

Homeostasis Project- Breathing/ Respiratory System

Results:

With every increase in physical exertion, all of the subjects showed an increase in breath rate.

Participant one had a resting breathing rate of 11 breaths per 30 seconds. After a 20 yard sprint the participant's breathing rate increased to 11 breaths. After the 40 yard sprint the participant's breathing rate went up to 13 breaths. After the 60 yard sprint the participant's breathing rate went up to 16 breaths. Next we started with 10 jumping jacks and the first participant's breathing rate went up to 11 breaths. After 20 jumping jacks the participant's breathing rate went up to 12 breaths. After 30 jumping jacks the participant's breathing rate went up to 13 breaths. Participant two had a resting breathing rate of 8 breaths per 30 seconds. After a 20 yard sprint the participant's breathing rate increased to 11 breaths. After the 40 yard sprint the participant's breathing rate went up to 13 breaths. After the 60 yard sprint the participant's breathing rate went up to 15 breaths. Next we started with 10 jumping jacks and the first participant's breathing rate went up to 8 breaths. After 20 jumping jacks the participant's breathing rate went up to 10 breaths. After 30 jumping jacks the participant's breathing rate went up to 10 breaths. Participant three had a resting breathing rate of 7 breaths per 30 seconds. After a 20 yard sprint the participant's breathing rate increased to 11 breaths. After the 40 yard sprint the participant's breathing rate went up to 13 breaths. After the 60 yard sprint the participant's breathing rate went up to 15 breaths. Next we started with 10 jumping jacks and the first participant's breathing rate went up to 9 breaths. After 20 jumping jacks the participant's breathing rate went up to 11 breaths. After 30 jumping jacks the participant's breathing rate went up to 13 breaths.

Materials and Method:

For our procedure we tested three subjects. These subjects are sophomores in high school and compete in high school sports. They are healthy and active in their everyday life.. First we recorded the subjects resting breathing rate by counting their breaths for 30 seconds. We started the physical exercise with a 20 yard sprint and recorded their breathing rate afterwards. We followed this procedure for 40 and 60 yard sprints. Next we recorded their breathing rate after sets of 10, 20, and 30 jumping jacks. Between each activity we waited to participate in the next activity until the subjects' breathing rates went back to normal. For this test we needed a timer, a field to run on (marked with yards), and a notebook to record our data.

Discussion and Conclusion:

When we tested our breath rate, we proved our hypothesis that breathing rate increases as exertion increases. Our data shows this hypothesis because when either Kendal, Caitlin, or Taylor sprinted or did more jumping jacks their breathing rate went up one or two breaths from their normal breathing rate. Overall our project and testing went very well and we came out with steady results that proved our hypothesis. I believe that we did a lot of things well for this project. One being that we stayed on task and we had good time management. We got everything done on the right day. Probably what we could work on for next time would be to be more precise with our timing and counting of breaths. Some of the times we tested, we let the clock run a little bit over 30 seconds which made it so that we had to redo the experiments. I believe that we did all the tests we could for breathing, but we could maybe do more experiments such as bike riding or playing another sport.

Abstract:

After physical exertion of energy, your body needs more oxygen going to your muscles, therefore your breathing rate increases depending on your amount of physical activity. We conducted an experiment testing how breathing rate varies with different levels of exercise. Our results showed that with every increase in physical exertion, all of the subjects showed an increase in breathing rate. Our conclusion from our results show that the body increases breathing rate in order to maintain the level of oxygen in the blood and muscles.

Introduction:

Homeostasis is your body's ability to keep everything stable. There are many processes to homeostasis by which the body controls its' internal environment. This is obtained by releasing hormones into the body in response to changes. One example of homeostasis would be your respiratory system that controls your breathing. There are many different hormones that control different aspects of breathing. The hypothalamic neuropeptide hormone is released during normal function. Two more breathing hormones are estrogen and progesterone which are released to protect from sleep-disordered breathing, whereas testosterone increases your susceptibility to it. Furthermore, progesterone, thyroxine, corticotropin, and leptin act as respiratory stimulants. Somatostatin, dopamine, and neuropeptide Y have a depressing effect on breathing. Your breathing will be slow and deep when you sleep, normal pace during the day, and fast during physical exertion. After physical exertion of energy, your body needs more oxygen going to your muscles, therefore your breathing rate increases depending on your amount of physical activity.

Works Cited

<https://www.ncbi.nlm.nih.gov/pubmed/12475861>

www.livestrong.com/article/30209-breathing-regulated/