

### 3.1.1.6: Conservation of Energy Simulation

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This simulation shows a test dummy bungee jumping from a tower. It records the kinetic energy (KE), gravitational potential energy (GPE), elastic or spring potential energy (SPE) and total energy (TE) of the jumper/bungee system. There is no friction in this simulation. You can change the length of the bungee cord,  $L_0$ . If the bungee cord is too long, the dummy crashes into the ground.

#### Simulation Questions:

1. What is the longest length of the bungee for a safe jump? (Try several lengths to find out.)
2. For a bungee cord length of one meter, describe what happens to the kinetic energy, the gravitational potential energy and the spring potential energy as the dummy falls (you can use the step button to see how the different energies are changing)?
3. What happens to the total energy during a jump?
4. The total energy shows how much is kinetic, gravitational potential and spring potential. Explain what happens to the various components of the total energy during a jump.
5. As you change the length of the bungee, what happens to the total energy? the KE, PEs?
6. For the most exciting (safe) jump, what makes it exciting? How can you describe it in terms of energy transfers?

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