



Curiosity Guide #507

Soccer Science

Accompanies Curious Crew, Season 5, Episode 7 (#507)

Banana Kick

Investigation #7

Description

You may go bananas over what this kick can do!

Materials

- Soccer ball
- Soccer field line
- A friend or camera with tripod

Procedure

- 1) Have a friend stand behind you or set up a camera in line with the field line.
- 2) Place the ball on the line. Try to do a banana kick. A banana kick is an off-center kick that makes the ball curve or suddenly change direction before dropping to the ground.
 - a. Approach the ball on an angle.
 - b. Have your energy start from your hip.
 - c. The toe of your support foot will aim slightly to the side of the target, where the ball will travel first before the curve.
 - d. Contact the ball with your instep, which is the side of your foot.
 - e. Contact should be at the lower half of the ball and slightly to the side.

- f. Continue your leg movement, slicing across the body, and follow through.
 - g. Lock your ankle and point your toes upward with the follow-through to get both a side spin and a bit of a top spin.
- 3) Ask your friend, "What did you notice about the ball's pathway?"
Or, take a look at the camera recording and answer the question for yourself.

My Results

Explanation

The benefit of the banana kick is the curve that can result from the ball's rotation, called the Magnus Effect. When the ball first lifts off the ground, the position of the foot causes the ball to begin to spin on its axis while also traveling forward. The ball travels straight at first, but as it slows down from air resistance, something incredible happens. The ball begins to hook. This is because the air on one side of the spinning ball is moving faster than the air on the other side. The particles on one side get deflected down, which causes the ball to go in the opposite direction. This is similar to how a rudder deflects the water on a sailboat and causes the boat to turn in the other direction. Try standing exactly 180 degrees to the goal and try the banana kick to get the ball to hook in the goal. With practice, this can be a very powerful offensive move, even hooking the ball around a human wall on a penalty kick.

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