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Physiology

Blood Pressure and Heart Rate Lab Conclusion

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Water in the Face: A Blood Pressure Manipulation Lab

In this experiment, we answered the question of how temperature affects blood pressure and heart rate. Heart rate is the number of times your heart beats per minute. Blood pressure is the force of blood against the walls of blood vessels. Blood pressure is written with two numbers: a systolic and diastolic pressure. The systolic pressure measures when the blood pressure is at its highest, during heart beats, pumping the blood. The diastolic pressure measures in between heartbeats, when the blood pressure falls. In the experiment, temperature was manipulated and many questions arose. If I stick my face in a bowl of ice water, then my blood pressure and heart rate will increase, because it’s a startling and dramatic change in body temperature.

There are many ways to manipulate blood pressure. A few include exercise, temperature and stress. In this particular experiment, we used a sudden blast of cold water on the face. Each test subject had their blood pressure and heart rate taken and then proceeded to stick their face in ice cold water for ten seconds. Upon lifting their head out of the cold water, the blood pressure and heart rate were taken again. Manipulations put the body under emergency circumstances, where the body believes blood is in high demand and it must pump more quickly and efficiently, thus increasing blood pressure. Through evolution people have developed this ability.



In this experiment, two test subjects did three trials, excluding a resting plus and pressure test. My base was 120/80, which could be off due to the coffee I drank at 10 AM. Caffeine can temporarily drive blood pressure up. After my first trial, I saw an increase to 140/90 in the first trial. I also saw an increase in heart rate from 86 bpm to 90 bpm and then 102 bpm. In my final trial, both my heart rate and blood pressure dropped back down. This is most likely due to my body getting used to the shift in body temperature, expecting it, and not utilizing emergency tactics. Haiden saw similar data to mine in the blood pressure department. He began with 130/90 (he also drank coffee, so this is probably normal) and jumped up to 160/100 after one round of ice-face-bath. However, Haiden’s heart rate hovered around 75 the entire time. We hypothesized that because Haiden surfs he knows how to maintain his heart rate in freezing temperatures. This data does support my hypothesis, but for a slightly different reason than I accounted for. I knew that my blood pressure and heart rate would increase due to the severity of the temperature, but I did not understand that this was because of a so-called emergency response from my body to make sure I was receiving enough blood.

Overall, blood pressure is very adaptable to situations and manipulations. It will control the rate at which your body receives blood to prevent trauma and circulate blood flow more quickly. Having a blood pressure that fluctuates well, as mine and Haiden’s did, is indicative of good health. Our experiment did have the inference of caffeine. However, since we both drank seemingly equivalent doses of coffee, perhaps that was just a hidden side of our experiment. My base blood pressure is extremely normal (120/80) and shows that I am in good health.

Bibliography:

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