



CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

Name(s) Markus Fleischer; Robert Smith	Project Number J0308
Project Title Wonderful Whiffle Bats: Which Is Best?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to determine if plastic Whiffle ball bats could be modified, to make them hit a plastic Whiffle ball further.</p> <p>Methods/Materials Official plastic Whiffle ball bats: Bat-1, was unaltered. It was the control bat. Bat-2, was cut open at the end, filled with bouncy super balls, and resealed with Duct tape. Bat-3, was filled with spray foam and resealed with Duct tape. Bat-4, was cut open, and filled with a broomstick core, and Duct tape. Bat-5, was wrapped with Duct tape. A bat-swinging machine was constructed to apply exactly the same amount of force to each bat swing during the trials. Each bat was placed in the bat-swinging machine in exactly the same way. The tension of the spring was the same for each trial, because the machine was wound to the exact same position before each swing. This is how we controlled the "swing strength" variable. Each bat hit the same ball 20 times, off the same batting tee, for a total of a 100 trials.</p> <p>Results Bat-1 hit the furthest, averaging 16'7.4" and was the lightest at 5oz. Bat-1 was our control bat. Bat-2 hit the shortest distance, averaging 11'10.8" while being 2nd heaviest at 17oz. Bat-3 came in 3rd for distance, averaging 15'1.6" while being the 3rd lightest at 7.3oz. Bat-4 came in 4th for distance averaging, 12'11.6". Bat-4 also was the heaviest bat at 18.5oz. Bat-5 came in 2nd for distance, averaging 15'8.9". Bat-5 was the 2nd lightest bat that we tested at 6.8oz.</p> <p>Conclusions/Discussion We were surprised that the control bat-1 hit the Whiffle ball the furthest. Neither the taped bat-5, nor the foamed bat-3, out did the control bat. Therefore, our hypotheses were not supported. The control bat was the lightest of all 5 bats. We think that because it was the lightest bat, it generated more bat speed, while in the bat swinging machine. This made the ball go farther. This experiment proves that our modified bats were not as effective as the original Whiffle Bat! Further experiments might have us test the bats again. We could apply more force, by increasing the tension of the bat-swinging machine's spring, simply by winding it tighter, to each swing to see if we would get different results. Finally, another way to test the bats would be to calibrate our bat-swinging machine, using a radar gun, to see if there would be different results if we were able to swing all 5 bats at exactly the same bat speed.</p>	
Summary Statement We wanted to find out if plastic Whiffle ball bats could be modified to hit plastic Whiffle balls further.	
Help Received The Moms helped cut and hot glue the pictures and text on to the display board. Markus' dad helped us with the power tools during modifications of the bats and the construction of the bat-swinging machine. We did all the testing and measuring ourselves.	