



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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| Name(s) Troy C. Romana | Project Number J2112 |
| Project Title Tennis Shock Absorbers: Bad Vibes? | |
| Abstract Objectives/Goals Objective/Goals: Tennis players worldwide use tennis shock absorbers. They believe that a reduction in racket vibrations help them play better. But do the shock absorbers actually absorb the vibrations? This experiment has tested multiple racquets and absorbers in order to see if the absorbers reduce vibrations significantly. Methods/Materials Methods/Materials: The experiments used 3 different tennis racquets and shock absorbers, a tennis ball machine, and a program called Praat. Each shock absorber was made of different materials. In order to test the vibration, the sounds of the balls impact of the racquet were recorded and run through Praat to get their frequency readings. Each racquet was tested once without the shock absorber, and three times with. There#s a repetition of 25 balls per absorber. Results Results: There were a total of 300 measurements, and 100 per racquet. When the racquets were tested without a shock absorber, the sound intensity had ranged from 3500 Hz to 3900 Hz Shock absorber #1 had dropped the intensity by about 100 Hz # 150 Hz, Shock absorber #2 had dropped it from 175 Hz to 250 Hz, and shock absorber #3 had the intensity drop approximately 200 Hz to 325 Hz Conclusions/Discussion Conclusions/discussions: Based off this data I can conclude that the Commercial shock absorbers could not absorb any significant amount of vibrations, and that the original hypothesis was incorrect. The hypothesis had predicted 60% drop in vibration, but the data has shown there to be a 14% drop in vibration. This was not a lot of vibrations, and it shows that the absorbers may not be useful to the player. i can also conclude that rubber is the best material of the three to dampen vibrations with. Also, it is possible the racquet could affect the absorbers usefulness. | |
| Summary Statement It is about whether or nor tennis shock absorbers work. | |
| Help Received Mom helped with report; Dad helped with testing; ;Bob Sandler for loaning a ball machine | |