



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Cory R. Hunter</b>	<b>Project Number</b> <b>J0209</b>
<b>Project Title</b> <b>Experimentation in Elasticity: How Can Temperature Affect a Golf Ball's Flight?</b>	
<b>Objectives/Goals</b> If I change the temperature of a golf ball from 0 °C to 40 °C in 10 degree increments, how will this ultimately affect ball flight distance and elasticity. The goal of the project is to determine whether it would be beneficial to a golfer to either keep the golf balls "cold" or "hot" to improve performance.	
<b>Abstract</b> <b>Methods/Materials</b> I will hit at least 30 new golf balls at each temperature in no wind using a #6 iron in a blind study with 2 other people to complete the tasks. Exp. 1 measures ball flight, Exp. 2 measures % elasticity. <b>Supplies</b> 48 New Nike One Golf Balls, Golf mat & tee, 6 iron, 200 ft tape measurer, Garden flags, Markers, Insulated containers, Thermometers, Water baths & ice, Towels, Ladder, Camera & computer <b>Procedure</b> 1 Label balls; 2 Choose a field; 3 Hit all golf balls early in the morning. No wind, constant temp.; 4 Create hitting field with distance grid, and a hitting mat; 5 Use a #6 iron for all hits; 6 Measure ball temp. indirectly by measuring water temp; 7 Hit balls in random order determined by another; 8 Measure flight & record data. <b>Exp. #2</b> 1 Drop golf balls of different temps. from 100 inches onto cement & measure the height it bounces back up on 1st bounce (% elasticity). 2 Record data, and graph results	
<b>Results</b> Exp. #1 shows that as the temperature increased so did the flight distance. My data charts also show that there was a steady increase until the temperature reached 40 °C. Exp. #2 confirms that the warmer the ball, the more elastic it is and the higher it will bounce based confirming the hitting distance of the balls in Exp. #1	
<b>Conclusions/Discussion</b> My original hypothesis is not supported by my data measurements. My data showed that the warmer the golf ball, the farther it traveled. The balls are more elastic the higher the temperature in my experiment. Higher temperatures increased the elasticity of the balls. This may be because the ball had a higher compression value. Golfers in cold weather would increase golf distance if they could keep their golf balls warm and exchange them before starting a new hole.	
<b>Summary Statement</b> This project tests the effects of golf ball temperature on the golf ball flight and the elasticity of the ball.	
<b>Help Received</b> Parents and brother helped to conduct the experiments as measurer's and father provided science equipment.	