

“Wingshot” Experiment

Question

How does Newton's second law of motion relate to peregrine falcons in the context of sexual dimorphism?

Hypothesis

Experiment

Materials

- 3 Balls with different masses
- Measuring tape
- Stopwatch
- Tape
- Elastic
- Something to stretch the elastic between (i.e. 2 chairs/desks/etc.)
- Books/pool noodles/etc. to set up like bumpers in a bowling alley to keep the balls from rolling all over
- (Optional: paper cups and cutouts of eggs and pigs)

Instructions

1. Take an elastic and stretch it between 2 chairs/desks/etc. to make a taut slingshot 12 inches across. Put a piece of tape 5 inches behind the slingshot as the point to pull back to each time.
2. Set up books/pool noodles/etc. as bumpers to make a "track" in front of the slingshot.
3. Set up measuring tape along the track and measure out a distance of 5 feet. Put a piece of tape at that mark. (Optional: set up a small cup tower at the mark with cutouts of eggs and pigs.)
4. Figure out the different masses of the balls.
5. Put each ball individually into the slingshot, pull it back to the tape, and let it go, starting the stopwatch once it is let go and stopping the stopwatch once it reaches the 5-foot mark.

6. Repeat 3 times for each ball.

Analyze Data

Ball 1

Mass:

Trial 1 Speed:

Trial 2 Speed:

Trial 3 Speed:

Ball 2

Mass:

Trial 1 Speed:

Trial 2 Speed:

Trial 3 Speed:

Ball 3

Mass:

Trial 1 Speed:

Trial 2 Speed:

Trial 3 Speed:

Draw Conclusions

What is the relationship between the mass of the ball and the speed of the ball? How does this relate to sexual dimorphism in peregrine falcons with regard to the males being the primary hunters?