CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)

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Project Number

31388

Project Title

Musical Measures: The Effect of Music on Heart Rate, Blood Pressure, and Mood

Abstract

Objectives/Goals

The purpose of this study was to investigate the effect of music on Heart Rate (HR), Blood Pressure(BP) and Mood(M), i.e. level of anxiety. We hypothesized that listening to music would alter a subject's HR, BP, and M. Specifically, when a subject listened to music with a faster tempo, there would be an increase in HR, BP and M; and conversely, when a subject listened to music with a slower tempo, there would be a decrease in HR, BP, and M.

Methods/Materials

Informed consent was obtained from a total of 20 subjects (Ss), 9 test and 11 control Ss. All Ss had their BP and HR measured 3 separate times, and they filled out a Mood Survey 3 times. Ss in the Test Group listened to 2 selections of music: fast rock and slow classical for a 3 minute period. We used an Automatic Blood Pressure Monitor to measure HR and BP, and an anxiety inventory to measure M. HR, BP, and M were measured after each type of music. There was a 5 minute rest period between each BP reading. Both test and control Ss were tested for the same duration of time. Instead of listening to music, control Ss were instructed to sit and relax.

Results

A small majority of the test Ss' systolic BP decreased after listening to either genre of music, but 7 out of 11 control Ss experienced a similar effect. The changes in diastolic BP appear to be evenly distributed for both test and control Ss. The majority of test Ss that listened to either genre of music had an increased HR. 5 out of 9 test Ss had decreased anxiety after listening to music with a slower tempo, and only one had increased anxiety. That one subject is one of two who expressed a dislike of classical music. After listening to faster tempo (rock music), 5 of 9 Ss had increased anxiety.

Conclusions/Discussion

Results for systolic and diastolic BP were inconclusive. There were no changes noted that did not also occur in the control subjects. The majority of test subjects had increased HR after listening to either tempo of music. These results support our hypothesis in regards to fast tempo music and are contrary regarding slow tempo music. Results do not support our hypothesis regarding music preference. The data on change in Mood after listening to various types of music supports our hypothesis regarding tempo, and does not support it for the effect of music preference. Suggestions for further research are discussed.

Summary Statement

This study investigated the effect of listening to music on both physiological and emotional parameters.

Help Received

Mother helped glue display board; Advisor provided feedback on data analysis.