

Lab 10: Circulatory Physiology

10.1 Cardiovascular System

Introduction

- The cellular circulatory system transports oxygen and other nutrients to all cells and carries carbon dioxide and other waste products away
- We will learn how to take pulse and blood pressure for a human and gather information for a mouse tail
- We will discuss the effect of temperature on the heart rate of a small mammalian

Key Concepts 1. Blood Pressure and Pulse

- Blood-carrying cells pressure on blood vessel walls
- Blood Pressure: the highest value (force that blood exerts against the wall of a vessel)
 - Highest in aorta
 - Decreases as blood moves through arteries, capillaries, veins, and veins
- Pulse: expansion and recoil of the elastic arteries when they pass near the surface of the skin
- Systolic Pressure: the pressure in the artery during the ventricular contraction phase of the heart cycle; the pressure in the aorta is highest at this time
- Diastolic Pressure: the pressure in the artery when the ventricles are relaxed. The pressure is at its lowest point, though it decreases long all the way to zero

Key Concepts 2. Counting the Blood Pressure

- Measuring systolic and diastolic pressure separately
- The number refers to the number of millimeters the pressure will raise a column of mercury
- Typical BP for humans: 120/70

Key Concepts 3. Measuring Blood Pressure

- Use a sphygmomanometer
 - Inflatable cuff wrapped around the upper arm with a gauge that measures pressure
 - Inflatable cuff is there to diffuse outside the vessel

Key Concepts 4. Procedure for Measuring Blood Pressure

1. Inflate cuff. Place the pressure in the cuff to above subject's systolic pressure. Blood cannot flow below cuff pressure will be no sound in brachial artery when you listen with a stethoscope
2. As you release the pressure cuff and slowly deflate the cuff, the change in flow through artery
3. When pressure is cuff is between systolic and diastolic pressure, a tapping sound can be heard with each pulse
 - a. This tapping sound indicates that blood has entered artery
 - b. Should this be systolic and continue to deflate the cuff until there are no more tapping sounds
4. Last tapping sound is diastolic pressure

Key Concepts 5. Measuring Pulse