



Homeostasis Lab: Water Content

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Introduction

Homeostasis is how your body keeps balance. Water content is one of the things your body needs balance.

Your body can lose too much water while sweating, peeing, and breathing. Your body gets that water back from drinking or the kidneys.

Background

Homeostasis is how your body keeps balance. Your body balances water content through drinking water and your kidneys, that's how water replenishes. You lose water through sweating, peeing, and breathing.

Your kidneys control the water in blood plasma and keeps your water content stable. The hormone, anti-diuretic, makes us thirsty and tells us when we have to go to the bathroom.

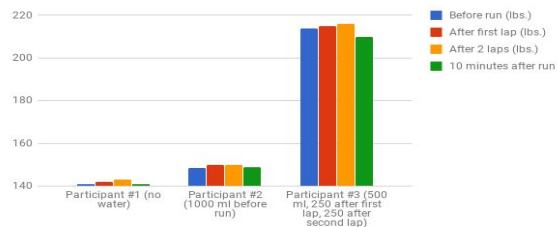
Hypothesis

The more water you drink, the less weight you'll lose and if you drink less water, you'll lose more.

Objectives

Observe how people's water content (weight lbs.) would fluctuate and keep balance during and after an 800m run depending on how much water they drink

Before run (lbs.), After first lap (lbs.), After 2 laps (lbs.) and 10 minutes after run



Materials/Methods

Procedure:

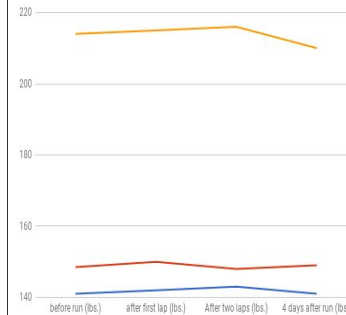
- Go on a 400m track
- Have participant 2 drink 1000ml (2 bottles) of water and the other two participants drink nothing
- Weigh all three participants and record their weights
- All three participants run 400m (1 lap)
- After the first lap, have participant #3 quickly drink 250ml (½ bottle) of water and weigh all three participants upon completion of the lap. Weigh participant #3 after they drink the water.
- Have all three participants complete the second lap and then record all of their weights, again making sure participant #3 drinks 250ml (½ bottle) of water before weighing.
- Wait 10 minutes and weigh all three participants

Materials:

- Human scale
- 3 full 500ml water bottles
- People to test
- A 400m track
- notebook and writing utensil

Data

We found homeostasis to be true in this lab because everyone's weight went back down after the run. Participant #3's weight decreased significantly either because of true weight loss or they were wearing less clothes/no shoes. As the graphs (left and close right) show, weight fluctuated in the 1-2 pound range during the run. 4 days later, the participants were reweighed and all weights had gone back down. This shows that homeostasis has taken place and gotten rid of the excess water that they had drank. However, it is odd that even though participant #1 did not drink any water, his weight still went up and then retreated back to the starting point of 141. This is most likely due to another form of homeostasis whether it be temperature, glucose levels, or something else. The table (far right) shows a more detailed and easier to understand graphic of our final data.



Conclusion

Homeostasis keeps the water levels in our body balanced. The hypothesis of the more water you drink, the less weight you will lose and if you drink less water you will lose more, was correct after testing.

Special Thanks

We'd like to thank Mr. Williams and Ms. Mathews for running us through the important elements that were both used and could've been used to improve our lab. We'd also like to thank STEM< Marin and San Marin High School for the campus and materials provided to make our experiment happen.

References

<http://www.h4ninitiative.com/everyday-hydration-water-balance-regulation>
<https://www.merckmanuals.com/home/hormonal-and-metabolic-disorders/water-balance/about-body-water>

	Before run (lbs.)	After first lap (lbs.)	After 2 laps (lbs.)	4 days after run
Participant #1 (no water)	141 lbs.	142 lbs.	143 lbs.	141 lbs.
Participant #2 (1000 ml before run)	148.5 lbs.	150 lbs.	148 lbs.	149 lbs.
Participant #3 (500 ml, 250 ml after first lap, 250 ml after second lap)	214 lbs.	215 lbs.	216 lbs.	210 lbs.