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BIOL 125 - 20895
Lab Day: Thurs
10/12/2023

Physiology Lab Report #11-

Lab 11: Cardiovascular Measurements

Purpose

- In this lab we measured different things such as blood pressure, heart sounds, and pulse rate. This gives us the ability to know the differences between resting rates and exercising states. This kind of gives us an idea of everyone's health and physical fitness. It is a good way of getting an idea of how healthy our hearts and bodies are functioning.

Procedures

11-A: Determination of Blood Pressure

1. Wrap the pressure cuff snugly around your lab partner's upper left arm while they are in a relaxed, sitting or supine position.
2. Securely place the stethoscope over the brachial artery and close the pressure valve.
3. Start pumping up the rubber ball. As you pass the diastolic pressure, you'll begin to hear the arterial pulse. Keep pumping until the pulse is no longer heard, which should be around 10 mmHg above your partner's normal systolic pressure. At this point, the brachial artery is completely occluded.
4. Slowly open the pressure valve and listen for the pulse sounds to reappear. These sounds are known as Korotkoff sounds.
5. The first sound you hear signals the systolic blood pressure. Make sure to record this value from the scale.
6. As you continue to release the pressure, the sound will become louder until it starts to become muffled. Make sure to record the pressure at which the sound completely vanishes. This indicates diastolic blood pressure. Record your blood pressure as systole/diastole.
7. Switch roles with your lab partner and repeat these procedures.
8. Now, it's time to measure the blood pressure immediately after standing up. Remember to have the cuff inflated before standing so that you can release the pressure right away.
9. Finally, measure the blood pressure three minutes after standing. Record these values for your use and also on the chalkboard.
10. Let's discuss the orthostatic response, which refers to the changes that occur in the body when transitioning from a sitting or lying position to standing. We'll talk about the receptors involved and the effects of postural change. We should also consider any limitations that might affect the reliability of the results.

11-B: Demonstration of a measure of physical fitness

1. Choose three volunteers who exercise regularly and three who do not. Each volunteer will measure their resting pulse rate for one minute and write it down.
2. Next, all the volunteers will run around the track twice at a fast but comfortable pace.
3. As soon as they finish running, each student will record their pulse rate after exercise.

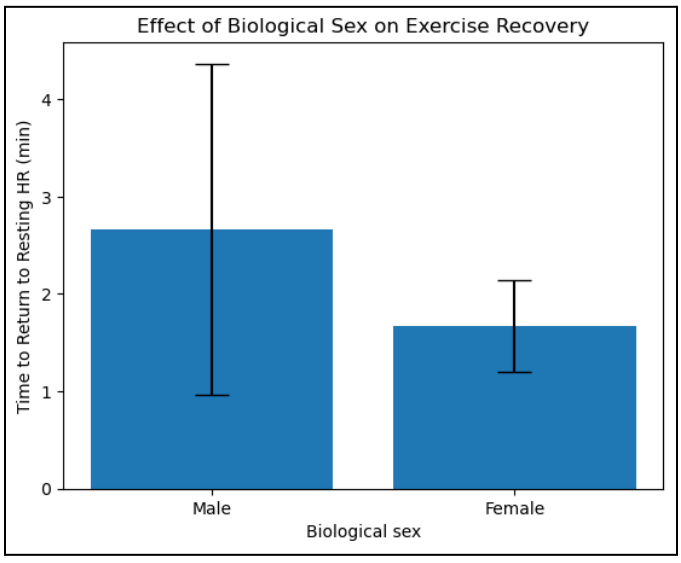
4. The volunteers will continue to measure their pulse rate at one-minute intervals until their resting pulse rate returns to normal.
5. Finally, we'll gather the results and discuss if there is a difference between the exercisers and non-exercisers. We can also determine which students are in better physical condition based on their pulse rate recovery.

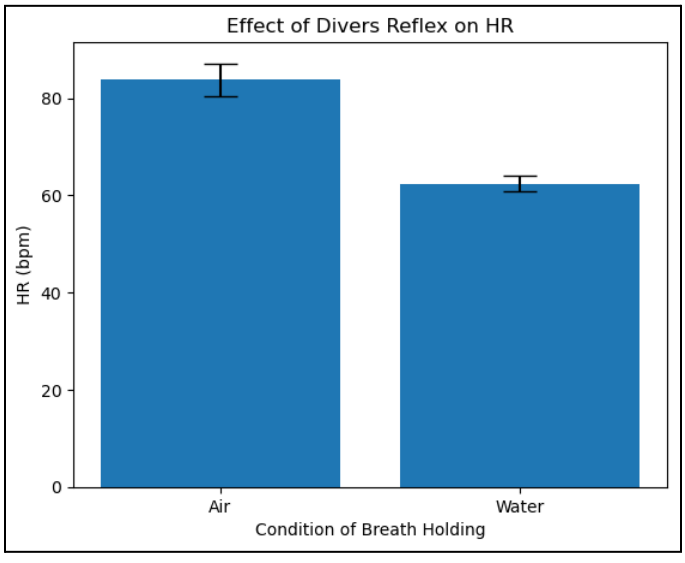
11-C: Demonstration of the diving response

1. Get a big tub and fill it with ice-cold water.
2. Then a volunteer will participate in this activity and they will be connected to the computer.
3. Take recordings of their Lead II ECG and pulse pressure while they are at rest to establish a baseline measurement.
4. Then, record their readings while they hold their breath for at least 20 seconds, ideally 30 seconds.
5. Repeat the experiment with the student holding their breath and submerging their head in a bucket of ice-cold water.
6. Make sure to include copies of the results in your lab report.
7. Analyze the three sets of data in terms of bradycardia (slow heart rate) and vasoconstriction (narrowing of blood vessels). Discuss the adaptive advantages of these reflexes.

Results

Blood Pressure	Me	Dayana
Resting	120/62	112/60
After immediately standing up	126/64	116/62
3 minutes after continuously standing	122/60	112/62





Discussion

- In this lab we were able to measure the effects of postural change and exercise on cardiovascular parameters. We did this by testing things like the blood pressure, heart, and pulse rate in different situations like resting and exercising. By comparing the values that we measured in the exercise states we were able to assess the physical fitness of the class volunteers. This lab was interesting because we were able to see how our blood pressure changed in different states whether it be standing and sitting. This is because different positions can affect blood flow and the workload on the heart. It was cool to see how our body works after standing for a while. It stabilizes our blood pressure.

Conclusion

- The basis of this experiment was for us to understand the way certain things impact the heart's workload based on physical fitness of a person or by simply changing from a relaxed to a moving state. This lab showed us that postural changes and exercise have a direct impact on cardiovascular parameters. The changes that we observed in blood pressure, heart sounds, and pulse rate can provide insights into an individual's overall cardiovascular health and physical fitness level.