



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> Maya C. Gonzales	<b>Project Number</b> <b>J0712</b>
<b>Project Title</b> <b>A Shot at Success: Does Exercise before Learning Improve Comprehension and Memory?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> A leading problem in our society is the lack of physical activity in the lives of busy teenagers. Many students need motivation to escape from the pile of homework on their desks to do something active. After reading an article describing a study done at M.I.T. on how exercise improves learning ability, I was motivated to do my own study on whether or not exercise affects learning comprehension and memory in adolescents. The purpose of my study is centered around finding benefits to physical activity beyond staying fit, as well as to examine if the physical activity adolescents typically participate in, specifically team sports, have a positive impact on learning. It is my hope that the set of data I have unlocked in my project will prove to America that exercise is crucial for the body and the mind.</p> <p><b>Methods/Materials</b> The way in which I tested my hypothesis was by teaching ten 8th grade test subjects 5 Japanese words after they had moderate exercise for 1 hour. These subjects had no prior knowledge of the Japanese language. I then tested them 24 hours later on the same words in a matching quiz. The following week, as a control, I taught the same test subjects five new Japanese words at the same difficulty level without prior exercise, and tested them 24 hours later.</p> <p><b>Results</b> The results of my study support my purpose. My hypothesis was that if adolescents exercise before learning and then take a test, they will perform better on the test compared with adolescents who do not exercise before learning. After conducting my experiment, I found that my data highly supports my hypothesis. The average test scores of test number 1 (Exercise-Learn-Test) was 92%, in contrast to the average test scores of Test number 2 which was 56%.</p> <p><b>Conclusions/Discussion</b> I have concluded that my experiment is one that has the potential to alter the way in which people view exercise and its benefits. The data in this project is very relevant to teenagers, and I am confident that this is a new way of thinking about exercise that will lead to further, more advanced studies that people will truly appreciate.</p>	
<b>Summary Statement</b> The purpose of my project is to discover benefits to exercise in teenagers beyond physical health.	
<b>Help Received</b> My father helped motivate the purpose, and my basketball team helped by participating in the experiment as the test subjects.	