CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
Megan Dolan

Project Number
J1212

Project Title
Which Swimming Stroke Raises the Adult Heart Rate the Most?

Abstract

Objectives/Goals
The objective of my project was to determine the swimming stroke that raises the adult human heart rate the most.

Methods/Materials
Ten adult masters swimmers were asked to participate in 50-yard sprints of each of four main swim strokes, on four separate occasions. They counted their pulse for 15 seconds on their carotid arteries using a swimmer pace clock. Their pulses were recorded each day after they warmed up, and after each sprint. A recovery 50-yard easy swim followed each sprint. The order of the strokes rotated in each trial.

Results
Butterfly raised the adult human heart the most. It changed the heart rate by an average of 14.06 beats per 15 seconds. Backstroke raised the heart rate by 13.4. Breaststroke changed it by 11.91. And freestyle was 11.41.

Conclusions/Discussion
My hypothesis that butterfly would raise the heart rate more than the other strokes was proven correct. Freestyle raised the raised the heart rate the least which is most likely due to the fact that when master swimmers are given a choice of which stroke to swim, they seem to always choose freestyle. Therefore, they are more efficient swimming that stroke. Because of my results, I believe that masters swimmers should vary the strokes in their workouts more in order to maximize their fitness levels.

Last year, I performed a similar test on competitive swimmers ages 12-14. Interestingly, freestyle increased their heart rates the most. The heart rate changes in the adult masters swimmers were overall much greater than the youth competitive swimmers.

Summary Statement
My project was to determine which swimming stroke increases the adult heart rate the most in order to improve fitness levels in masters swimmers.

Help Received
Mother helped with project board and transportation to pool for trials.