FOOTBALL SPIN

SCIENCE SAFETY

PLEASE follow these safety precautions when doing any science experiment.

- **ALWAYS** have an adult present.
- **ALWAYS** wear the correct safety gear while doing any experiment.
- **NEVER** eat or drink anything while doing any experiment.
- **REMEMBER** experiments may require marbles, small balls, balloons, and other small parts. Those objects could become a CHOKING HAZARD. Adults are to perform those experiments using these objects. Any child can choke or suffocate on uninflated or broken balloons. Keep uninflated or broken balloons away from children.

INGREDIENTS

- Football

INSTRUCTIONS

STEP 1: Place the football on a flat surface.
STEP 2: Using both hands, grip the pointy ends of the football, slowly spin the football, and observe.
STEP 3: Using both hands, grip the pointy ends of the football, quickly spin the football, and observe. Compare the effects of different strengths and different directions of pushes and pulls on the motion of the football. Provide evidence of the effects of balanced and unbalanced forces on the motion of the football.

EXPLANATION

The unusual shape of the football allows it to jump from a spin to a stand. A football has two axes, a short and a long axis. The short axis goes from side to side, while the long axis goes from pointy end to pointy end. Objects with axes of different lengths are most stable when spun around the longest axis.

SCIENCE BACKGROUND

A force is a push or pull, which can cause an object to be in motion. Pushes and pulls can have different strengths and directions. Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net forces on the object. Forces that do not sum to zero can cause changes in the objects speed or direction of motion. Motion is a change in position. The mass of an object affects the objects motion. An object with more mass requires a greater force to put the object in motion. Speed is how far an object moves over a specific period of time. An object moving at a greater speed changes position faster than an object moving at a slower speed. Inertia is the tendency of an object to resist change.

I CAN STATEMENTS

- ✓ I can plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
- ✓ I can plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

NEXT GENERATION SCIENCE STANDARDS CONNECTION

K – Forces and Interactions: Pushes and Pulls I Cause and Effect
3 – Forces and Interactions I Cause and Effect