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October 17, 2023
Tuesday Lab

Laboratory 11-Cardiovascular Measurements

Purpose- Cardiovascular parameters can be measured, and those measurements reflect the general condition of an individual. These cardiovascular parameters are blood pressure, heart sounds, and pulse rate. The values obtained between resting and exercise states provide a good measurement of the physical fitness of the person. The purpose of laboratory 11 is to measure the effects of postural change and exercise on the cardiovascular parameters using the different equipment and determining the physical fitness of the individual.

Procedures- There were three different procedures in laboratory 11 because of the three different experiments. For experiment 11A determination of blood pressure we wrapped the pressure cuff of the sphygmomanometer around our left arm snuggly and placed the stethoscope over our brachial artery. We closed the pressure valve and started to pump up the rubber ball. When you pass the diastolic pressure you will hear the arterial pulse, keep pumping until the pulse is not heard anymore, the brachial artery is now fully occluded. Then we slowly opened the pressure valve and listened for the pulse sounds to reappear as the pressure drops down, these are known as Korotkoff sounds. The first sound heard signals the systolic BP, we then recorded this value from the scale. The sound becomes louder as the pressure decreases until it finally becomes muffled, we then record the value at which the sound disappears, this is the diastolic pressure. We then were to alternate positions and have our lab partner do the same procedure. Lastly we then measured our blood pressure immediately upon standing and three minutes after standing and recorded the results. For experiment 11B, the demonstration of a measure of physical fitness, we first selected three boy students and three girl students to do a one minute exercise after first checking their resting heart rate. Immediately after the one minute workout each student was to record their heart rate after the exercise. Each student will get their heart rate at one minute intervals until their resting heart rate is reestablished, after getting these results we were to discuss as a class if there was any difference between the boys and the girls on which gender is in better physical condition. In experiment 11C, the demonstration of the diving response, we first filled a large tub with ice cold water and selected a couple student volunteers from the class to hook up to the computer. A recording of Lead II ECG and pulse pressure from a thumb will be obtained with the student at rest for a baseline measurement. Recordings were then taken with the students holding their breath for about 20-30 seconds, the recordings were repeated but with the student holding their breath for 20-30 seconds with their head dunked into the ice cold water. Lastly we got the different recording results and made it into a graph.

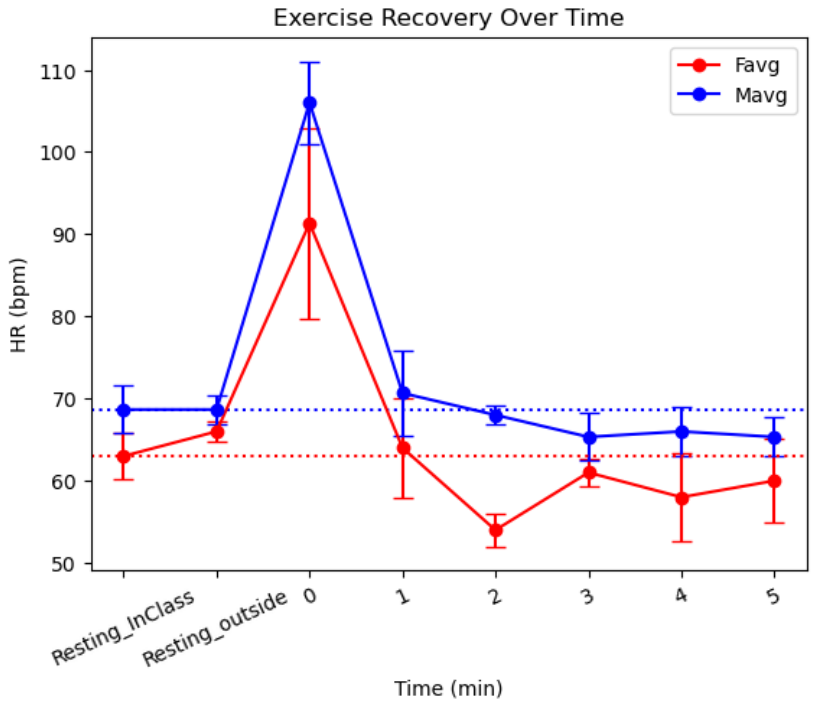
Results-

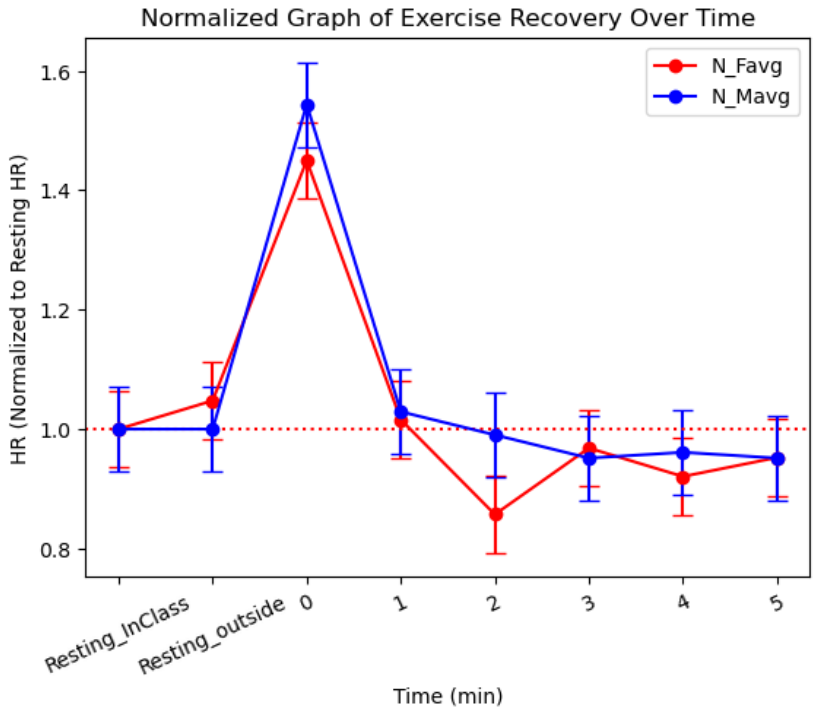
Results for 11A-Determination of blood pressure

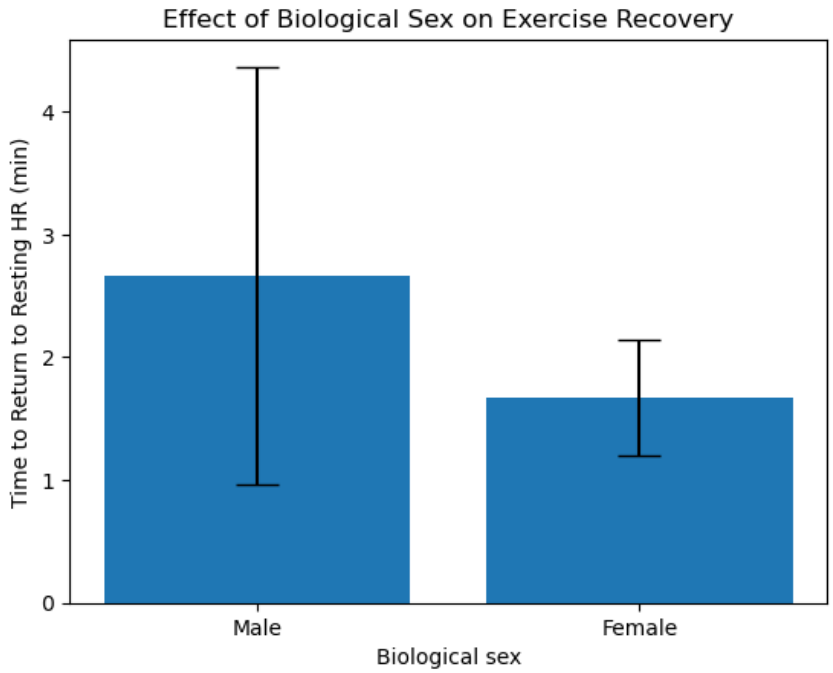
Systolic Blood Pressure	Diastolic Blood Pressure
(Sitting) 115	(Sitting) 58

(Standing) 108	(Standing) 64
(Sitting again) 117	(Sitting again) 67

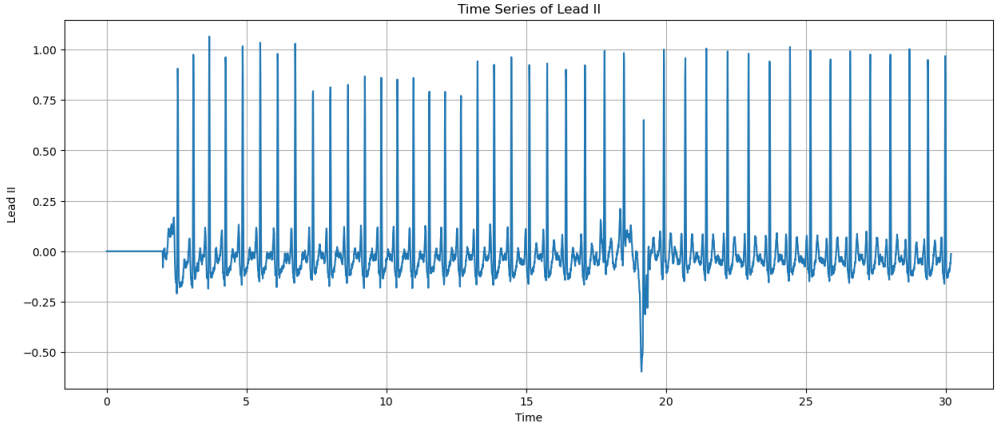
Results for 11B-Demonstration of a measure of physical fitness

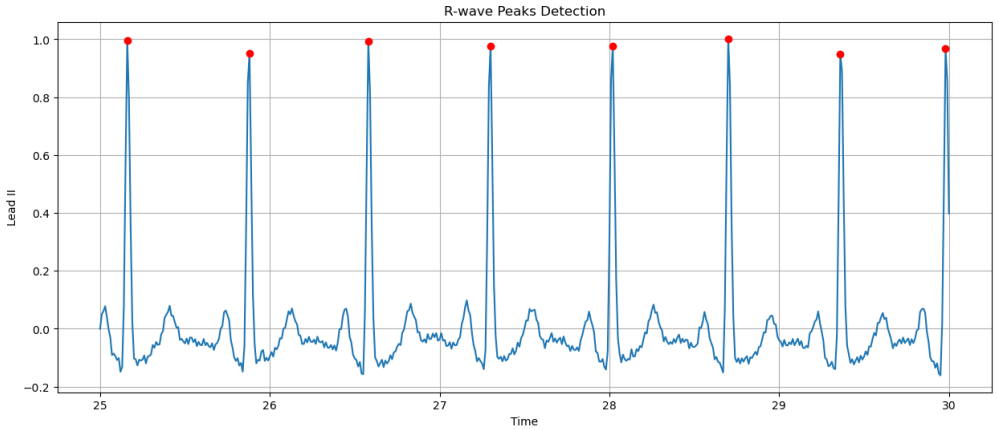


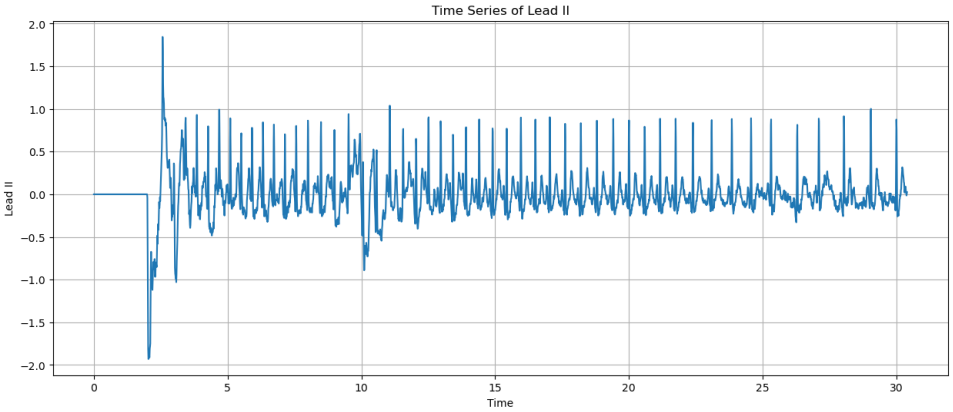


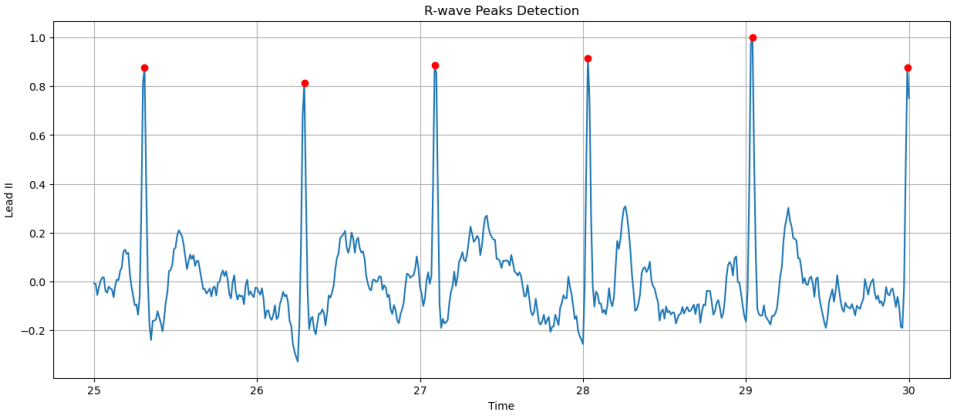


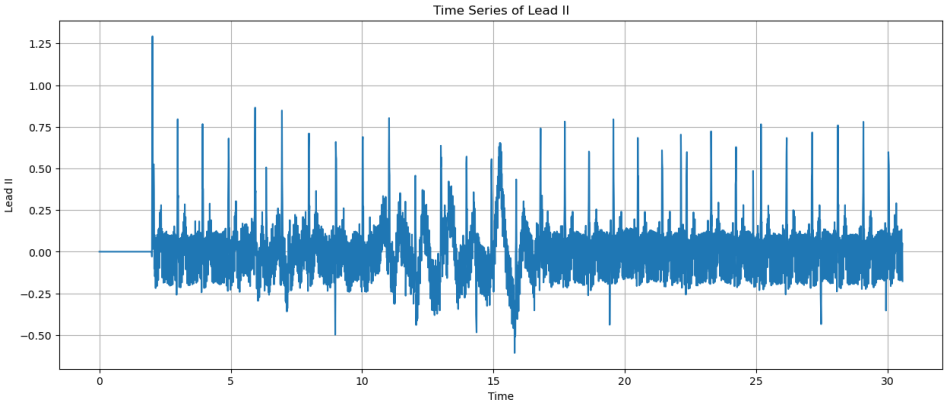
Results for 11C-Demonstration of the diving response

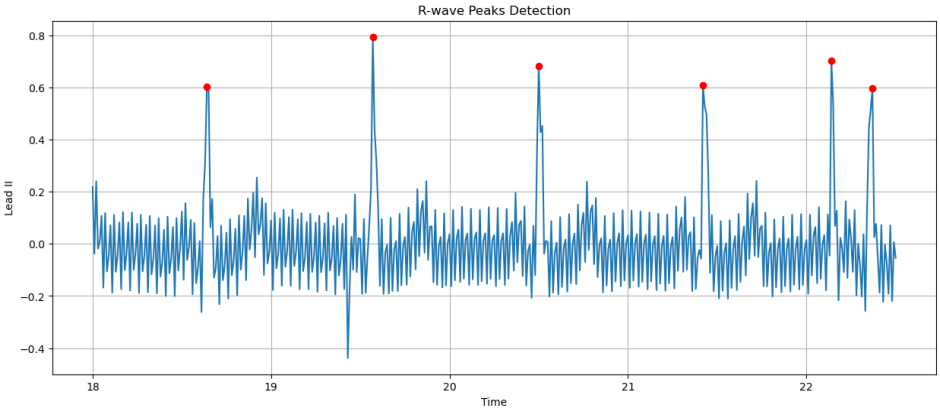


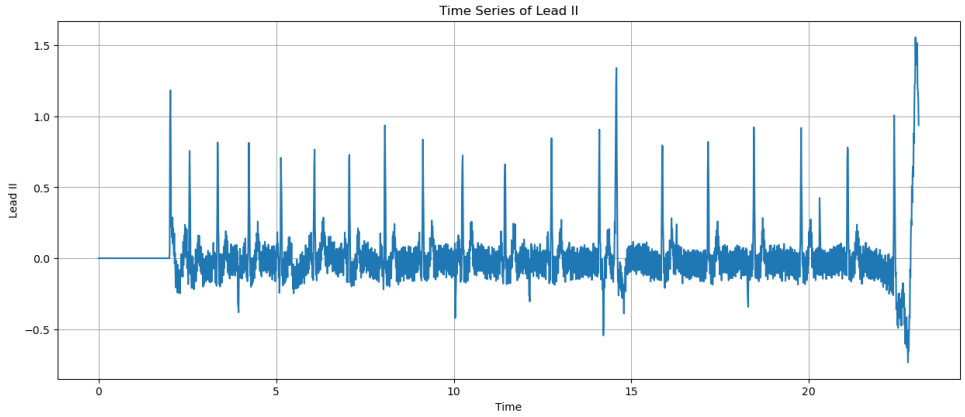


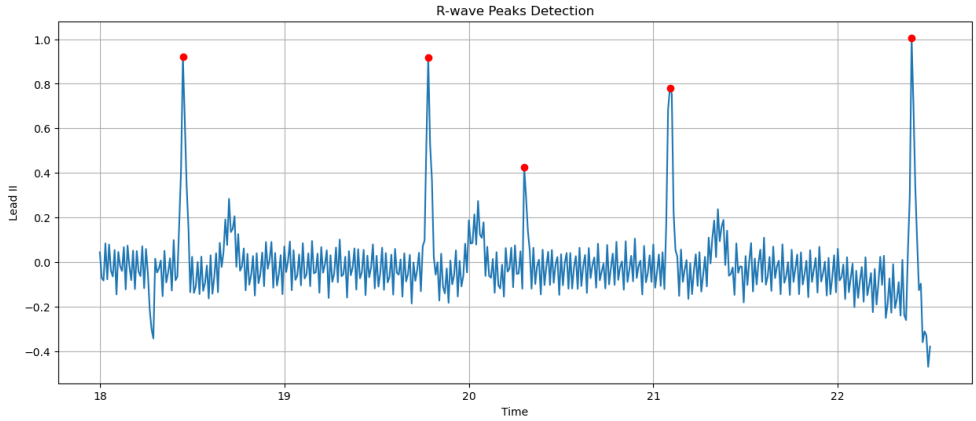

Time Series of Lead II
Lead II
Time

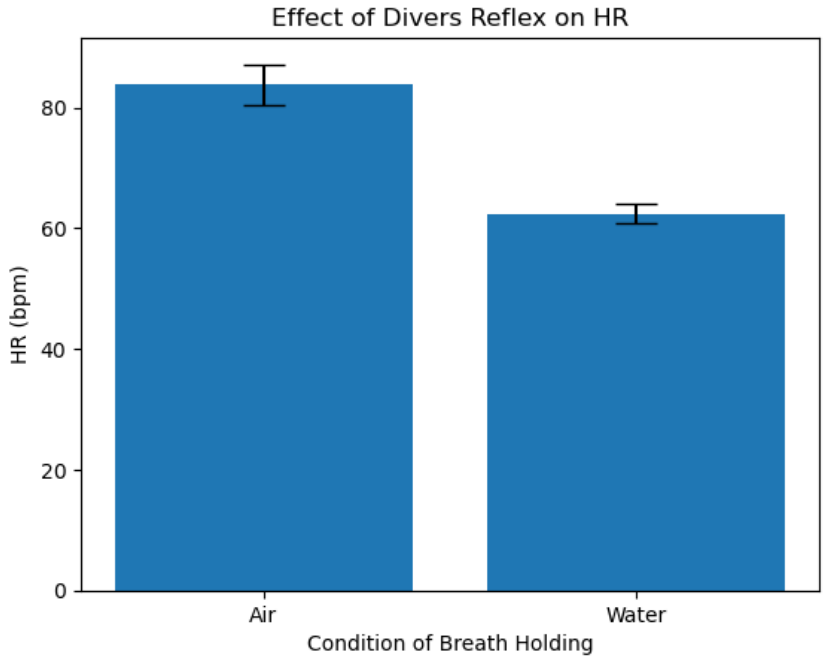

R-wave Peaks Detection
Lead II
Time


Time Series of Lead II
Lead II
Time


R-wave Peaks Detection
Lead II
Time







Discussion- My results for 11A was very interesting to me because I thought my blood pressure would have gone up when I stood up but it actually went down a little bit in the systolic BP but in

the diastolic BP it did go up a little bit. When I sat back down after standing, that is when both systolic and diastolic were higher than my resting blood pressure. In experiment 11B we compared the heart rate after exercise between boys and girls. After looking at the results for that experiment, I can conclude that the boys heart rate went a little higher than the girls, but the girls recovery time was a bit faster in the beginning than the boys, overall there wasn't really any major differences from the results. In the results of 11C I didn't really see any major differences in the results besides when I got the bar graph of the condition of breath holding in the air compared to under the ice cold water. It looked like it was a lot easier to hold your breath not in cold water and that makes full sense. When you get cold air blown in your face is it harder to breathe than if hot air got blown into your face. Overall this lab was very interesting to me because it was cool to see the changes our body goes through for simple things like standing up and holding your breath under cold water.

Conclusion- The results of laboratory 11A showed the difference between our blood and pulse pressure at rest, standing up and back to at rest again. The results for experiment 11B showed the differences of physical fitness between males and females and this was done by having students get their resting heart rate and then doing an exercise and getting the heart rate again every minute and comparing the results. The results from experiment 11C were found with an ECG machine to detect our heart activity and pulse pressure. Students were to get a regular reading while holding their breath and then dunk their head into ice water and get a reading and compare the results to see what changes happened. In conclusion the main idea of laboratory 11 was to measure the effects of postural change and exercise on the cardiovascular parameters using the different equipment and determining the physical fitness of the individual.