

BIOS255 Week 2: Virtual Lab | Cardiovascular Function during Exercise Part 1, Part II, Part III

Learning outcomes:

- Identify the chambers of the heart.
- Identify the location and function of valves within the heart.
- Describe the flow of blood through the heart.
- Define stroke volume and cardiac output.
- Understand how the cardiovascular system responds to exercise.
- Understand how cardiac output and blood pressure can be measured.
- Understand how heart rate, stroke volume and cardiac output change with exercise.

Introduction:

The heart is a strong muscular pump with 2 complementary sets of vessels: one for the systemic and one for the pulmonary circulation. The pumping of the heart is essential in the delivery of oxygen to the millions of cells of the body and in the removal of their waste products. The heart pushes deoxygenated blood to the lungs and oxygenated blood around the entire body. It must continually beat to sustain life and so its muscular walls are made of specialized cardiac muscle cells that carry their own intrinsic contractile rhythm.

All cells within the body must be supplied with enough oxygenated blood each minute to meet their cellular metabolic demands. During exercise and processes such as tissue repair, cells are metabolically active and require more oxygen from the blood, thus increasing the workload of the heart. At rest, the metabolic demands of cells are less and therefore the heart doesn't need to work as hard to supply them with the oxygen they require. The body must adapt to these changing requirements. Cardiac output is a measure of the flow of blood. We will examine the variables that make up the cardiac output, learn how to measure these variables, and then put some experiment subjects to work to see how exercise alters cardiovascular function. Let's head to the cardiac exercise lab!

Assignment:

Part 1: Complete Labster "Cardiovascular function during exercise: learn how your body responds to exercise"

As you complete the lab, have the lab report ready to record data. The theory section is a good resource.

Part 2: Complete the Lab report.