Addressing Respiratory Issues through Sound Compression

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Introduction

The goal of this project was to create a device that would assist in the relief of certain respiratory issues

Created a sonic compression device that can be applied to the body

Obtained data on device effectiveness through survey instruments

Transducer

These are devices that take one form of energy, in this case electrical energy, and change it into another form of energy, in this case mechanical energy.

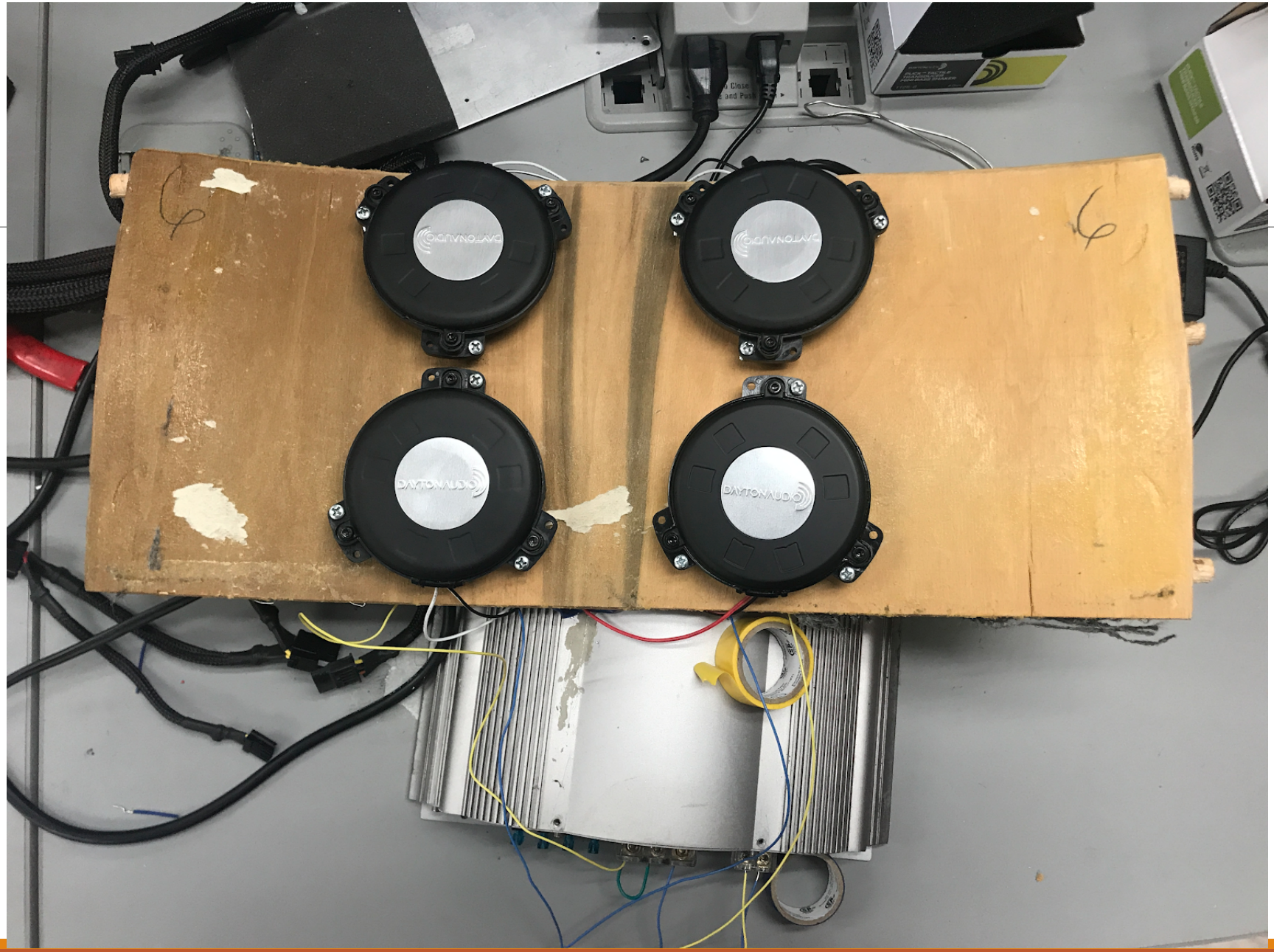
When a voltage is applied at a given frequency, the transducers will start to vibrate

This vibration when applied to the body can alleviate certain respiratory issues

Frequency

In order to test the device we need a program that will be able to generate a specific frequency

Using JavaScript, I have created a small web app that will allow you to enter the desired frequency and a sine wave at that frequency will be played, this is what drives the vibrations of the transducers.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Preliminary Results

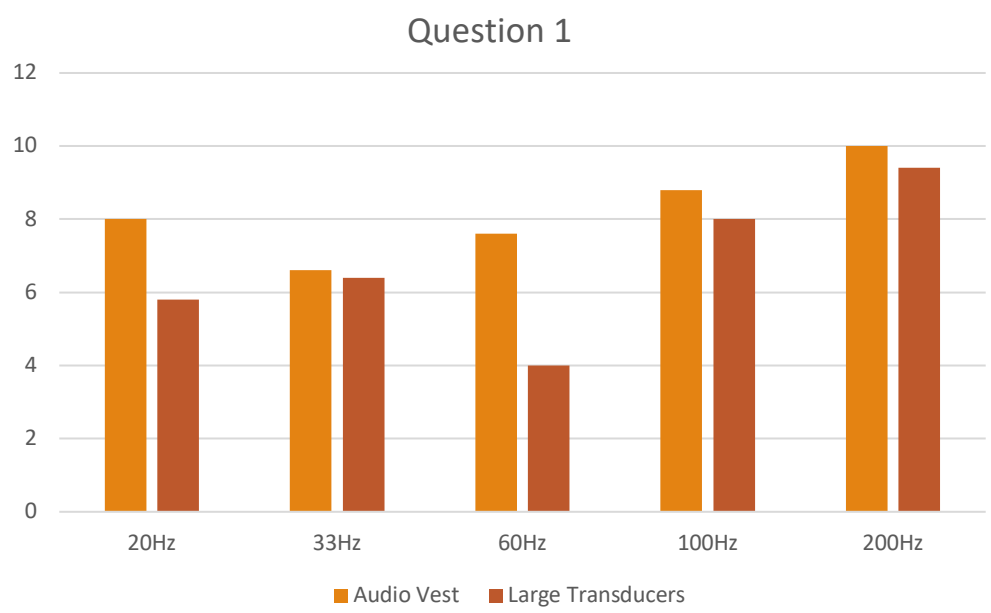
In the survey we used 5 distinct frequencies to test with our makeshift transducer device: 20Hz, 33Hz, 60Hz, 100Hz, and 200Hz

We had 4 questions that would be answered while the device is on, these questions where on a scale of 1-10

Questions

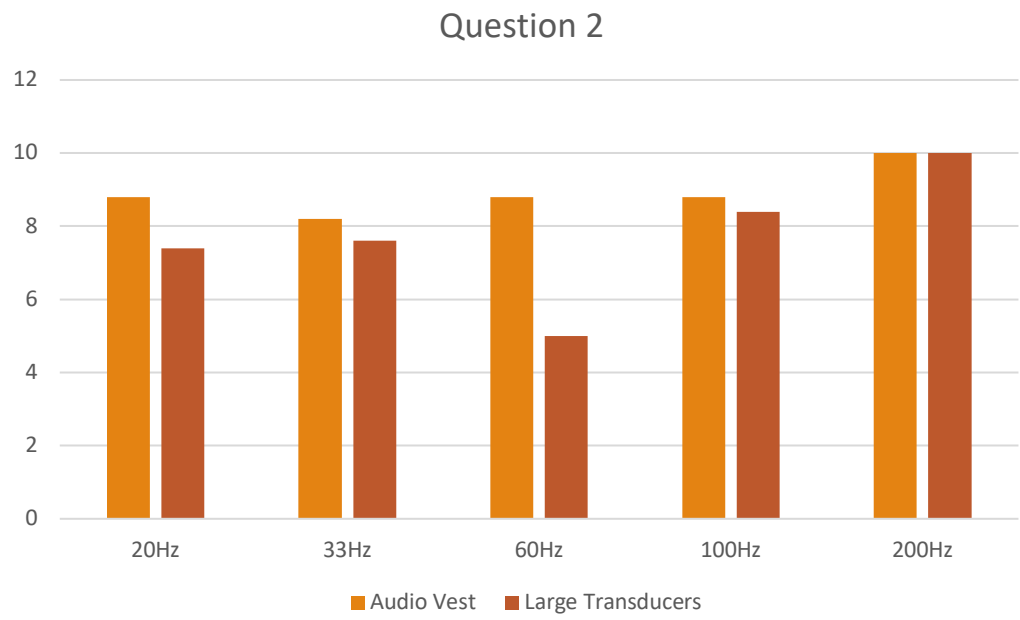
Indicate Your Discomfort from 1-10?

1 being extremely uncomfortable 10 being very comfortable.



Indicate the effect the device has on your breathing from 1-10?

1 being inhibits breathing 10 being no effect on breathing.



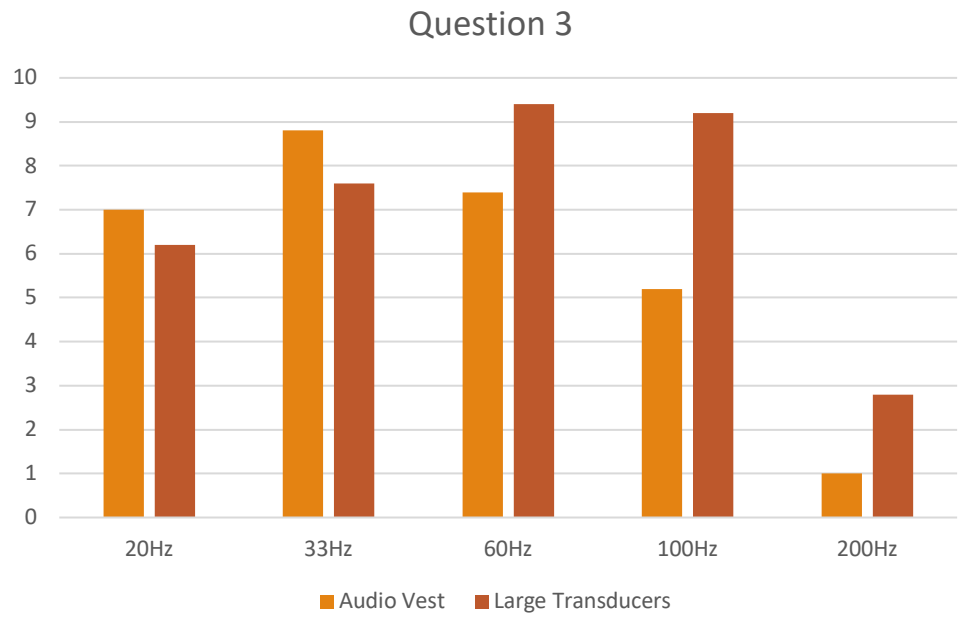
Questions

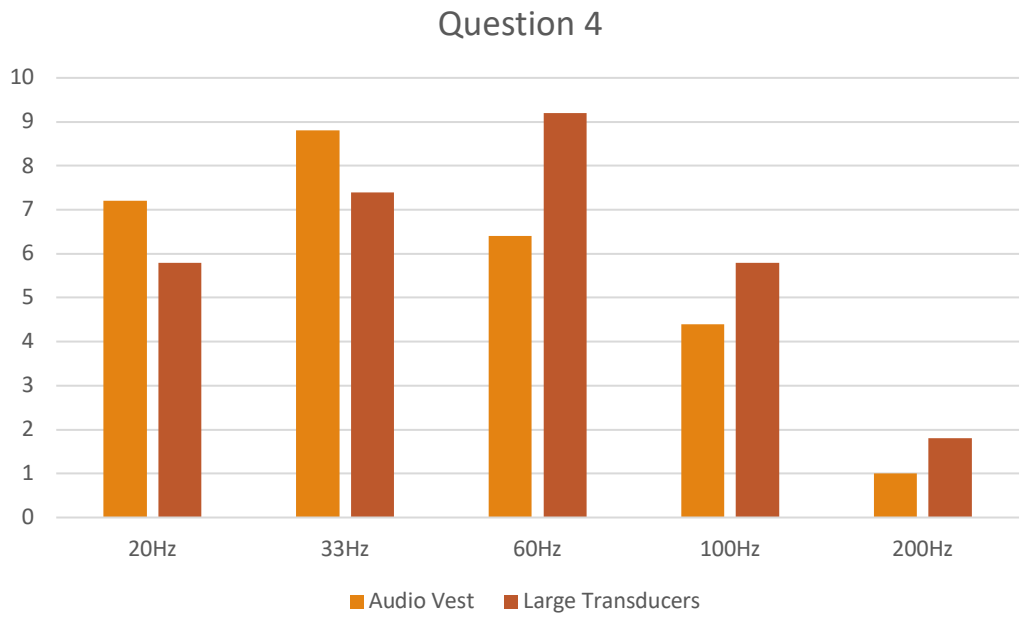
On a scale of 1-10 what do you rate the vibrations you feel in your chest

1 being no vibrations 10 being extreme vibrations

How effective is this frequency at addressing respiratory problem [Not Actual Question Asked]

1 Ineffective 10 Extremely Effective





Future Plans

Using a 3-D printer, we will construct a prototype of frame to hold transducers to body, and survey individuals again.

We will also implement an Arduino in attempts to be able to control the frequency that is fed into the transducers.

Acknowledgments

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