Cardiovascular System Lab – Part 2
Blood Vessels and CV Physiology
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Blood Vessels

Microscopic structure of blood vessels

Utilizing the cardiovascular system board:
Examine walls of arteries and veins in the CV board. Describe the principle components of the blood vessel wall tunics.

1. tunica interna
2. tunica media
3. tunica externa

How do the tunics of arteries and veins differ?
Why do arteries have a thicker tunica media?
Describe the composition of capillary walls.

Utilizing the Viewmaster Set 68 – Circulatory System:
Examine the various perspectives of Set 68 and compare them with the descriptions put forth in the preceding section. Drawing optional.

3) Cross-section of artery and vein
   • The three tunics of the artery wall are clearly visible
   • The tunics of the vein are thinner and less obvious
     o Why are the walls of veins thinner?
     o Which layer(s) is/are thinner in veins?

8) Aortic semilunar valve
   • This three-flap valve can be found between the base of the aorta and the ___________ ventricle.
   • The aortic semilunar valve prevents backflow of blood into the ________________

Pathway of Blood

Utilizing the tall CV model that contains the kidneys, heart, and many blood vessels:
Obtain a 3-dimensional perspective of the cardiovascular system using this model. Be sure to view the CV system from angles other than straight ahead. Pay close attention to the size and pathway of the aorta as it travels up, down, and out from the heart. Also observe how the entire venous system eventually ends up in the superior and inferior vena cavae and finally the right atrium

Cardiovascular Physiology

Heart sounds
Auscultating (listening to) heart sounds with a stethoscope
   • Obtain a stethoscope and clean the earpieces with an alcohol wipe. Allow to dry.
• Don the stethoscope. Place the diaphragm of the stethoscope on your partner’s thorax, just medial to the left nipple. Listen carefully for heart sounds.
  o NOTE: Heart sounds are best auscultated if the subject’s outer clothing is removed, so a male subject is preferable.
• Record the number of beats in thirty seconds. Double this value to determine beats per minute.
  _____ beats/30sec translates to _____ beats/minute

The Pulse
  Define pulse _______________________________________________________
• Determine a subject’s pulse by palpating two different superficial pulse points
• Use the pads of your fingers to better feel the alternating expansion and contraction that characterizes the alternating surges of pressure of the pulse
  Record the number of pulses in thirty seconds. Double this value to determine pulses per minute.
  _____ pulses/30sec translates to _____ pulses/minute
  o How does the pulse rate compare with the heart rate recorded earlier?
  o Identify the pulse points you palpated.

Blood pressure determinations
Utilizing a sphygmomanometer and a stethoscope, measure your partner’s blood pressure via the auscultatory method
• Subject should sit comfortably with one arm at roughly heart level
• Wrap the cuff snugly around the upper arm
• Inflate the cuff to stop blood flow to the forearm
• Gradually release the cuff pressure
• Examiner listens with a stethoscope over the brachial artery for characteristic sounds of Korotkoff, which indicate a resumption of blood flow into the forearm
• Pressure at which the first soft tapping sounds are heard is recorded as the systolic pressure
• As the pressure is reduced further, blood flow becomes more turbulent and louder
• Below the diastolic pressure, when the artery is no longer compressed, blood flows freely and the sounds of Korotkoff can no longer be heard.
  o Diastolic pressure is recorded as the point where the sounds disappear
• Record the blood pressure
  o Systolic pressure/Diastolic pressure