CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36029

Project Title

How Does Sound Affect Your Body?

Abstract

Objectives/Goals

I have always been curious about which sounds affect your body or raised your heart rate the most. I thought the more abrupt the sound was, the more your heart rate would increase because it would startle you. I tested 100 people, about 50 men and 50 women, and I played 10 different sounds for 10 seconds and recorded their change in heartrate. All of the sounds were played at the same decibel level and I used all of the same types of headphones. The results were interesting and surprising.

Methods/Materials

Participant wears headphones and places pulse oximeter on right pointer finger, play 10 different sounds for 10 seconds each, record change in heartrate. Finger pulse oximeters, recorder, Panasonic headphones

Results

My average results indicate the biggest positive number is 0.58 (baby crying) and the smallest negative number is -1.81 (Halloween sounds). This means that on average most people respond more to annoying sounds and disturbing sounds. When people hear a baby cry their heart rate will increase and they become stimulated to react to the situation. Conversely, when people hear Halloween sounds their heart rate drops and they are not stimulated enough to react. With regard to ones heart rate and weekly exercise, my study showed the more you exercise the more you will react to sound. However, you can still react greatly to sound with little to no exercise.

Conclusions/Discussion

I hypothesized the more abrupt the sound was, the more your heart rate would increase. My hypothesis was incorrect because first of all, the biggest change was a drop in the participant's heart rate and second of all, the sound that increased the most was an annoying sound. When the testing was complete, I had a new perspective on how sounds affect your heart rate. If your heart rate goes up, you become stimulated. The sounds that stimulated my participants were a baby crying, a woman screaming, and shattering glass. If your heart rate goes down, you were likely startled or fear struck. The sounds that spooked my participants were Halloween sounds, a firing machine gun, dogs barking, police siren, car crash, and nails on a chalkboard. The one sound that did not spark much reaction in my participants was cymbals crashing.

Summary Statement

After testing over 100 people I discovered that emotions play a big part in how people react to sound.

Help Received

I would like to thank my mother and father for guiding and supporting me in the testing process. I would also like to thank my water polo team, my school classes, and my neighbors. Finally, I would like to thank my science teacher Mrs. Culley.

Preliminary