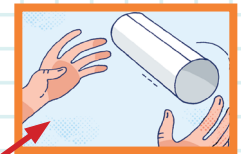
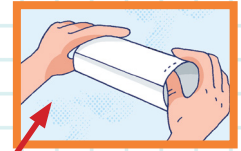


GETTING IN A SPIN

What you do:

1. Draw a vertical line down the middle of the paper and cut along it.
2. Join the ends of the paper with glue or sticky tape to make a cylinder.
3. Stand on a step. Hold the cylinder with your thumbs underneath each side of the upper surface and your fingers on top. Spin the cylinder away from you as you throw it up and forward.
4. Repeat step 3, but this time spin the cylinder towards you as you throw it up and forward.

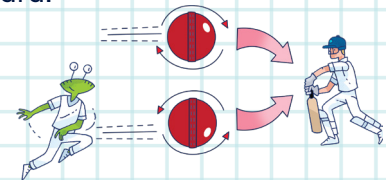


You will need:

- A4 paper
- Ruler
- Pencil
- Scissors
- Sticky tape or glue

You should find:

At step 3, the Magnus effect makes the cylinder curve back as it falls. This is called **topspin**. At step 4, the Magnus effect helps the cylinder to go further. This is called **backspin**.



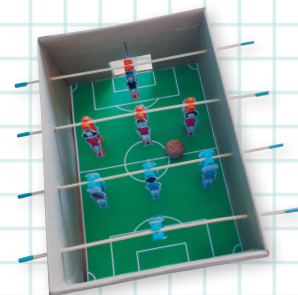
SHOEBOX TABLE FOOTBALL

What you do:

1. Draw a rectangle on each end of your shoebox and ask an adult to cut them out – these will be the goals.
2. Cut out the pitch template and stick it to the bottom of your shoebox with glue. You may need to trim it, or add some more green paper or paint around the edges.
3. Ask an adult to make four holes on each side of the shoebox, about 3 cm from the top.
4. Push the wooden skewers through the holes and wrap some sticky tape around each end.
5. Cut out the players and stick a front and back to each peg using glue or sticky tack.
6. Attach your peg players to the skewers. If your pegs don't grip tightly enough, put a small amount of sticky tack onto the skewer!

You will need:

- A shoebox
- Four wooden skewers
- Eight clothes pegs
- The pitch template
- Eight players
- A small ball
- Scissors
- Glue
- Sticky tack and tape



You should find:

Most of the energy that you put into spinning the skewers is transferred to the ball via your peg players. Some energy is converted into heat due to friction, for example, where the skewers rub against the shoebox. A small amount of energy is converted to sound as your players hit the ball with a satisfying 'THWACK'!