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Physiology 125

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Cardiovascular Measurements

Purpose

The purpose of this experiment is to understand the function of a well-developed cardiovascular system in relation to physical fitness. It is also to be able to calculate the target heart rate range for cardiovascular fitness. Lastly, to be able to determine the pulse rate from a graphical record.

Procedures

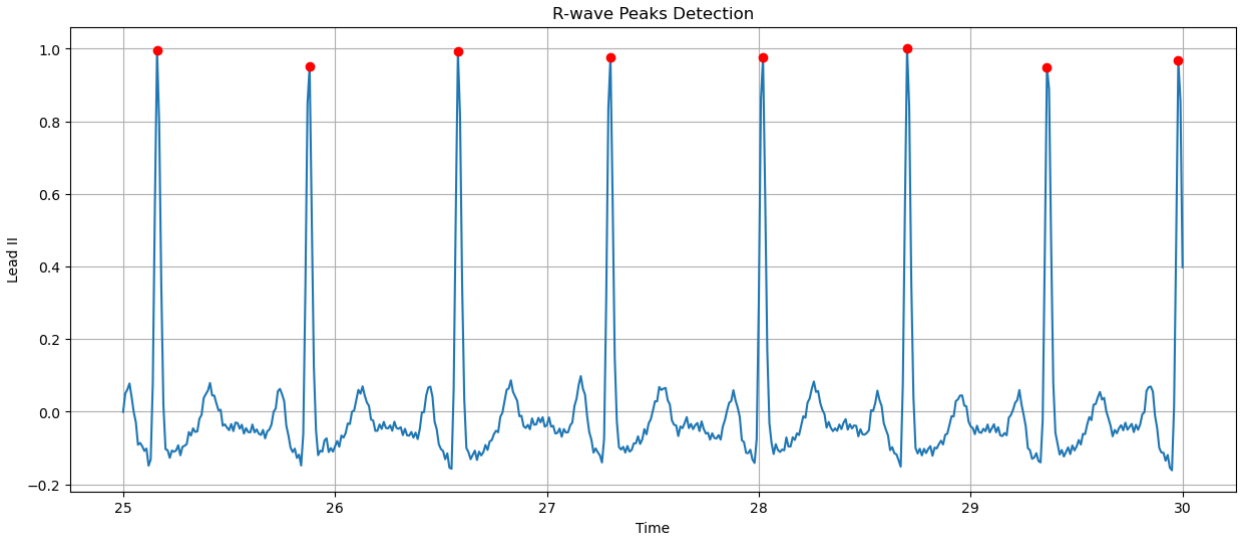
In experiment 11-B, 6 students were chosen to do the exercise. Each student will have to do the exercise and will have to check their pulse at one minute intervals until the resting pulse is reestablished. Before doing the exercise, it was made sure that each volunteer got their resting heart rate. The exercise was repeated three times and recorded the heart rate during each interval of rests. The results were recorded by the assigned timers for the experiment.

In experiment 11-C, a large tub was filled with ice cold water. A student was chosen to hook them up to the computer to get the recordings of the Lead II ECG and pulse pressure. The recordings were taken while the student was holding their breath for at least 20 seconds, but 30 seconds was preferred. The experiment was repeated with the subject holding their breath and then placed their head into a bucket of ice cold water.

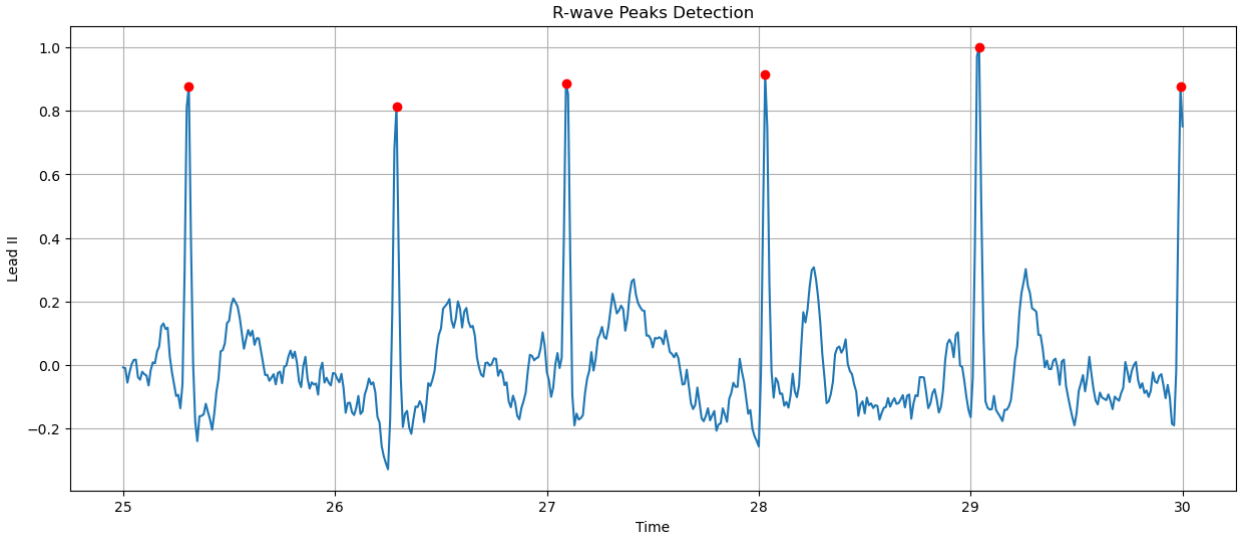
Results

For experiment 11-B these are the results gathered from the subjects. This graph is the combined results of the two volunteers in the experiment.

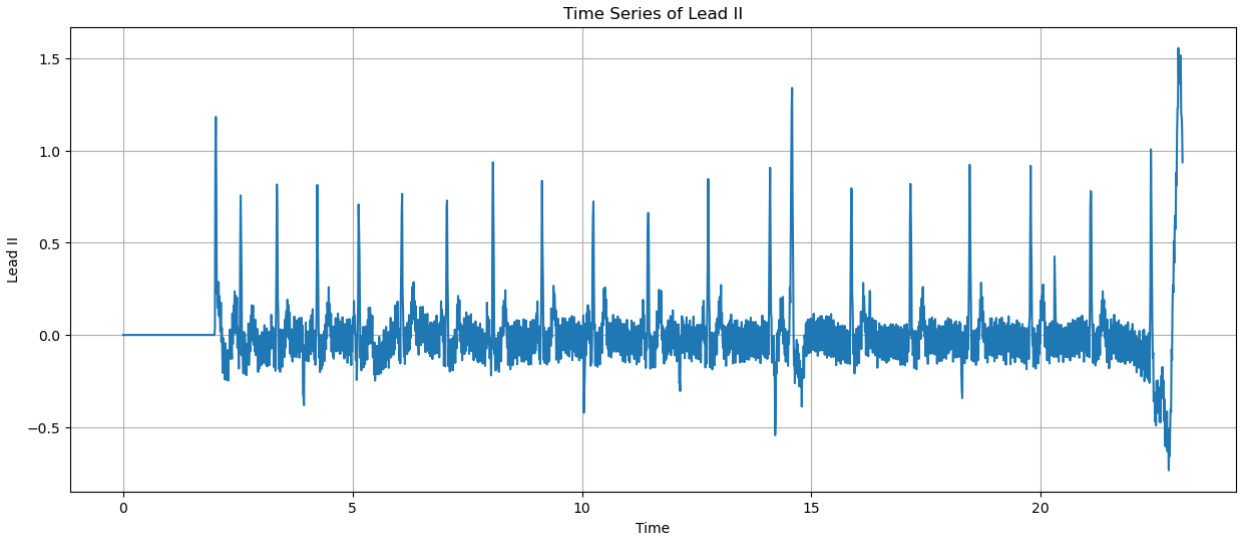
A. Control holding breath without submersion of individual 1



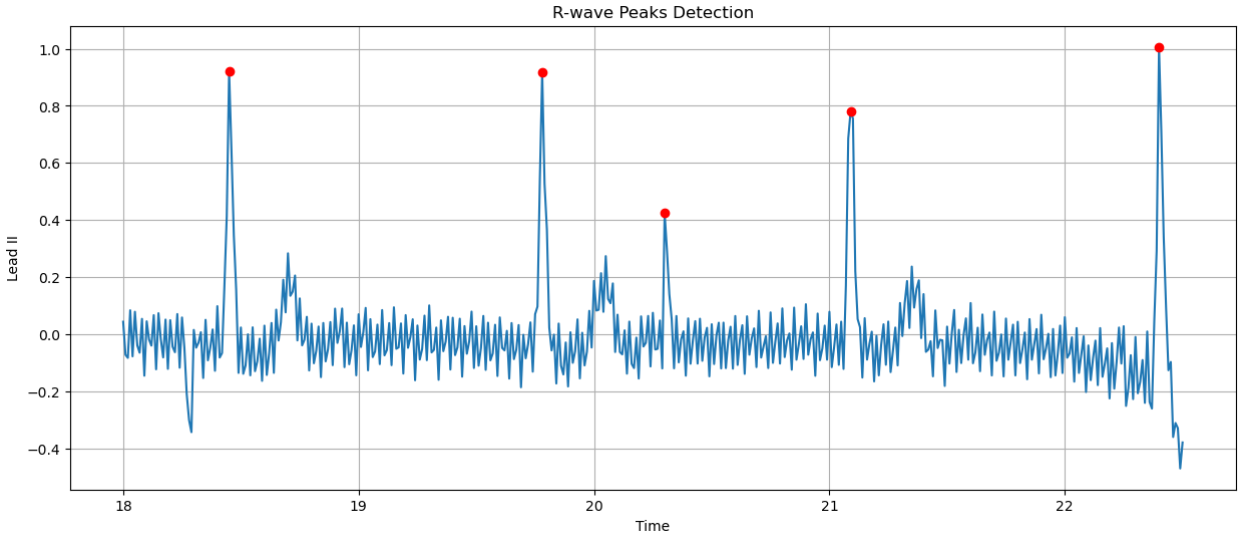
B. Head submerged in icy water of individual 1

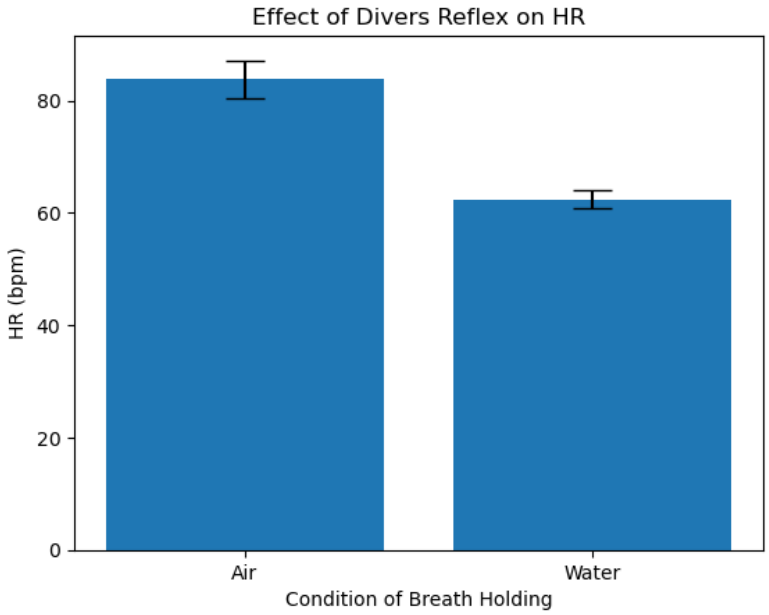


C. Control holding breath without submersion of individual 2



D. Head submerged in icy water of individual 2

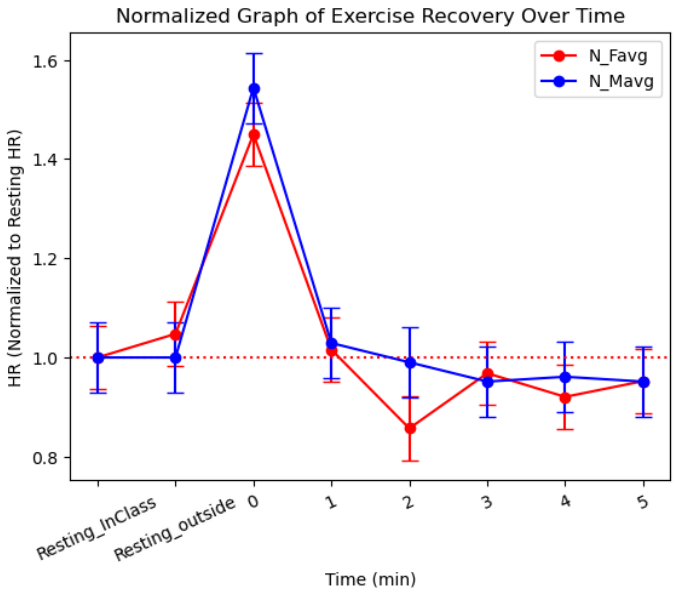




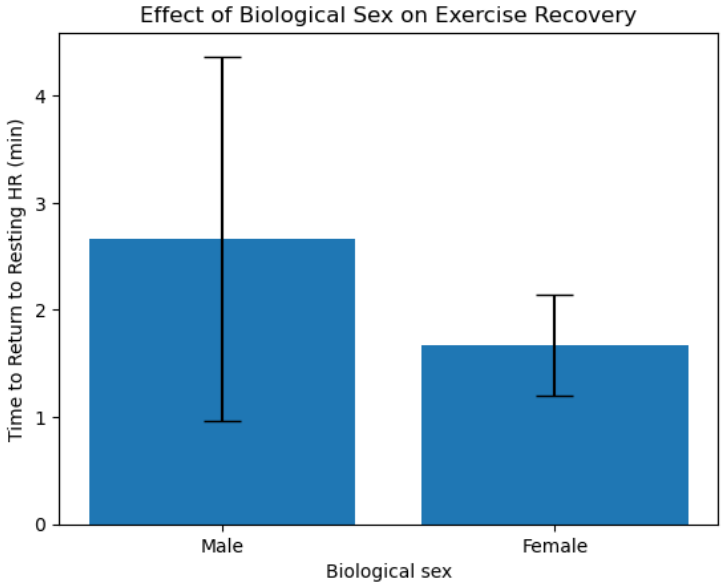
For experiment 11-C these are the results from the six volunteers after doing the exercise based on the procedures above.

Group	**F1**	**F2**	**F3**	**Favg**	**M1**	**M2**	**M3**	**Mavg**
Resting (class)	58	68	63	63.000000	64	74	68	68.666667
Resting (outside)	66	64	68	66.000000	66	72	68	68.666667
	72	112	90	91.333333	116	102	100	106.000000
	68	52	72	64.000000	70	80	62	70.666667
	56	56	50	54.000000	68	70	66	68.000000
	58	64	61	61.000000	66	70	60	65.333333
	48	66	60	58.000000	68	70	60	66.000000
	50	66	64	60.000000	64	70	62	65.333333

Average Resting Heart Rate: Female: 63 BPM , Male: 68.7 BPM



The bar graph shows a better understanding of the average heart rate for both male and female on the exercise recovery.



Discussions

Based on the graph above, for individual 1, they had a heart rate of 87.14 BMP while his head was not submerged in the icy water and a heart rate of 64.10 BPM. For individual 2, his

heart rate when not submerged in icy water was 80.43 BPM while his heart rate when submerged in icy water was 60.76 BPM. As we can see from the bar graph the average heart rate per minute is around 83.9 when their heads were not submerged in icy water and had an average heart rate of 62.43 BPM when submerged in the icy water. Based on the data above, the heart rate is higher when they are not submerged in water because they are just breathing at a normal pace so no changes in the normal heart rate was seen. When they are submerged in icy water, the heart rate starts to be lower. It is because when their face is submerged in water, the sensory receptors relay the information to the brain that causes the blood restriction from limbs and all organs to preserve the oxygen for the heart, brain, and lungs.

On the second experiment, we got some interesting results. The resting heart rate for female was 63 BPM and for male it was 68.7 BPM. From the line graph above, it is clear that the males resting time were close to each other, but the female had a dip on the line graph which is very interesting. It took the males to return to their resting heart rate at around 2.7 mins while the female took around 1.6 mins to return to their resting heart rate.

Conclusion

In conclusion, for the first experiment we can see that when our head is submerged under water our heart rate is lower and slower in order for us to conserve the oxygen for our brain, heart and lungs compared to when we are only sitting or doing normal chores. For the second experiment, we can conclude that getting back to the resting time for males and females are different. Based from the data above, we can see that the females got back to their resting heart rate first than the males.