

Cardiovascular System: The Heart

Required:

1. Sketch and label the fibrous and serous pericardium layers. Include the pericardial cavity and epicardium.
2. Describe the remaining two tissue layers which comprise the heart wall: myocardium and endocardium.
3. Describe, draw and label a gross anatomy diagram of the heart showing: four chambers, four valves, five great vessels, septums, grooves, pectinate muscles, chordae tendinae, trabeculae carnae, and papillary ridges.
4. Label the path of blood flow to and through the heart and lungs on your drawing.
5. Explain why the heart is termed the “double pump.” Contrast this description to the actual action of the atria and ventricles as functional units.
6. Describe the circulatory route termed pulmonary circulation and describe its unique feature in contrast to normal systemic circulation.
7. Describe the coronary circulation including the term coronary sinus. Include the medical significance of CC by discussing ischemia, angina pectoris, and myocardial infarctions.
8. Explain the lubb-dupp sounds of the cardiac cycle as they relate to valve action.
9. Describe the typical EKG pattern utilizing a labeled diagram.
10. Explain each deflection of the EKG and relate it to the cardiac cycle. Where does atrial diastole occur? Explain the PR interval and the ST segment.
11. Define the terms arrhythmia and murmur and relate these to the conduction system and the cardiac cycle discussed above. Give examples of each.
12. Describe the cardiac action potential with respect to changes in membrane potential. Contrast this to neuron action potentials.
13. Discuss the contraction of cardiac muscle cells in contrast to the contraction of skeletal and smooth muscle cells.
14. Diagram and describe the intrinsic conduction system of the heart (SA node, AV node, bundle branches, Purkinje fibers)

15. Describe the functional role of the SA node as the pacemaker. .
16. Define cardiac output and be able to calculate CO given the heart rate and Stroke Volume.
17. Describe how Cardiac Output can be altered.
18. Describe the events of the cardiac cycle and explain how the timing of these events is related.
19. State and explain Starling's Law of the Heart (relationship of stroke volume to ventricular filling).
20. Describe the factors which affect venous return to the heart.
21. Explain how stroke volume is affected by afterload.
22. Explain the role of the CIC and CAC ANS centers in regulating heart rate and contractility via sympathetic vs. parasympathetic stimulation.
23. Explain the regulation of heart function by discussing the roles of blood volume and blood pressure receptors in cardiac feedback loops.
24. Discuss the effects of aerobic exercise on the heart.