Curiosity Guide #610
Bowling Science

Accompanies Curious Crew, Season 6, Episode 10 (#610)

Pendulum Power

Investigation #3

Description

Use your pendulum power to bowl a good game!

Materials

- Bowling ball
- Bowling lane
- Friend

Procedure

1) Pick up the bowling ball and hold it in front of you.
2) As you take your four-step approach, let the ball swing back.
3) Gradually bend your knees and gently release the ball.
4) Was the ball in control? Did the ball have a lot of energy on the release?

My Results

Explanation

Bowling balls require momentum to effectively transfer energy to knock down the pins. The momentum comes from a combination of the pendulum motion of the bowler's arm swinging back and the mass of the ball. Momentum is the product of mass times velocity. This requires good timing as you execute your steps toward the foul line and swing. Good bowlers need to know that the release should not be forced, but is just a natural release that lets gravity and the energy from the swing move the ball. A good tip is to keep your arm relaxed and let it swing like the pendulum of a clock. To avoid dropping the ball, keep the hand behind it. Some collegiate bowlers will add a bit of tape to their thumbs to create a bit more friction and prevent a premature release. This also means you do not have to be big or strong to be a successful bowler. Success is more about timing.

Think about this: Anthropologists believe that bowling has been around for a very long time. Modern engineers have continued to make the game more interesting. The basic idea has always been the same: see how many pins you can knock down with a ball. But there is a lot of science involved, especially when you take advantage of momentum from the mass and velocity of the bowling ball and the resulting collisions with the pins. Wow! Great strike!

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