CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Sara M. Yusufaly

Project Number
J1034

Project Title
The Effects of Temperature on Nerve Conduction Velocity

Abstract

Objectives/Goals
The purpose of this experiment was to explore if there is a recognizable difference in nerve velocity and reaction rate at different temperatures.

Methods/Materials
· Using an electromyography machine, the nerves on my 7 subjects' wrists were tested in cold, and normal temperatures (three times for each temperature).
· The nerve temperatures of the subjects were changed by having all subjects place their hands in ice-cold water for 20 seconds.
· Their reaction rate was also tested, by having them catch a falling, vertical yardstick from above, and checking the point at which they caught it.

Results
After gathering all the data, my hypothesis was proved correct. The nerve velocity is affected, as it dropped when the subject's wrists were in a colder temperature. This was shown when the electromyography machine measured a slower velocity at a colder temperature, and the yardstick was also caught later. Thus, the nerve reaction had dropped when temperature decreased.

Conclusions/Discussion
In conclusion, the lower temperatures decreased nerve velocity and reaction rate. For example, Subject A's regular temperature average was 16.3 inches, and in cold temperature was 17.83 inches. Thus, subject A reacted slower in the colder environment. To expand on this experiment, one could test many different temperatures, with intervals in between. Also, instead of only testing adult males, one could also test adult females too. Compare to see if all adults velocities drop, versus only men/only women. Lastly, one could control height. Instead of saying male adults in general, set a requirement of height.

Summary Statement
My project tested the effects of temperature on the nerve velocity, and the reaction rate of 7 male, healthy, adult subjects.

Help Received
Father monitored the electromyography machine; Mother edited the information; Science teacher gave me advice and told me areas that I needed to improve upon; Language Arts teacher showed me the steps of writing a research report; A friend peer-edited my research report; Brother guided me and edited my