

Cardiovascular pt2

For Anatomy
Bio 250

The Heart: Regulation of Heart Rate

- Stroke volume usually remains relatively constant
 - Starling's law of the heart – the more that the cardiac muscle is stretched, the stronger the contraction
- Changing heart rate is the most common way to change cardiac output

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The Heart: Regulation of Heart Rate

- Increased heart rate
 - Sympathetic nervous system
 - Crisis
 - Low blood pressure
 - Hormones
 - Epinephrine
 - Thyroxine
 - Exercise
 - Decreased blood volume

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The Heart: Regulation of Heart Rate

- Decreased heart rate
 - Parasympathetic nervous system
 - High blood pressure or blood volume
 - Decreased venous return

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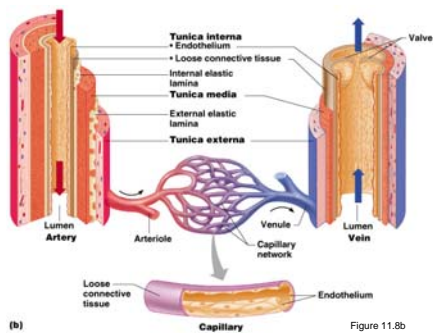
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Blood Vessels: The Vascular System

- Taking blood to the tissues and back
 - Arteries
 - Arterioles
 - Capillaries
 - Venules
 - Veins

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Figure 11.8b

Blood Vessels: Anatomy

- Three layers (tunics)
 - Tunic intima
 - Endothelium
 - Tunic media
 - Smooth muscle
 - Controlled by sympathetic nervous system
 - Tunic externa
 - Mostly fibrous connective tissue

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Differences Between Blood Vessel Types

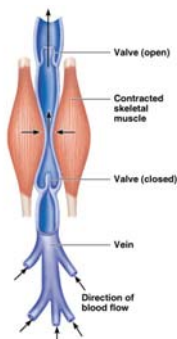
- Walls of arteries are the thickest
- Lumens of veins are larger
- Skeletal muscle “milks” blood in veins toward the heart
- Walls of capillaries are only one cell layer thick to allow for exchanges between blood and tissue

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Movement of Blood Through Vessels

- Most arterial blood is pumped by the heart
- Veins use the milking action of muscles to help move blood



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Major Arteries of Systemic Circulation



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Major Veins of Systemic Circulation

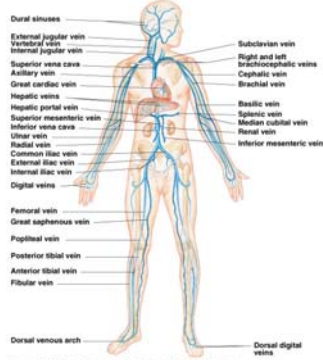


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Arterial Supply of the Brain

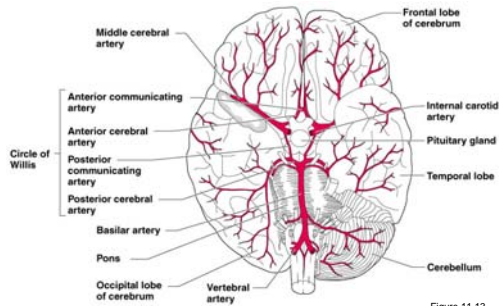


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Hepatic Portal Circulation

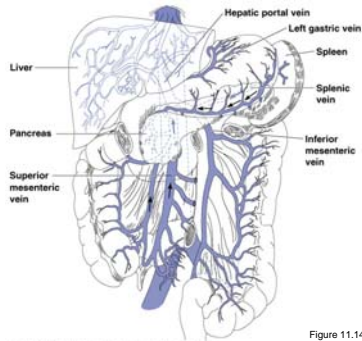


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Circulation to the Fetus

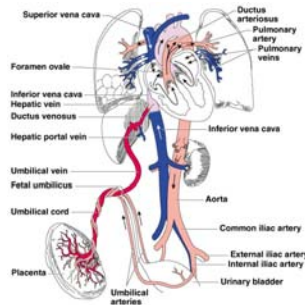


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Pulse

- Pulse – pressure wave of blood
- Monitored at “pressure points” where pulse is easily palpated

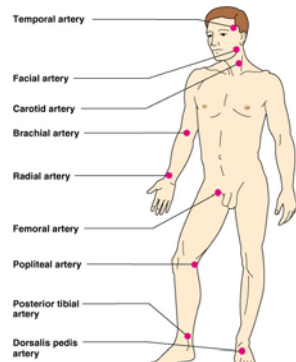


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Blood Pressure

- Measurements by health professionals are made on the pressure in large arteries
 - Systolic – pressure at the peak of ventricular contraction
 - Diastolic – pressure when ventricles relax
- Pressure in blood vessels decreases as the distance away from the heart increases

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Measuring Arterial Blood Pressure

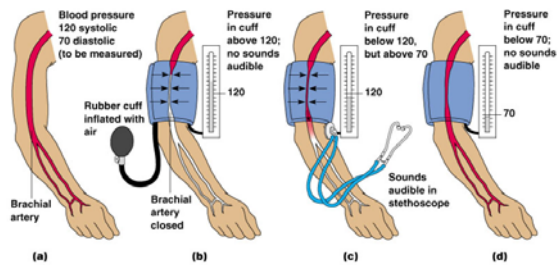


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Comparison of Blood Pressures in Different Vessels

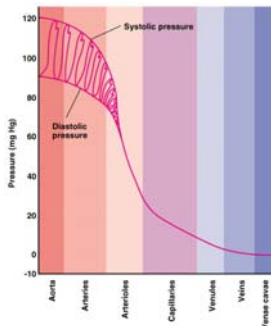


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