BMD 330 and 335: Human Physiology
Chapter 15 Objectives

The Cardiovascular System: Blood Vessels, Blood Flow, and Blood Pressure

1. Describe the physics of blood flow through blood vessels. Explain the concepts of pressure gradients and resistance.
2. Describe the anatomy of the vasculature and explain the basic functional properties of the different types of blood vessels.
3. Explain the role of arterioles in varying resistance. Describe how intrinsic control of vascular resistance regulates blood flow to organs. Explain the role of extrinsic control of arteriole radius in determining mean arterial pressure.
    a. Compare active to reactive hyperemia.
    b. Explain the change in distribution of blood flow that occurs during exercise.
    c. Describe sympathetic and hormonal control of arteriole radius.
4. Describe the exchange of solutes across capillary walls.
5. Describe the bulk flow of water across capillary walls and explain each of the Starling forces for this movement.
6. Describe the factors affecting venous return.
7. Explain how mean arterial pressure influences blood flow to individual organs and to the entire systemic circuit.
8. Describe how the following variables affect mean arterial pressure: parasympathetic nerve activity, sympathetic nerve activity, epinephrine, angiotensin II, ADH, heart rate, stroke volume, and central venous pressure.
9. Describe what the arterial baroreceptor reflex is, and explain how it regulates mean arterial pressure.
10. Describe how changes in arterial carbon dioxide levels, body heat, and exercise affect cardiovascular function and mean arterial pressure.