



Curiosity Guide #507

Soccer Science

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

Toe-Kick Trials

Investigation #5

Description

Put your best toe forward!

Materials

- Soccer balls
- Cones
- Golf putter
- Golf ball
- Measuring tape

Procedure

- 1) Measure off a distance of twenty yards from a starting point. You could use the sideline on an athletic field.
- 2) Place 2 cones at the mark, about 5 feet apart.
- 3) Try kicking a soccer ball from your toe. This is called a Toe Kick in soccer. Your goal is to kick the ball between the cones.
- 4) Try again, using the side of the foot.
- 5) What did you notice?

My Results

Explanation

In a toe kick, a player is able to strike the ball with a lot of force because all of the energy is directed at a very small area. However, that small impact area makes controlling the ball's direction more difficult. You may have also noticed that a toe kick hurts much more because all of that force is contacting your toe. When you use the side of your foot, there is more area contacting the ball. The larger area of contact cradles the ball for better directional control and also hurts less. However, the larger area of contact also limits the amount of energy transferred to the ball. You probably noticed that your toe kick traveled further than the side kick, but the toe kick was not as accurate.

Compare what you learned to a golfer using a golf putter. The player uses the side of the putter to control the direction the ball travels. Using the end of the putter instead would make hitting the ball into the hole much harder.

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