



CALIFORNIA STATE SCIENCE FAIR 2003 PROJECT SUMMARY

Name(s) Thomas P. Kovilakath	Project Number J0322
Project Title The Key to Relaxation	
Abstract Objectives/Goals My objective for this project was to determine if listening to no music, music in a G major key or music in a G minor key will cause my subjects' heart rate and/or respiratory rate to decrease quicker after six minutes of exercise. I believe that the minor key will cause people to physiologically relax faster than music in a G major key or no music at all. Methods/Materials My project included eight human subjects, all women, ranging in age from 18-53. I put each subject on stationary bike for six minutes. Then I had them sit and relax in a chair while listening to either no music, music in a G major key or music in a G minor key. My subjects were hooked up to an EKG machine and a pulse transducer to record heart rate. At the same time I recorded their respiratory rate using a stethoscope. Every two minutes the data was recorded. Results My results showed that there was no case in which the people relaxed at a greater rate with no music. The average heart rate drop for no music was 27.96%, for G major 28.7%, and for G minor 33.40%. Overall G minor decreased the heart rate more over a six-minute period even though 3 out of the 8 subjects heart rate dropped more with G major. The average heart rate drop was over 5% greater for the G minor and less than 1% for G major than with no music. The average respiratory rate drop for no music was 29.93%, for G major 40.63%, and for G minor 41.53%. Overall G minor decreased the respiratory rate more over time even though the same number of subject (4) dropped more with G major. The average respiratory rate drop was over 10% greater for G major & G minor when compared to no music. Conclusions/Discussion It turns out my hypothesis was accurate in saying that the minor key (# 3: C.P.E. Bach: Largo in G minor) will cause the subjects to physically relax faster than no music or the major key (#6: J.S. Bach: Minuet in G). What was strongly represented in this study was that music's major and minor key caused my subjects to relax (decrease their heart & respiratory rates) faster over several minutes compared to no music at all. And the G minor key did have the greatest overall relaxing affect.	
Summary Statement I wanted to determine if listening to no music, music in a G major key or music in a G minor key will cause my subjects' heart rate and/or respiratory rate to decrease quicker after six minute exercise	
Help Received Used Lab Equipment at Santa Rosa J.C. where my Mother is a professor	