

Chapter 24 Blood Vessels and Circulation

Anatomy and Physiology Text and Laboratory Workbook; Davenport, Stephen

1. What happens at the capillary level? What is the driving force for the delivery of nutrients and oxygen, and the removal of metabolic wastes and carbon dioxide to cells?
2. What forces water and solutes across capillary walls?

Arteries

3. What are two properties that characterize arteries? Which division of the ANS controls vessel diameter? Define vasoconstriction and vasodilation. What are three affects of changing vessel diameter?
4. What is another name for elastic arteries? Give four examples. What does their expansion during ventricular systole accomplish? What does their recoil during ventricular diastole accomplish? What happens to the oscillations in arterial pressure by the time the arterioles are reached?
5. What do the muscular arteries do (another name)?
6. What are three mechanisms which are used to change the diameter of arterioles. What is another name for arterioles (and smaller muscular arteries)?

Capillaries

7. What two features of capillaries make them ideal for exchange between blood and interstitial fluid? What does a typical capillary consist of? What are the two major types of capillaries?

Continuous Capillaries

8. Describe the structure of continuous capillaries. Where are they found? What are three things that can move across the capillary?

Fenestrated Capillaries

9. Describe the structure of fenestrated capillaries. What do they permit? Give several locations.

Sinusoids

10. Describe sinusoids. What do they permit. Give a location.

Capillary Beds

11. What is a capillary bed? What is an arterial anastomosis?

Veins

12. Why is the wall of the vein thinner than its corresponding artery?

Venules

13. Where do venules collect blood from?

Venous Valves

14. What is the function of venous valves? In which direction do they point? How does the "skeletal muscle pump work?"

Distribution of Blood

15. Where are the major venous reservoirs? How much blood (percent) is held there?
16. Why are veins called capacitance vessels?
17. What are the two major effects promoted by the vasomotor center if serious hemorrhaging occurs?

Cardiovascular

18. How does the afterload of the heart relate to blood flow?

Pressure

19. What is circulatory pressure?

Resistance

20. Define resistance. What does resistance of the circulatory system oppose? Which component of the circulatory system offers the greatest resistance? What is the relationship between resistance and blood flow? What are the three sources considered in peripheral resistance?

Vascular Resistance

21. What is vascular resistance? What is the most important factor?

Vessel Length

22. How does the length of the vessel affect resistance? As an adult is this feature, on a day-to-day basis, constant?

Vessel Diameter

23. Which has a more significant effect, differences in diameter or vessel length? Which vessels are concerned with regulation of diameter, thus resistance?

Viscosity

24. What is viscosity? What contributes to blood viscosity? When does blood viscosity change?

Turbulence

25. What is turbulence? How does it affect blood flow and resistance?

Overview of Circulatory Pressure

26. What is the relationship between blood flow velocity and cross-sectional area?
27. What happens to blood pressure from the aorta to the venae cavae?

Arterial Blood Pressure

28. Define systolic and diastolic pressures. What is pulse pressure?

Elastic Rebound

29. What is elastic rebound? Which arteries are mostly responsible for this effect?

Pressures in Small Arteries

30. What happens to arterial pressure and pulse pressure as the distance from the heart increases? Why does this happen?

Capillary Exchange

31. What does a capillary consist of? What are the three importance processes involved in movement of materials across the capillary wall?

Diffusion

32. Define diffusion. What are three criteria which promote diffusion. (Note that water moves across the capillary wall because of hydrostatic pressure (blood pressure, BP) ions and small solutes follow a concentration gradient, especially note the movement of oxygen and carbon dioxide).

Filtration

33. Define hydrostatic pressure (blood hydrostatic pressure is generated by?). Define filtration. What is the driving force for filtration? What determines what passes (solutes) across