variations in Blood Pressure

Normal human range is variable

- \_\_\_\_\_ 140–110 mm Hg systolic  
80–75 mm Hg diastolic
- \_\_\_\_\_ Low systolic (below 110 mm HG)  
Often associated with illness
- \_\_\_\_\_ High systolic (above 140 mm HG)  
Can be dangerous if it is chronic