Delanie Duran

11/28/2023
Tuesday Lab

Laboratory 11-A (Determination of Blood Pressure) & 11-B (Demonstration of a Measure of Physical Fitness)

Purpose: The purpose of this laboratory experiment (Procedure 11-A) is to explore cardiovascular measurements, specifically focusing on blood pressure, heart sounds, and pulse rate. The primary objective is to understand the impact of postural changes and exercise on these cardiovascular parameters. Through the determination of blood pressure using a sphygmomanometer, the lab seeks to provide insights into systolic and diastolic pressures, by showing the importance of their relevance in assessing vascular health. This experiment aims to analyze the orthostatic response and discuss the receptors involved, all while considering potential limitations in obtaining reliable results.The purpose of this laboratory experiment (Procedure 11-B) is to demonstrate a measure of physical fitness by analyzing the changes in heart rate within the exercise. By comparing individuals who engage in regular exercise with those who do not, the study aims to assess recovery times and determine relative physical conditions. The experiment seeks to calculate the target heart rate range for cardiovascular fitness using the Karvonen formula, providing personalized insights into optimal exercise intensity.

Procedure: For 11-A, First gather the necessary equipment, sphygmomanometer and stethoscope. Make sure there is a quiet and comfortable environment for accurate measurements. For accurate resting blood pressure measurements, instruct the participant to sit or lie down in a relaxed position. Wrap the pressure cuff snugly around the upper left arm. Place the stethoscope securely over the brachial artery. Close the pressure valve and start pumping up the rubber ball until the pulse is no longer heard. Slowly open the pressure valve and listen for Korotkoff sounds. Record the pressure at the first sound (systolic BP) and at the disappearance of the sound (diastolic BP). Record blood pressure as systole/diastole. When changing to postural measurements, instruct the participant to stand up immediately. Measure blood pressure immediately upon standing. Record the values. After measuring post-standing, measure blood pressure three minutes after standing. Record the values.
For 11-B, Three students who exercise regularly and three students who do not will be selected to participate. Each student records their resting pulse rate for one minute. For resting pulse measurement, participants take their resting pulse rate and record this value. Each student runs the track twice at a fast but comfortable pace. Optionally, use a heart rate monitor to continuously monitor heart rate during exercise. For post-exercise pulse measurements, immediately upon returning to the laboratory, each student records their pulse after exercise. For the recovery time assessment, participants take their pulse at one-minute intervals until the resting pulse is reestablished. Record each pulse measurement. The target heart rate range using the Karvonen formula: a. Max HR = 220 - Age
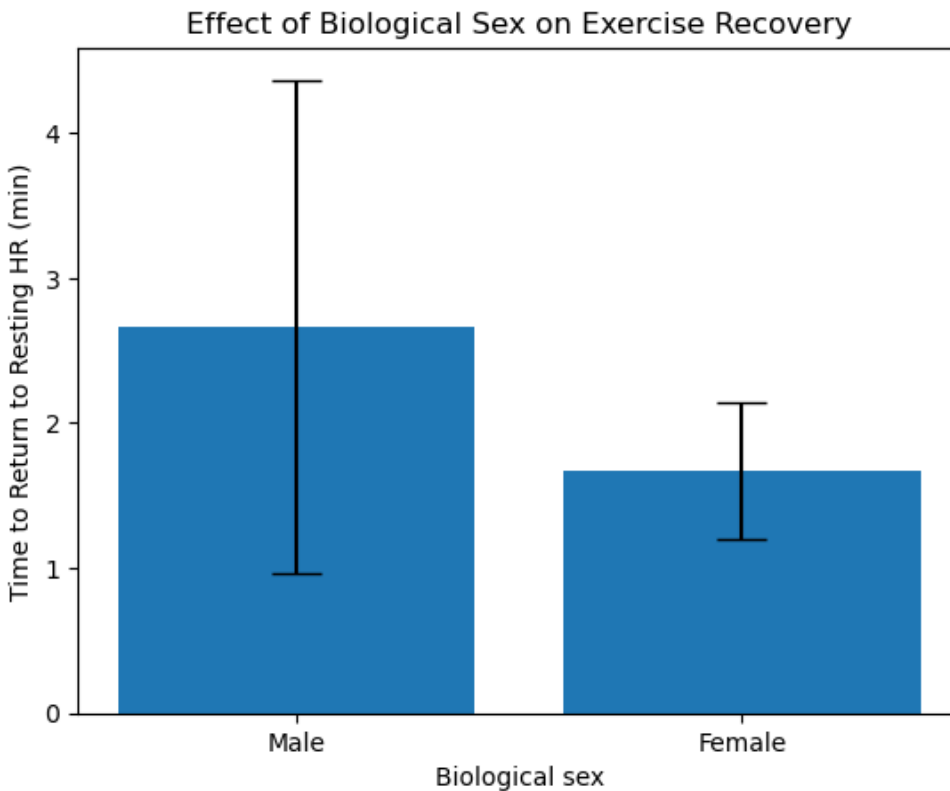
b. HR Reserve = Max HR - Resting HR

 c. Target heart rate range = (HR Reserve x 60%) + Resting HR to (HR Reserve x 80%) + Resting HR.

Results:

For 11-A: <u>Determination of Blood Pressure</u>   <u>Systole/ Diastole</u>

Sitting	122/75 BP
Standing	139/62 BP
Sitting	136/60 BP

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For 11-B: <u>Demonstration of a Measure of Physical Fitness</u>

Discussion: For 11-A, the accuracy of blood pressure measurements can be influenced by many factors such as proper placement, cuff size and individual variability. Variations in technique during measurements may introduce inconsistencies. Recognizing these limitations is essential for the interpretation of results. While this experiment demonstrates measures of physical activity, it is essential to acknowledge individual variations, including genetic factors and pre-existing health conditions, which may influence the observed outcomes. The study provides a foundation for further exploration into the long-term effects of exercise on cardiovascular parameters.

Conclusion: In conclusion, both experiments demonstrate the dynamic nature of cardiovascular parameters and the significance of routine exercise in maintaining optimal heart health. Understanding blood pressure variations and recovery times contributes to a comprehensive assessment of cardiovascular fitness, offering valuable information for both individual and population-level health interventions.