CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J2227

Project Title
The Comparison and Design of Golf Balls

Abstract

Objectives/Goals
This study compares hexagonal dimples versus spherical dimples on golf balls to see if the shape of the dimple makes a difference in the distance that the golf ball travels. The Hypothesis was that Callaway HX Hot Plus golf balls engineered with unique hexagonal dimples would go farther than Nike Power Distance Soft with conventional spherical dimples.

Methods/Materials
Two players, a professional and an amateur, used 2 types of golf balls: Callaway HX Hot Plus and Nike Power Distance Soft. Using 2 types of clubs, a 7 Iron and a Driver, each player hit 3 golf balls from each brand. This procedure was conducted 3 times and labelled Experiment 1, 2, and 3.

Results
In all 3 trials, when the professional hit the balls with a 7 Iron, Nike went farther, whereas Callaway had greater distance when hit by the amateur. When both the pofessional and the amateur player hit the golf balls with a Driver, Callaway went farther in all three trials. A significant lift was noted when the professional hit Callaway golf balls with the Driver.

Conclusions/Discussion
My hypothesis was proven mostly correct, except when the professional hit the golf ball using a 7 Iron. Nike may have gone farther since it is specially created for players with fast swing speeds. The amateur player had a slower swing speed decreasing the distance traveled by the Nike ball. Callaway's core is specially engineered to give great distance to a wide variety of swing speeds. When players use their Driver, they tend to have a slower swing speed, so when the professional hit the golf balls with his Driver, Nike's distance decreased, whereas Callaway gave great distance. But the huge difference that was seen in the distance that the two balls traveled cannot be attributed to only these reasons as both the balls have specialized cores. Callaway's unique hexagonal dimples which remove flat spots from the balls surface, reducing drag and increasing lift for more distance could be the main reason for the difference. Hexagonal dimples cover 100% of the surface of the ball as compared to spherical dimples which only cover 86% of the golf ball. These unique dimples give you a more symmetrical golf ball that goes farther. To conclude, there are golf balls for every type of person, one's that give you distance, one's for precision, and one's that give you spin to varying degrees, but if your looking for distance, then I recommend Callaway HX Hot Plus.

Summary Statement
My project compares the shapes of dimples (hexagonal versus spherical) on golf balls to see if their shape makes a difference in the distance that the golf ball travels.

Help Received
Joe Haggardy helped conduct the experiment, and Mother helped me with the display board.