CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
S1211

Project Title
Breath Capacity in Singers

Abstract

Objectives/Goals
The lung capacities of singers and non-singers, were compared in liters, by using a wet spirometer. The participants were asked their age, gender, years of singing experience, genre of music, lung disease and height. The results were averaged and demonstrated a difference of one-third of one liter in the lung capacities of the singers and non-singers. The singers capacities being 0.3 liters greater than the non-singers. This minimal difference indicates that other factors, other than singing, determine the lung capacities of singers.

Methods/Materials
The experiment required the use of a wet spirometer, the tips of balloons as a mouth piece, gloves, three gallons of water, and a note book to record the data. The Cal Poly Pomona choir, Cal Poly's ensemble singers and the Los Angeles Children's Choir from Pasadena were the people used in the sample. A wet spirometer requires three gallons of water to function. After the survey, each participant breathed and then exhaled into the spirometer. This device measured the maximum amount of air a person can expel from their lungs, also known as, vital capacity.

Results
There is 0.28 liter difference in the average of the lung capacities of the singers and the non singers. The singers with the highest lung capacities were the tallest participants. Therefore, the height of the person determined their lung capacity, because the chest cavities of the tall participants had more capacity, then the cavity of the short person.

Conclusions/Discussion
The experiment disproved the hypothesis. The age, gender, and average vital lung capacity of the singers and non-singers were compared. It was found that singers do actually have a greater lung capacity from non singers.

Summary Statement
If a singer uses his or her diaphragm properly, then the volume of his or her lungs will be no different from a non singer.

Help Received
California State Polytechnic University, Los Angeles Children's Chorus, and I-Poly High School (Participants)