

# Egg Bungee Jump

Grade Level: 4, 5, 6, 7, 8, 9, 10

Duration: 45-60 minutes

Classification: Classroom, STEM Spark

Subject(s): Physics

Categories (STEM): Engineering, Science

Keywords: Bungee, Design, Drop, Energy

## **Introduction**

- Summary: Students will be challenged to design a bungee cord out of everyday materials.
- Description: Students will use design, test, and build their bungee cord to drop the egg as close to the ground as possible without making contact with the floor

**Online Resources:** [https://www.discovere.org/sites/default/files/Eggciting%5B1%5D\\_1.pdf](https://www.discovere.org/sites/default/files/Eggciting%5B1%5D_1.pdf)

## **Materials**

<b>Materials</b>	<b>Quantity</b>	<b>Reusable?</b>
Hard Boiled Eggs	1 per group	No
Nylon Stocking	1 per group	No
Rubber Bands	10 per group	No
Paper Clips	4 per group	No
Scissors	1 per group	Yes
Balloons	2 per group	No
Meter stick	1 per class	Yes

## **Directions**

- Have students get into groups of 3-4. They will design a bungee jump for an egg so that it stops within 2 inches of the floor when dropped from roughly 5 feet.
- Hand out materials to each group. Have them pull on each material to see how elastic/stretchy they are.
- Have each group come up with a design for their egg bungee and then create it.
- Groups can test their design as many times but tell them that this is the only egg they get and if they break it they don't get a new one.
- After each test, have groups update their designs.
- Invite the class to watch during the final egg drop test and see which design can get closest to the ground.

### **Activity Extension**

- Have students redesign their drop using the leftover materials.
- Take away one of the materials, are they still able to complete the drop?

### **Discussion Questions**

- Did the egg stop within 2 inches of the floor? If not, what could you change so that it does?
- What happens if you change the length of the bungee cord?
- What type of rubber bands did you use? Does it make a difference?
- How do you think bungee jump creators test the length of a bungee cord for a human jump?
- What happens if you add more weight to the egg?

### **What is happening?**

- The falling egg stretches the bungee cord until it slows to a stop then springs back up pulling the egg up from the ground.
- Elastic materials return almost to their original shape after they've been stretched by a force.
- The amount the bungee cord stretches depends on how elastic the materials are and how much the egg weighs.

### **Applications:**

- Majors
  - Materials Engineering: Study the stretch and strength of materials being used for different products
  - Physics
- Jobs
  - Gym teacher: Workout equipment and stretching bands often use elasticity to help with passive exercising
  - Materials Engineers
- Hobbies
  - Bungee Jumping
  - Exercising, elastic bands are used for stretching
- Real world applications
  - Elastics are used in clothing waistbands and hair ties
  - Seat Belts use similar logic of slowing the passenger to a stop then pulling them back