Boy, Do Golf Balls Fly!

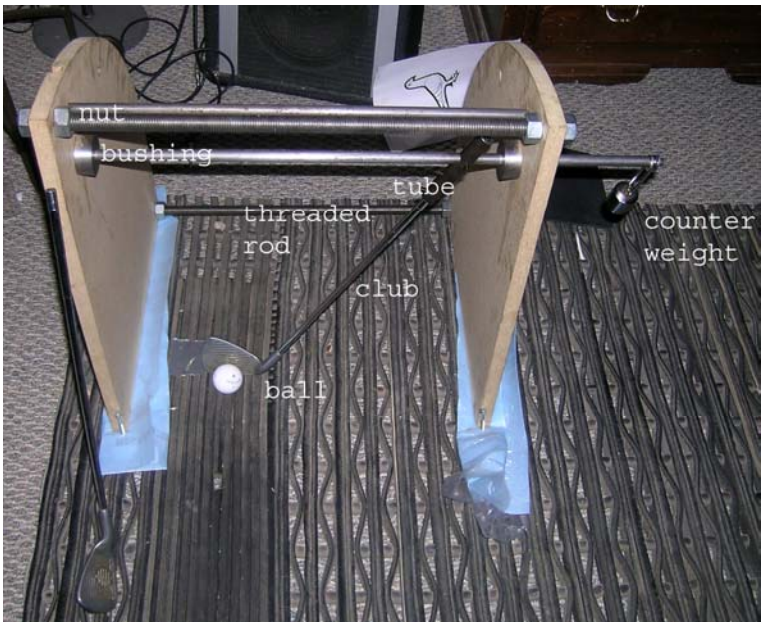

Figure 1: Golf Hitting Mechanism

Hypothesis

If the Titleist Pro V1 golf ball is the number one golf ball it will travel the farthest consistently after being hit by a 4/5 and a 7/8 iron ten times.

In this experiment, there will be 3 balls tested: Titleist Pro V1, Nike One, and Callaway Hex. The distance traveled by the ball will be measured by a tape measure in cm. The clubs will be changed after each ball has been hit 10 times. A mechanism that will hold the club is used so the balls can be hit consistent each time. The golf balls are brand new so there will be no question about the condition of the ball and how it will affect the distance travelled by the balls.

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Introduction

Golf is one of the world's greatest sports. It is an awesome game that you can play all of your life. This is why it is a good topic for a science project.

This project will be measuring the distance travelled by the three leading brands of golf balls: Nike, Callaway, and Titleist. Titleist has claimed to be the number one golf ball. It has a soft fast core. The inner core is 1.55 inches in diameter, it is surrounded by a spin reducing firm casing. The diameter is 1.55 inches. The Nike's extremely hot oversized core results in higher initial velocity for more aggressive swing speeds. The Callaway has a .025-inch urethane cover that surrounds the mantle layer, and there is a chemically re-engineered core. In this project each ball was hit ten times one after the other with two different clubs. The ball was hit with a hitting mechanism that hit the ball consistently.

This project is related to the real world because many people want to know if they should be spending $70.00 Canadian for 12 golf balls. The significance of these golf balls is that professionals on the PGA use these balls and their companies claim that the balls are meant for distance.

Materials

In this experiment three different types of golf balls were used: Titleist, Nike, and Callaway. Each ball is stated to be the best of its' manufacturers for distance. To hit the ball a hitting mechanism was used. (See figure2) In order to make this mechanism the following materials were used: Two different golf clubs, a 7/8 iron and a 4/5iron.

Two pieces of threaded rod, eight nuts, two pieces of half inch diameter solid rod, one for the swinging mechanism that holds the metal tubing at a 60 degree angle with a split pin so the club is parallel to the ground, and one for the stop. The swinging rod has two bushings at each end so there is no side motion when swinging. The metal tubing has two setscrews to hold the clubs. There are two sides made out of pressboard, they are held together with two pieces of threaded rod and 8 nuts.

Method

1. Purchase the three leading golf balls: Titleist, Nike, and Callaway.
2. Build a hitting mechanism that is able to hit each ball consistently each time (See figure 1).
3. Place ball in desired area below hitting mechanism.
4. Secure bar through both holes in each side of the hitting mechanism.
5. Make sure weight is tight.
6. Determine how far the ball will roll so the mechanism was in the right location for using carpet and artificial green in basement.
7. Release allowing the club to hit the ball and follow through.
8. Establish the distance travelled including roll with tape measure.
9. Establish the distance travelled in air. Using sand and a tape measure.

Results

Distance Ball Travels (in cm) including roll for 4/5 Iron

Trial	Titlist	Callaway	Nike
1	1116	1143	1120
2	1125	1155	1107
3	1132	1155	1108
4	1116	1155	1136
5	1129	1155	1152
6	1108	1138	1150
7	1122	1150	1155
8	1131	1162	1155
9	1131	1155	1111
10	1136	1162	1125
Average	1124.6	1153	1131.9

Distance Ball Travels (in cm) in Air for 4/5 Iron

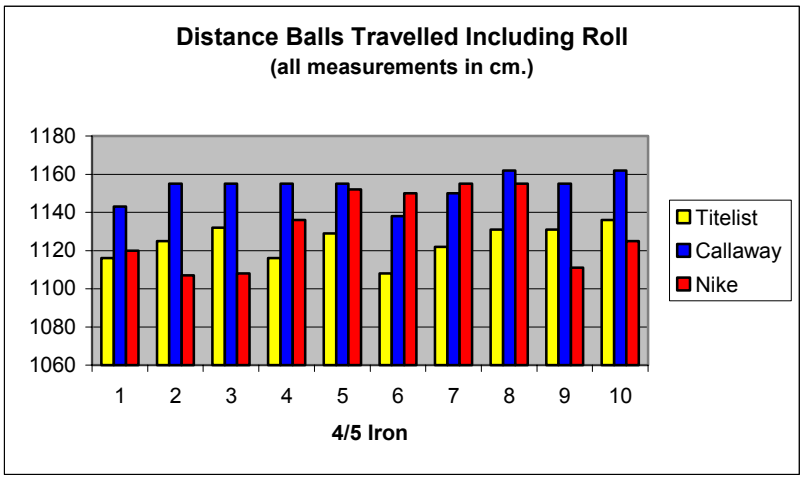
Trial	Titlist	Callaway	Nike
1	180	170	183
2	174	167	182
3	172	181	179
4	180	179	179
5	179	174	184
6	176	166	176
7	174	181	173
8	169	181	184
9	177	178	178
10	168	185	181
Average	174.9	176.2	179.9

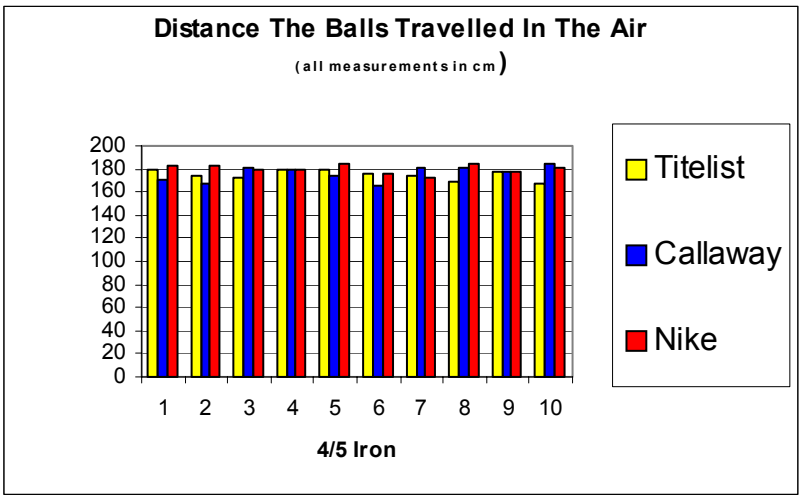
Distance Ball Travels (in cm) Including Roll for 7/8 Iron

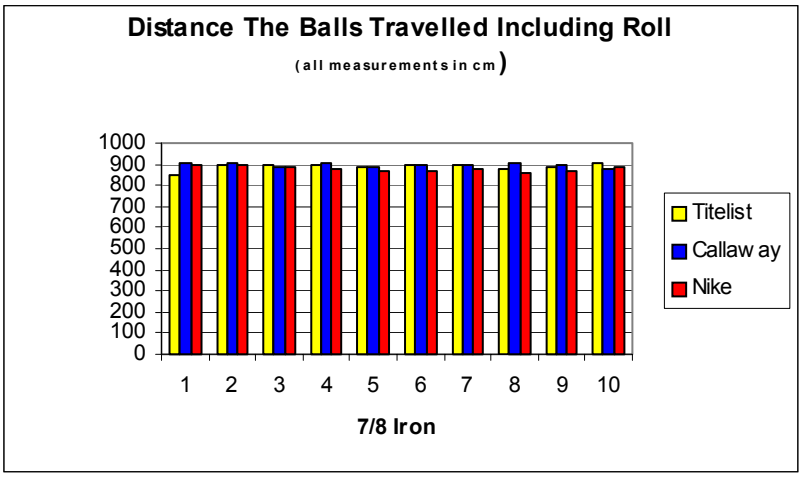
Trial	Titlist	Callaway	Nike
1	852	909	894
2	900	904	899
3	893	886	890
4	899	907	882
5	884	883	869
6	893	894	869
7	899	896	880
8	878	901	863
9	887	895	872
10	901	877	883
Average	888.6	895.2	880.1

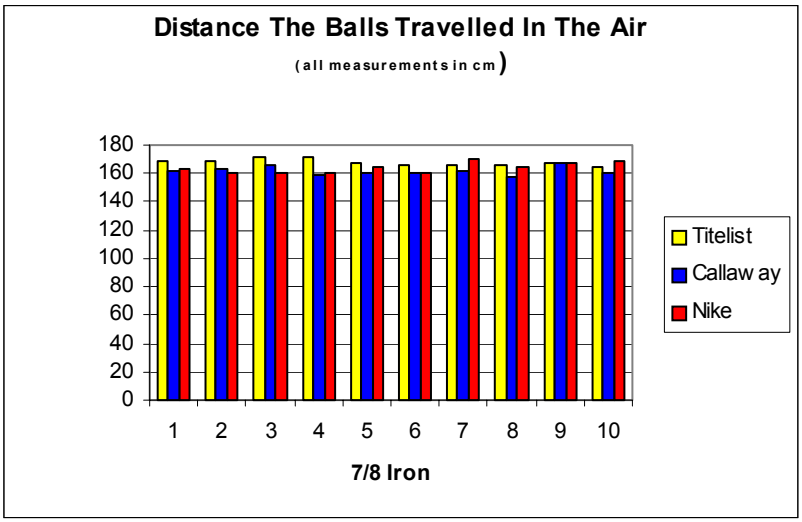
Distance Ball Travels (in cm) In Air for 7/8 Iron

Trial	Titlist	Callaway	Nike
1	169	162	163
2	169	163	161
3	171	166	161
4	171.5	159	161
5	168	161	165
6	166	161	160
7	166	162	170
8	166	158	165
9	167	168	167
10	165	160	169
Average	167.85	162	164.2


Distance Balls Travelled Including Roll
(all measurements in cm.)
1180
1160
1140
1120
1100
1080
1060
1 2 3 4 5 6 7 8 9 10
4/5 Iron
Titelist
Callaway
Nike


Distance The Balls Travelled In The Air
(all measurements in cm)
200
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10
4/5 Iron
Titelist
Callaway
Nike


Distance The Balls Travelled Including Roll
(all measurements in cm)
1000
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10
7/8 Iron
Titelist
Callaw ay
Nike



Conclusion

It can be concluded that in this project the Titlist was estimated to travel the furthest with roll. It was discovered that it might be the best in the world if you can control your spin, but it is not the longest in the world. It has been observed that this ball has more spin causing the ball to slow down in a smaller amount of time. This is measured by the trajectory (Distance the ball travels in the air) and how far it travels with roll. The Titleist had the highest trajectory yet it had the shortest distance.

To make this experiment more accurate, it could have been tested in the summer on real grass. This may have varied the results. If it had been real grass the balls would have travelled a shorter distance.

A video camera could have been used to make the trajectory test more accurate. Sand in a pan was placed along side a tape measure and when the ball landed it would make a mark. You would then take a ruler and measure from the back of the mark to the position the ball was hit from and you would have your distance travelled in the air.

The hitting mechanism could have been bigger and hit harder for more accurate results. It had a very slow swing path. If the balls had of been hit harder the results may have varied. The Callaway has the lowest trajectory but averaged the longest distance. Callaway did not travel as far in the air as the Titleist and Nike ball did but recorded the furthest roll. This is because it has lower trajectory and causes the ball to have more roll.

This project has showed that the Titleist golf ball is not the farthest hitting ball and that Callaway is the long ball of the group. Therefore based on the results of this experiment it would appear Callaway is the best ball for overall distance.

Bibliography: Titleist.com**,** Nikegolf.com**,** Golfer's Digest