

Catch Your Breath

By: Joshua Moses and Liam Hester-Corston

Cycle II, Year 1 (Sec. III)

February 22nd, 2021

Wabannutao Eeyou School

Purpose:

People today rarely take time to sit and relax without going on their phones or other technology. We believe that this worsened with the onset of COVID so many months ago. With the news and all the changes, our stress levels have gone up and it doesn't look like we will be returning to a normal life any time soon but how can we relax? There must be something we can do to feel better at any point in time during the day! If people learned to breathe, they could lower stress levels and lead happier lives. Returning to healthier roots starts with looking deep within ourselves... our breathing!

Hypothesis:

If periods of stress make you trigger hormones that make your heart beat/pressure rise then playing a stressful game can make both increase by 25%. If breathing makes your body feel like its relaxed then breathing deeply 5 times should make your heart beat/pressure return to normal.

Materials:

Data recording sheet, Cellular phone, Tetris game, UA-767FAM Digital Blood pressure Monitor, Pencil, and Volunteers.

Procedure:

1. We had the volunteers sign for consent since our experiment involved personal health data.
2. We wrote down their blood pressure and heart beat.
3. The subjects played the game "Tetris" for 5 minutes.
4. Their blood pressure was taken and recorded once more.
5. We demonstrated and asked the subjects to take deep breaths for 3 minutes. Some students sat down without doing breathing exercises (control group).
6. Their blood pressure and heart beat were recorded one last time.

Background Research:

When you are in a stressful situation, your body produces a surge of hormones. These hormones temporarily increase your blood pressure by causing your heart to beat faster and your blood vessels to narrow. Your body goes in to "fight-or-flight" mode when you are overwhelmed with stress, which triggers your adrenal glands to release the hormones adrenaline and cortisol. These can make you blood pressure rise and your heart beat faster. Blood pressure is the measure of the force of blood pushing against blood vessel walls. When you read blood pressure, the top number refers to the amount of pressure in your arteries

during the contraction of your heart muscles. We call this systolic pressure. The bottom number refers to your blood pressure when your heart muscle is between beats. We call this diastolic pressure.

Some video games can be relaxing to the player. Violent video games have to opposite effect. Research has shown that violent video games increases heart rate and blood pressure.

Aside from video games, smartphones can also be a problem. They can interfere with our sleep, productive and impulse control. Even having a smartphone in reach reduce available cognitive capacity. A recent study found greater smartphone use was associated with a greater rise in the cortisol awakening response - the natural spike in cortisol that occurs around minutes after waking.

Breathing exercises can help you relax, because they make your body feel like it does when you are already relaxed. The things that happen when stressed, such as increased heart rate, fast breathing and high blood pressure all decrease as you breathe deeply to relax. When feeling stressed with video games or by using your smartphone too much, clearing your mind with breathing exercises will help.

Discussion:

When we were doing the experiment we found that some students were having trouble breathing, they felt dizzy. I looked up the symptoms and found out that they were hyperventilating. The blood pressure went up from an average of 120 to 123.37 (systolic). We were surprised because this not a big change, however the participants were mostly working on their math before that played the game. We were sure that for many this was less stressful. This is why the numbers were not as high, however when doing the breathing exercises the blood pressure went down from an average of 123.37 to 112 (systolic). Although we were happy with these results, we were concerned that some students had trouble with the breathing exercises and even said that they were dizzy. We looked this up and realized that maybe they were feeling symptoms of hyperventilation. Concentrating on breathing is not easy because we are not used to it. It takes practice and not be done too long at first. If we were to try this experiment again, we would use subjects that are used to breathing exercises and compare our results with other subjects not doing breathing exercises at all. We would also change the game to a more stressful and popular one.

Conclusion:

In conclusion, we said that there would be a 25% increases in blood pressure and pulse when playing the game. Unfortunately, there was little difference seen after playing the game, not even enough to make a clear percentage. However, we hypothesized that their blood pressure and pulse would return to normal when doing deep breathing exercises but it actually did more than that and decreased it by 10%.

Bibliography:

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