



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Alyssa L. Yoshitake	Project Number J0429
Project Title Does Mindset Affect Success in Board Breaking?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to find out if and how a person's mindset affected his/her ability to break boards in tae-kwon-do.</p> <p>Methods/Materials In the experiment, I had participants break three #2 pine boards. They were told that they were breaking a dry/chemically weakened pine (easier) board, a normal pine board, and an oak/chemically hardened pine (more difficult) board in order to induce a positive or negative mindset. After the participants broke/attempted to break all three boards, they filled out a brief survey regarding board breaking. The materials used were 70 #2 pine boards, 70 permission slips and post-break surveys, a video camera, a digital camera, and experienced board holders.</p> <p>Results When the data was sorted by gender, the differences in the importance affects of mindset were easy to see. About 46% of women and 41% of men broke the "dry pine" board, 46% of women and 39% of men broke the regular pine board, and 21% of women and 52% of men broke the "oak" board. When the data was sorted by age or rank, the differences in the importance of mindset was little, if any.</p> <p>Conclusions/Discussion Mindset is important regardless of age, gender, or rank, but the way a successful mindset is achieved is different for both genders. The best type of encouragement for women is typical positive encouragement ("you can do it/this should be easy for you" comments). For men, the best type of encouragement is a challenge ("you can't break that board/very few people can do this" type of comments). These results can be explained by the fact that body mass has a large impact of the difficulty of board breaking. In general, women have less body mass than men, which makes it more difficult when they are first learning to break boards, which gives them more experience with failure, in general, than men. This makes it easier to cause a negative/unsuccessful mindset based on fear of pain or failure on women, whereas many men think that if they use a little more power and speed, they can break a board that is more difficult.</p>	
Summary Statement Through this experiment, I hoped to show whether or not mindset affected a person's success in tae-kwon-do board breaking and in what ways different mindsets affected different genders, ages, and ranks.	
Help Received My tae-kwon-do instructor helped organize the break-a-thons where I collected the data and answered my questions. My mom helped film several board breaks (with informed consent of the board breaker) and helped organize the break-a-thons. Home Depot donated the #2 pine for people to break.	