



Curiosity Guide #304

Football Science

Accompanies Curious Crew, Season 3, Episode 4 (#304)

Bouncing Candy

Investigation #2

Description

Can you predict how high a small candy will bounce?

Materials

- Tic Tac candies

Procedure

- 1) Hold a Tic Tac above the table and drop it.
- 2) Notice how high the Tic Tac bounces on the first bounce.
- 3) What happens after multiple bounces?
- 4) Did one of the bounces go higher?

My Results

Explanation

You might have noticed that the candy suddenly bounced much higher. This higher bounce made the candy look as though it had more energy. In fact, it doesn't. When an oblong object such as a Tic Tac falls, the Tic Tac has a certain amount of kinetic energy when it strikes the table.

If the candy has a low bounce, it is also likely to be spinning very quickly. This is called rotational kinetic energy. Some of the candy's overall energy is in the rotation, which lessens the potential energy against gravity. Then the candy has a small bounce. However, if the candy hits the table and stops rotating, the energy transfers into potential energy and bounces really high. A similar phenomenon happens when a football strikes the ground. The football's unpredictable bounce makes the game that much more interesting to watch.

Something to think about: Have you ever heard of a football being called a pigskin? Well, the funny thing is that the football was never made from the skin of a pig. The original football was actually made from the bladder of a pig, which closely resembles the shape of current footballs. Over time, the prolate spheroid shape has slightly transformed, extending its length. This makes the ball easier to carry in the player's arm, and throwing the longer football is also easier.

"I'm open! Throw me the pig bladder; I mean the pigskin; I mean the football!"

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