Greater San Diego Science and Engineering Fair
2015 PROJECT SUMMARY

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Project Title: Comparing a Fencer's Physical Parameters to Their Reaction Time and Accuracy

Abstract

Objectives/Goals

The objective is to determine if there is a relationship between a fencer's height, weight, age, experience, hand dominance, weapon preference, and their reaction time and accuracy.

Hypothesis

The hypothesis of this project states that the 45 year old and older fencers will reach a reaction time .3 seconds faster than that of the 20-30 year old males. The males who have been fencing for at least five years will be 10% more accurate than those who have less than three years of practice. The participants who weigh 150 pounds or less will have an approximately .1 second advantage in reaction time because they can have a faster lunge. The fencers who fence with an epee will be 2-3% less accurate than the foil fencers.

Methods/Materials

After filling out one row from a chart, 60 people had to lunge at an accuracy and reaction time board. The chart asked for them to fill out what their height, weight, age, experience, hand dominance, and weapon preference was. Forty three fencers were given a set distance away from the board, while the other seventeen were allowed to lunge from whichever distance they chose. The people who were tested from a set distance were tested at two different time intervals between cues, 1.25 seconds and .5 seconds.

Results

Overall, the height, weight, age, and experience vs accuracy and reaction time comparisons had positive slopes. This means that a fencer's accuracy increases for every unit (kg., cm., year) added to the measured property (weight, height, age, experience…). Also, the results showed a higher accuracy for left handed, and foil fencers than right handed or epee fencers. As for reaction time, the results showed a decrease in reaction time for every unit added to the measured parameter. The foil fencers, however, had a faster reaction time than the epeeists and the left handed fencers had a faster reaction time than the right handed fencers.

Conclusions/Discussion

The results of this project did not support the hypothesis. The experiment showed that the reaction time on average would go below .82 seconds for fencers who weight over 68 kg (150 lbs.). Based on the comparison of experience and accuracy, people who fence less than three years are 8.07% less accurate than those who have been fencing more than five years. Finally, according to the results, the epeeists were 8.07% less accurate than the foilists.

Summary Statement

Comparing a fencer's physical parameters to their reaction time and accuracy to determine if there are patterns, and if so, what are they?

Help Received

Mrs. Elaine Gillum and my parents helped correct, guide, and improve the project. My head coaches, Tedd Padgitt, Bryan Bishè, and Rose Forcier helped by providing useful information, and a facility for testing. Alexandr Gladkikh helped with graphing the data collected.