

Cardiovascular System I: The Heart

1. Anatomy

1. size & location
 1. size: 250-350 g
 2. fist-sized
 3. where? mediastinum- medial cavity of thorax
 4. PMI
 5. figures
2. coverings
 1. pericardium
 1. fibrous
 2. serous
 1. parietal
 2. visceral
 3. pericardial cavity
 2. pathology
 1. pericarditis..... friction rub
 2. inflammation..... fluid compression, cardiac tamponade
 3. figures:
3. flow
 1. circuits
 1. pulmonary
 1. right side
 2. low pressure
 2. systemic
 1. left side
 2. high pressure
 3. figures
 2. valves
 1. atrio-ventricular (AV) valves
 1. tricuspid
 2. bicuspid (mitral)
 2. semilunar
 1. pulmonary
 2. aortic
 3. figure
 3. coronary supply
 1. figures

2. Physiology

1. Cardiac muscle
 1. lots of mitochondria- high dependence on O₂
 2. intercalated discs- conduct electrical signals
 3. desmosomes- hold fibers together
 4. figures
2. contraction
 1. all-or-none law- whole organ vs. fiber in skeletal muscle
 2. autorhythmicity- self excitable vs. need for individual innervation
 3. long refractory period 250 ms vs. 2ms in skeletal muscle
3. pacemaker
 1. unstable resting potential- drifts then fires
 1. gradual reduction in K⁺ permeability
 2. Na⁺ permeability unchanged
 3. at threshold, Ca⁺⁺ channels open
 2. excitation sequence (figure)
 1. sequence of potentials (figure)
4. extrinsic control
5. EKG