

**Greater San Diego Science and Engineering Fair
2015 PROJECT SUMMARY**

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Project Title: Does Water Temperature Affect Vocal Range?

Abstract

Objectives/Goals

The purpose of this project was to determine a way to increase a vocalist's range. To increase the range would improve a singer's ability to hit higher and lower notes.

Hypothesis

Based on research, room temperature water should have the largest effect on the voice. The hypothesis of this project was that drinking room temperature prior to singing would produce the greatest increase in range versus other temperatures of water.

Methods/Materials

Each test subject would first sing the recorded low note and the highest note they can produce. The frequencies of the notes sung were measured with an oscilloscope. The subject would repeat this step after drinking cold water, room temperature water, and hot water. The frequencies of the notes in each case were measured and noted. The range for each subject and condition was calculated by subtracting the low note frequency from the high note frequency.

Results

Subjects had a wider range after drinking room-temperature water than any other condition. The average range before drinking any water was 672 hertz. The average range after drinking room-temperature water was 833 hertz. The average range after drinking cold water was 796 hertz. The average range after drinking hot water was 819 hertz.

Conclusions/Discussion

Although room-temperature water was proven to increase the range the most of the conditions tested, there was not a significant difference among the various water temperatures. The most noticeable factor was the subject being hydrated, as opposed to, not consuming water before singing. This experiment has proved the hypothesis correct as room temperature did have the biggest impact on increasing vocal range.

Summary Statement

Based on the results from testing, room-temperature water will increase the range the most, but staying hydrated is more important.

Help Received

Help was received from my parents Armin and Janice Munévar.