



<b>Description</b> This activity is meant to extend your students' knowledge of the topics covered in our Physics of Roller Coasters lab. Through this activity, your students will deepen their understanding of potential and kinetic energy and learn that these energies are not only found in rollercoasters!		
<b>Grade Levels</b> 2-4	<b>Student Outcomes</b> <ul style="list-style-type: none"> <li>Students will:                         <ul style="list-style-type: none"> <li>Demonstrate and describe potential and kinetic energy.</li> </ul> </li> </ul>	<b>Next Generation Science Standards</b> <ul style="list-style-type: none"> <li><b>Grade 3:</b> DCI PS2.A</li> <li><b>Grade 4:</b> 4-PS3-1; DCI PS3.A, PS3.D</li> </ul>
<b>Duration</b> 20 minutes		<b>Common Core ELA Standards</b> <ul style="list-style-type: none"> <li><b>Grade 2:</b> <i>Speaking and Listening 2.SL.3</i></li> <li><b>Grade 3:</b> <i>Speaking and Listening 3.SL.3</i></li> </ul>

<b>Materials</b> <ul style="list-style-type: none"> <li>Large area for running</li> </ul>
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<b>Vocabulary</b> <i>Familiarity with these terms and concepts will enhance students' experience in the activity.</i> <ul style="list-style-type: none"> <li><b>Energy (from Greek, meaning "activity, operation"):</b> The capacity to do work.</li> <li><b>Potential energy:</b> Stored energy, energy that has the potential to be used but it is not in use.</li> <li><b>Kinetic energy:</b> Energy being used which is gained from being in motion.</li> </ul>
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## Procedure

1. Begin with a reminder discussion about potential energy and kinetic energy. Have students give their definitions of potential energy and kinetic energy and some examples of things that have kinetic and potential energy.
2. Ask students if they have potential energy.
  - a. Why or why not?
  - b. How can they show that they have potential energy? (Students can remain perfectly still-this is an example of potential energy).
  - c. Where did their potential energy come from? (Sleep, food, water, etc.)
  - d. How can they convert their potential energy into kinetic energy? (Running, walking, etc.)
3. To further cement the idea of potential and kinetic energy, this activity will use the classic game of "Red Light-Green Light."
4. Have all the students line up on one end of the field or basketball court with the teacher at the opposite end of the court.



5. Review the ground rules:
  - a. When the teacher yells out “kinetic energy,” everyone walks or runs as fast as they can. (They’re converting their stored potential energy into kinetic energy) – also known as “green light.”
  - b. When the teacher yells out “potential energy,” everyone must stop right where they are and hold as still as possible. (They’re resting and not moving, so they are storing potential energy; plus they have stored chemical energy from their breakfast/snack/lunch) – also known as “red light.”
  - c. The first student to the teacher is the winner!
    - i. What can be determined about the first person’s energy? *This person had the most energy.*