



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Lucy A. Conover	Project Number J0307
Project Title What's the "Pointe" of an Uncomfortable Pointe Shoe?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I love to dance en pointe. It is my passion, but during every leap, rise, and turn, I ache with discomfort. This motivated me to engineer a better safer, cushion for your toes when en pointe! Based on my research on pointe shoe comfort, I think my test subjects will prefer to wear my sponge cushions instead of not wearing them at all.</p> <p>Methods/Materials I made a non-toxic cushion for pointe shoes that was thick to provide comfort, but thin to feel the floor. It is small so dancers would not have ill-fitting shoes. I engineered my cushions from plant-based sponges to be placed under the toes, where the most force is applied. While dancing en pointe, the test subjects (ages 11-17) executed selected ballet steps with the cushions and without. The test subjects were randomly assigned to dance with the cushions first, or not. They filled out a comfort assessment form after each level of the trial. A comfort rating of 1 meant it was uncomfortable, and 10 meant they felt no pain.</p> <p>Results For the test, the average comfort ratings were 6.9 (without cushions) and 8.7 (with cushions). The test subjects preferred the cushions 26.1% more that not wearing them at all. For the test there were 20 subjects, of that 20, 15 preferred to wear the sponge cushions (because their comfort ratings were higher), four of them preferred the cushion equally, and one person preferred to not wear the sponge cushions. The most commonly chosen (by the test subjects) comfort rating without cushions was a 7, and the most common chosen comfort rating with cushions was a 10.</p> <p>Conclusions/Discussion To conclude, many ballerinas suffer from discomfort. Injuries, ill-fitting shoes, and the wrong padding may be the reason why. A plant-based sponge toe cushion is a unique and earth friendly solution to other toe pads, plus it is a renewable resource. My hypothesis was proven correct. My sponge cushions are more desirable among dancers. All average comfort ratings were higher when the cushions were worn on the dancers feet.</p>	
Summary Statement Creating a safe toe cushion to alleviate the discomfort of pointe shoe dancing.	
Help Received My teacher helped me with my timeline and was my mentor, my dance instructor at school let me use her studio and class time to test subjects.	