



CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

Name(s) Mizna Akbar; Dayna Thai	Project Number S0401
Project Title The Effects of Aerobic Exercise on Semantic Memory	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this study was to investigate whether performing a short amount of aerobic exercise would decrease the amount of false memories produced as result of increased blood flow and oxygen towards the brain. We hypothesized that if healthy adolescents perform short term aerobic exercise, then their rates of false memory production will decrease.</p> <p>Methods/Materials A total of 93 participants (41 males and 52 females) aged 14-18 signed an ethics committee approved consent with the assent of their guardians to participate in the study, and were divided into exercise and control groups. The study required exercise group participants to perform aerobic exercise on a fitness bike until reaching their target heart rate and then maintaining their pace for a short period of time. Participants then performed a false memory test containing 12 semantically associated words in which they had to write as many words as they could remember.</p> <p>Results Analysis was conducted through the comparison percentages of critical words, incorrectly recalled words, correctly recalled words, and the total amount of words recalled between exercise and control groups. Since males and females demonstrated significant variance in their results, they were analyzed independently of each other. The results did not demonstrate any statistically significant correlations between short term exercise and false memory production or the number of words recalled (all p-values for females and males > 0.05). But, males who exercised proved to recall a statistically significant (p-value<0.05) higher percentage of correct words than the control group (the same did not hold true for females).</p> <p>Conclusions/Discussion Due to the false memory recall percentages between exercise and non-exercise groups denoting no significant discrepancy, the hypothesis was not supported by the results. However, though there was no decreased false memory production, males showed improved memory in general after exercising because they recalled a significantly higher percentage of correct words than the control group.</p>	
Summary Statement Our project demonstrated that short term aerobic exercise did not decrease false memory production, but improved memory in general in males.	
Help Received All experimentation and data analysis was performed on our own. Background research was reviewed by psychologists Michael Danovsky and Yvette Segura.	