

Esther Navarro
10/27/2023
Bio 125
Physiology
Lab #11-A & 11-B

Determination of blood pressure

Purpose:

Blood pressure refers to the pressure of blood applied to the arterial walls. It is measured with a sphygmomanometer and the use of a stethoscope to reflect the conditions of a person's heart measured as systolic over diastolic. In this exercise we will look at each other's blood pressure and record our results.

Procedure:

1. Wrap the pressure cuff of the sphygmomanometer snugly around the upper left arm of your lab partner. Your lab partner should assume a relaxed, sitting, or supine position.
2. Place the stethoscope securely over the brachial artery. Close the pressure valve and begin pumping up the rubber ball.
3. You will begin to hear the arterial pulse as you pass the diastolic pressure. Continue pumping until the pulse is not heard, approximately 10 mmHg above your partner's normal systolic pressure. The brachial artery is now totally occluded.
4. Slowly open the pressure valve and listen for the pulse sounds to reappear as the pressure drops. These are known as Korotkoff sounds.
5. The first sound heard signals the systolic BP. Record this value from the scale.
6. The sound will become louder as the pressure drops until it finally starts to become muffled. Record the pressure at which the sound vanishes. This signals the diastolic BP. Record your blood pressure as systole/diastole.
7. Alternate with your lab partner and repeat these procedures.
8. Next, measure the BP of each of you immediately upon standing. (NOTE: be sure to have your cuff inflated prior to standing, so that you can begin to release pressure immediately upon standing.)
9. Lastly, measure the BP three minutes after standing. Record these values for your use and on the chalkboard.
10. Discuss the orthostatic response in terms of the receptors used and the effects of postural change. Include any limitations to obtaining reliable results.

Results:

Myself	BP sitting:	120/78	120/70	130/72	BP standing:	110/72	108/62	112/70
--------	-------------	--------	--------	--------	--------------	--------	--------	--------

Kristal	BP sitting:	121/86	122/86	122/82	BP standing:	128/86	118/78	120/74
---------	----------------	--------	--------	--------	-----------------	--------	--------	--------

Discussion:

I noticed that my own blood pressure was couple points lower than my partners. Could have been because of caffeine? Also, my blood pressure dropped a couple points while standing. This could have been caused because there's less blood flow back to the heart.

Conclusion:

Everyone's blood pressure is different based on age, weight, and health conditions. Also, there is a change in blood pressure when you consume coffee or any sort of energy drinks that can also affect your results.

Lab #11-B

Demonstration of a measure of physical fitness

Purpose:

The purpose for this exercise is to determine the measurement of physical fitness and to resume a normal resting pulse rate shortly after a brief period of exercise. We will compare these changes in heart rates between males and females who exercise regularly and students who do not and determine the target heart rate range for exercise for these students.

Procedure:

1. Select three students who exercise regularly and three students who do not. Each student will take his/her resting pulse rate for one minute and record this value.
2. Each student will then run the track twice at a fast but comfortable pace.
3. Immediately upon returning to the laboratory, each student will record his/her pulse after exercise.
4. Each student will take his/her pulse at one-minute intervals until the resting pulse is reestablished. (NOTE: The best method to employ is to take the pulse rate for 15 seconds and multiply by 4.)
5. These results will be recorded on the chalkboard for discussion. Is there a difference between the exercisers and the non-exercisers? Which student(s) do you consider to be in better physical condition? Why?
6. Determine the target heart rate range for each student (if the ages are available) and for yourself. The target heart rate range determines the heart rate that should be maintained for

20-30 minutes, at least 3 times per week for cardiovascular fitness. To determine your target heart rate range, do the following calculations for the Karvonen formula (only use numbers rounded off to **whole numbers**):

a. $220 - \text{your age} = \text{maximum heart rate (max HR)}$

b. $\text{Max HR} - \text{resting HR} = \text{HR reserve}$ (to find your resting heart rate, take your pulse before getting out of bed each morning for three days and then take the average)

c. $\text{target heart rate range} = (\text{HR reserve} \times 60\%) + \text{resting HR} = \text{low target heart rate}$ ($\text{HR reserve} \times 80\% + \text{resting HR} = \text{high target heart rate}$)

Example:

20-year-old with a resting heart rate of 65 beats per minute

$220 - 20 = 200$ (max HR)

$200 - 65 = 135$ (HR reserve)

$(135 \times 60\%) + 65 = 81 + 65 = 146$

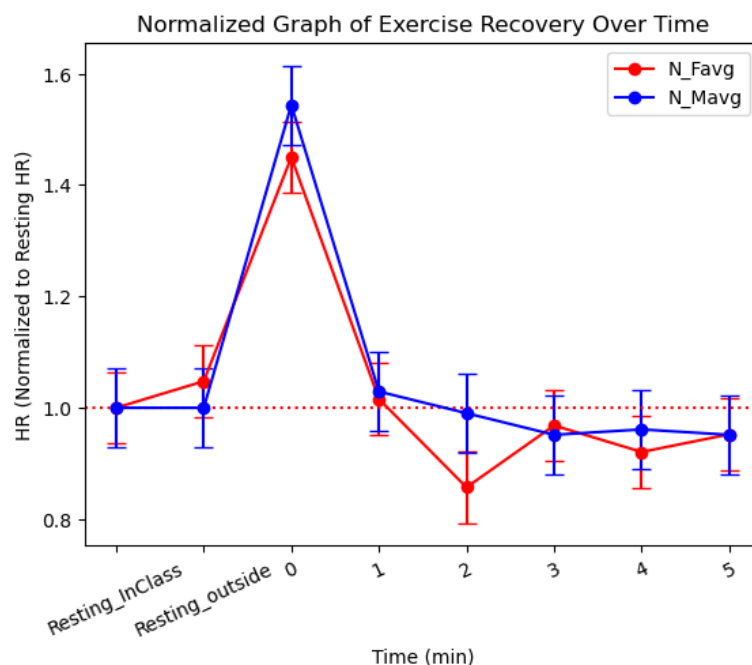
$(135 \times 80\%) + 65 = 108 + 65 = 173$

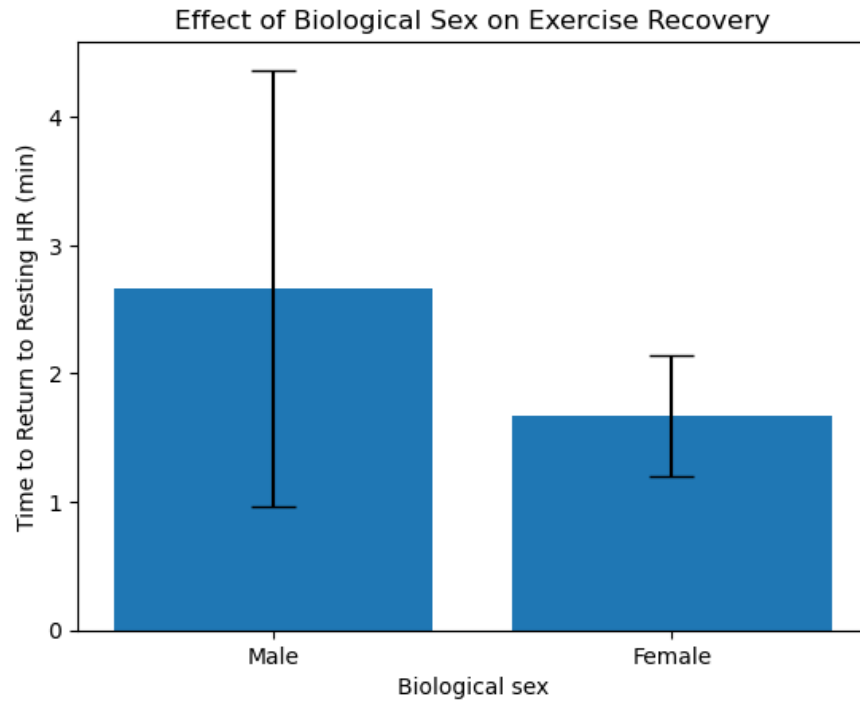
This student's target heart rate range would be 146 –173 beats per minute.

7. Include your calculations for your target heart rate in the results section of your report.

8. Evaluate the class results in terms of target heart rate and level of fitness for everyone.

Results:





Discussion:

It took males more time to come back to resting vs females. This could be possibly because males are more active physically than females.

Conclusion:

In conclusion, physical fitness does fluctuate your heart rate based on the activity you are doing. This just showed us that males have a long resting time vs females.