

## CD Air Puck

An air puck built from a compact disk will glide across a smooth tabletop with almost no friction on a cushion of air escaping from a balloon.



Figure 1

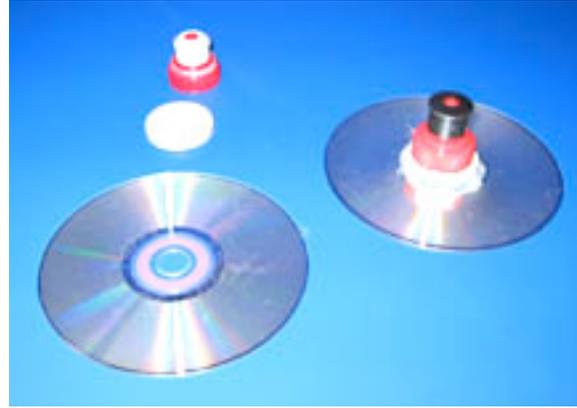


Figure 2

### Material

- CD
- film can lid
- sport top from a water bottle  
(the kind that pull to open and push to close)
- balloon

- hot melt glue gun & glue sticks
- drill with a 1/16 inch bit.
- cardboard toilet paper tube
- scissors
- smooth tabletop

### Assembly

1. Drill a 1/16 inch diameter hole in the center of the film can lid.
2. **Important:** Put the **label** side of the CD **down** toward the table (small ridges near the center of the shiny side will impair the flight of the CD if the shiny side is down).
3. Center the lid over the hole in the CD with the smooth side of the film can lid up. Hot glue the film can lid to the **shiny** side of the CD.
4. Hot melt glue the water bottle mouthpiece to the top of the film can lid.
5. Close the water bottle mouthpiece. Blow up the balloon. Twist the neck of the balloon to keep the air from escaping and stretch the neck over the water bottle mouthpiece.
6. Cut a length of toilet paper tube long enough so that it will push against the bottom of the balloon and keep it from flopping over (about 2/3 the length of the tube often works well). Cut a slit along the length of the tube and slip it between the balloon and the CD (see Figure 1 above).

### To Do and Notice

Place the frictionless air puck on a smooth tabletop. Open the mouthpiece. Push on the air puck and notice how it slides easily from one place to another. (If the tabletop is not perfectly smooth, and the puck does not slide easily, try drilling additional holes, or enlarging the original hole, as necessary.)

### What's Going On?

The air inside the balloon is under pressure. It flows out of the hole in the film can and makes a thin layer between the CD and the table. The CD slides on this layer of air with almost no friction.

**Credit:** This writeup is an adaptation of a writeup by Paul Doherty of the Exploratorium Teacher Institute. The original version may be found on Paul's website: <http://www.exo.net/~pauld>. Look under the Alphabetical Listing for Frictionless CD Puck.