PhET Tips for Teachers **Eating and Exercise**

Tips for controls:

- You can **Pause** the sim and then use **Step** to incrementally analyze.
- If you are doing a lecture demonstration, set your screen resolution to 1024x768 so the simulation will fill the screen and be seen easily.
- Food goes on plate, exercise goes in notebook

Important modeling notes / simplifications:

- The BMI tables and healthy body fat levels were specifically identified as being for full grown adults. Students will have to change height manually which makes sense because kids don't grow at a steady predictable rate, rather in spurts.
- General guidelines for *Sedentary to Very Sedentary*: When selected the person burns less calories based on the typical resting BMI of a Sedentary person with the given body fat. This is because a sedentary person exercises less. Choosing Very active assumes a lot of physical activity throughout the day so the person burns more calories. You can then change exercise for the person to add in specific physical activities.
- General guidelines *Heart Strength*: Depends on how much exercise the person gets and is independent of body fat.
- General guidelines *Heart Strain*: The heart strain depends on body fat. Both extremely low and extremely high body fat strain the heart. Does not depend on exercise.
- Male and female have different rules because they typically change different levels of body fat when they take in fewer calories than they use. Typical situations are used for defaults.

Insights into student use / thinking:

- Students may be confused because if they lose weight when they put what they think is their diet and exercise (without including a balanced 2000 calorie diet). Most likely, students didn't put in accurate info on everything they eat during the day. There are also minor fluctuations in average calories burned. My advice would be to have the students track every bite that goes in their mouths for three days. Then put that into the sim.
- Students may be confused about BMR and BMI. There are a wide range of good values for BMI, and that we shouldn't relate it with health too much. In the classroom, this often means students navigate to an external webpage to look up the same information. We recommend a series of guided questions to help them see what BMI is from the sim.
- Students' prior ideas about weight gain/loss, BMI and heart health may be incorrect. A teacher who used the sim walked around and checked their answers and then encouraged them to go back and double check what the sim actually did. (Gold Star activity: **Eating and Exercise Activity** by Wendy Adams)

Suggestions for sim use:

- For tips on using PhET sims with your students see: **Guidelines for Inquiry Contributions** and **Using PhET Sims**
- The simulations have been used successfully with homework, lectures, in-class activities, or lab activities. Use them for introduction to concepts, learning new concepts, reinforcement of concepts, as visual aids for interactive demonstrations, or with in-class clicker questions. To read more, see **Teaching Physics using PhET Simulations**
- For activities and lesson plans written by the PhET team and other teachers, see: **Teacher Ideas & Activities**

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