Sample Research Plan

The Difference in Elasticity between a New and Used Softball

Problem: To determine how the elasticity of a softball changes as it has been used. To determine if using a new or used softball will give the batter a more efficient hit.

Hypothesis: If a softball is unused, then the ball’s elasticity will be higher.

Materials:
- Pitching Machine
- Extension Cord
- A brand new 12 inch softball
- One piece of a wooden board with the dimensions 2 inches by 14 inches.
- One piece of plywood with the dimensions 2 inches by 8 inches
- 3 feet long rope
- Tape Measure
- Ruler
- Utility Knife
- Metal Tube (3 feet tall and 6 inches in diameter)
- Fence
- Duct Tape

Procedure:
1. Measure the tube using a tape measure.
2. Attach the ruler onto the metal tube using the duct tape.
3. Using the utility knife, make two slits (2 inches from the top) on each side of the tube.
4. Using the utility knife, cut a lower case “n” shape on the side of the tube, 6 inches high and 2 inches wide, right beside the measurement markings.
5. Slide the 2 inch by 8 inch plywood through the slits.
6. Plug the pitching machine into the outlet using the extension cord.
7. Place the pitching machine 40 feet away from the fence in a straight line.
8. Place the 2 inch by 14 inch board vertically in line with the pitching machine.
9. Fasten the top and the bottom of the 2 inch by 14 inch board to the backstop using the 3 foot rope.
10. Place the softball on the plywood in the tube.
11. Slowly slide the plywood out of the slits in the tube.
12. Let the ball fall on its’ own 10 times.
13. Measure the height of the first bounce of the ball for each of the 10 times.
14. Record each height.
15. Place the plywood back into the tube.
16. Start the pitching machine at 60 miles per hour.
17. Place the ball on the pitching machine.
18. Hit the board 20 times with the ball.
19. Repeat steps 10-18, 4 times.
20. After all of the heights have been recorded, find the average height of each time the ball hit the board.
21. After the ball hit the board 100 times, turn the pitching machine off, and take the board off the fence.