



Curiosity Guide #405

Basketball Science

Accompanies Curious Crew, Season 4, Episode 5 (#405)

Rising Inflation

Investigation #5

Description

Bounce that ball!

Materials

- 3 basketballs, inflated at different amounts; or 1 basketball that can be deflated a bit before each test
- Air pump
- Inflation needle
- Air pressure gauge
- Meter stick

Procedure

1. Use the air pump and inflation needle to inflate the ball to the suggested pounds per square inch, or PSI, printed on the ball. Standard air pressure is usually 8 PSI in a basketball.
2. Check the air pressure with the air pressure gauge to make sure the first trial is done with 8 PSI in the ball.
3. Prepare the other two balls with increasingly less pressure, or use the same ball and let more air out of it with each test.
4. One at time, drop each ball from the height of the meter stick and record how high the ball bounced.
5. How can you explain what you discovered?

My Results

Explanation

When a ball strikes the floor, the collision could be elastic or inelastic. The more elastic the collision, the better the bounce, because more of the energy that was in the ball transfers back to the ball during the collision. If the ball is flat, some of the energy will transfer into the reshaping of the ball, which makes for a much smaller bounce. When a ball is pumped up, air molecules are added to the inside of the ball. The air molecules are constantly moving and colliding with each other and with the surface of the ball. We call those collisions pressure, and the ball gets much firmer. The firmer the ball, the better the elastic bounce. If you don't have a pressure gauge, a quick way to test the ball's bounce is to hold it at shoulder height and drop it. If the ball bounces back to the level of your hips, the ball is well inflated.

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