

Water bottle flipping experiment because we can

Testable question:

Does the amount of water in a plastic bottle affect the chances of landing upright?

Independent variable:

The amount of water in milliliters

Dependent variable:

How many times the plastic bottle will land upright

Controlled variables:

- Same person tossing the bottle
- temperature of the water
- Same brand of water
- Same place where you're flipping the water

Prediction: I predict the 150ml room temperature in the Aquafina plastic bottle will be more likely to flip upright than the 100 ml and 200 ml

DEFINITIONS!!!!

upright: landing on the bottom of the plastic bottle (NOT THE CAP)

Hypothesis: If the center of gravity is high or low, the water bottle will be unstable to stay up when dropped.

Just a little bit of research:

Angular momentum: how much energy a rotating object has. It depends on the mass, size of the object and how fast it is spinning.

Center of gravity: is when a mass of an object is centred and points around when an object is rotating

Materials

- thermometer
- room temperature water 22 degrees Celsius
- Aquafina plastic bottle
- measuring cup
- ruler

Procedure

1. In an Aquafina plastic bottle, fill the bottle with 100ml of 20 degree Celsius of tap water (use thermometer to check if it's 20 degrees)
2. Sit down on a chair (I sat down 47 cm off the ground and on a 84 cm table)
3. Hold the bottle about 49 Cm off from your waist (optional)
4. Flip the bottle ten times and record your data and results
5. Next, add in 50 extra ml to your 100ml filled bottle
6. Repeat steps 2-5
7. Finally, add an additional 50 ml of water into your plastic bottle
8. Repeat steps 2-5

Data

100ml, room temperature- sitting 47cm off the ground, 49cm off from my waist

Trial 1: 0

Trial 2: 0

Trial 3: 0

Trial 4: 0

Trial 5: 0

Trial 6: 0

Trial 7: 0

Trial 8: 0

Trial 9: 0

Trial 10: 0

150 ml

Trial 1: 0

Trial 2: 0

Trial 3: 1

Trial 4: 1

Trial 5: 0

Trial 6: 0

Trial 7: 1

Trial 8: 0

Trial 9: 0

Trial 10: 1

200ml

Trial 1: 0

Trial 2: 0

Trial 3: 0

Trial 4: 0

Trial 5: 0

Trial 6: 0

Trial 7: 0

Trial 8: 0

Trial 9: 0

Trial 10 : 1

Ada threw the bottle