

PLOTTING HEART RATES!

Focus Lesson: Plotting Heart Rates

Materials:

Music for a game of Dance Freeze

Mindfulness Eating Script (at the end of the lesson plan)

Raisins or Hershey Kisses

What Happens to a Hamburger? by Paul Showers

Copies of Plotting Heart Rates graphs for each student (at the end of the lesson plan)

SmartBoard to project F.I.T. Trainer videos
<http://teachfitclub.org/fit-trainers/plotting-heart-rates/>

Time: 60 minutes

Afterschool Session: *Healthy Habits!*

** Review your programs Food and Allergy policy prior to bringing food items to the classroom. If the policy prohibits the use of outside food then skip this activity.

*Common Core Standards:

CCSS.MATH.CONTENT.2.MD.D.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems¹ using information presented in a bar graph.

Thinking Skill: Hypothesis formation, Using graphs

Objective:

Students will learn how food is digested and converted into energy.

Students will engage in an evidence-based mindfulness eating activity.

Students will form a hypothesis based on the question, What will the heart rate do in various conditions and why?

Students will learn how to take their pulse.

Students will plot their heartrates on a graph as evidence for their hypothesis.

Physical Activity:

Welcome to our fourth session of F.I.T. Club Healthy Habits! Last week we learned about different types of exercise (aerobic/anaerobic, strengthening, flexibility/balance). Today we are going to try to eat mindfully and also learn about the connection between physical activity and the foods we eat.

Let's start by getting the wiggles out after a long day at school by playing Dance Freeze!
(<https://www.playworks.org/resource/game-of-the-week-dance-freeze/>)

Allot about 10 minutes for this activity.

Mindfulness Activity:

Distribute a single raisin or Hershey's Kiss to each child in the class.
(Please see Food Allergy note above)

Read the *Mindfulness Eating Script* (found at the end of this lesson plan).

Interactive Read Aloud:

Before reading:

In our first two classes, we learned about the food groups and how to design a healthy and balanced lunch. Last week we read about four girls racing to meet an Olympic athlete and brainstormed different ways to be physically active. Today we are going to make the connection between physical activity and the foods we eat! You have probably heard that good food can make you strong and healthy. But why? Has anyone heard of the word *digestion*? Digestion is the process of breaking down food into substances that can be used by the body in different ways. We are going to learn all about digestion in today's book (show kids the cover and read the title).

Read *What Happens to a Hamburger?* aloud to the class. Pause for a moment on the double page spread of the exchange of food molecules from the small intestine into the blood vessels and lymph vessels. Point out the various 'food molecules' and explain using the picture/labels how this occurs. On the next page, show how the body absorbs water from the large intestine into the bloodstream. Reflect how it is important to drink plenty of water as well as good foods to keep their bodies healthy.

During reading:

While reading the book aloud, have another instructor write the various steps of digestion on the Smart Board (ie mouth, esophagus, stomach, small intestine (with help from enzymes from liver and pancreas), and large intestine).

After reading:

Ask the class the various ways their bodies use food (i.e. give you energy and helps you grow; helps make strong bones and hard teeth; helps to make solid muscles; keeps you warm).

Invite the students to trial the two experiments in the book at home. Refer back to the page of the sugar cubes dissolving in water and to the page of the raw carrot chewed 10 times versus 30 times. If time allows, consider trialing the sugar cubes experiment in class.

Connection:

The heart rate is the number of heartbeats per unit of time, usually in beats per minute (BPM). The heart pumps blood throughout the body in blood vessels delivering oxygen and nutrients to the organs (such as the brain and muscles) so they can function properly. Blood carries carbon dioxide and waste out of the organs.

Explicit Instruction:

Form a hypothesis based on this question:

What will the heart rate do in these conditions and why? (beat slower, faster or stay the same?):

1. Sitting/resting
2. Walking

3. Jogging
4. Jumping Jacks
5. Squat Jumps

Guided Practice:

Watch the Resting Heart Rate Demo.

Have students practice taking their pulse on their wrists (the radial pulse). For the first time, take it for 60 seconds. This is the resting heart rate. Next, have the students take their resting pulse for 30 seconds. Ask them how they might get a resting heart rate from this number? Multiplication of course! Multiply the number x 2 to get a resting pulse in beats per minute. They can also try checking their pulse for 15 seconds. Repeat the question. Multiple the number x 4 to get a resting pulse in beats per minute. Once they have mastered measuring their Resting Heart Rate, then move on to the exercise component.

For younger students who have not yet been introduced to multiplication, take pulses for 60 seconds.

Have students jot down their resting heart rate on a piece of paper.

Now let's start the exercises! Note, students should be healthy enough to participate in this activity.

If a child is unable to participate in Physical Education classes for health reasons, they should not participate in this activity. They can still make a bar graph using another student's heart rates.

Make sure that students have plenty of space to do these exercises.

Show students the Exercise Heart Rate- Walking video. Have students walk in place for a set amount of time (approximately 10 seconds). Have students jot down their Walking in Place heart rate.

Show students the Exercise Heart Rate- Jogging video. Have students jog in place for a set amount of time (approximately 10 seconds). Have students jot down their Jogging in Place heart rate.

Show students the Exercise Heart Rate- Jumping Jacks video. Have students jog in place for a set amount of time (approximately 10 seconds). Have students jot down their Jumping Jacks heart rate.

Show students the Exercise Heart Rate- Squat Jumps video. Have students jog in place for a set amount of time (approximately 10 seconds). Have students jot down their Squat Jumps heart rate.

Independent Practice:

Distribute a copy of the Plotting Heart Rates graph to each student (or they can design their own).

They will first need to label the X-axis and the Y-axis.

The exercise type (Resting, Walking, Jogging, Jumping Jacks, Squat Jumps) comprise the X-axis and the Heart Rate (BPM) comprise the Y-axis.

Using the 5 data points collected above, have student plot their heart rates on a bar graph.

Reflection – Group Share:

Was their hypothesis correct? How can they use their data points to support their conclusions?

Reading List:

Mindfulness Eating Script (at the end of the lesson plan)

What Happens to a Hamburger? by Paul Showers

Teacher Note:

** Review your programs Food and Allergy policy prior to bringing food items to the classroom. If the policy prohibits the use of outside food then skip this activity.

Mindfulness Eating Script

Mindfulness

Mindfulness is deliberately paying attention and being fully aware of what is happening both in the world around you and in your own body. Mindfulness practice helps you to be aware, stay in the present moment without thinking of the past or future without judgment or criticism.

Mindfulness has been extensively researched in relation to mood, emotions and physical health. Research has consistently shown that higher levels of mindfulness practice is related to higher levels of positive emotions, improved mood regulation skills, increased self-acceptance as well as decreased stress levels and depressive symptoms.

Mindful Eating

Mindful eating involves paying full attention to the full experience of eating and drinking. It encourages paying attention to the colors, smells, textures, flavors, temperatures, and even the sounds (crunch!) of our food before, during, and after eating. We also pay attention to thoughts and emotions while eating. While avoiding judgment or criticism, mindful eating encourages awareness of when the mind gets distracted, pulling away from full attention to what we are eating or drinking, such as noticing without judgment when we have the urge to watch TV, read a book, or call someone while eating. The goal of mindful eating is to notice these thoughts, let them pass, and return to just eating.

The old habits of eating and not paying attention are not easy to change. Lasting change takes time, and is built on many small changes. Let's practice with this one example:

Mindful Eating Script (you can use any food)

1. Take the raisin and hold it in the palm of your hand. Feel the weight of the raisin.
2. Look at the raisin. Examine it. Notice any unique features of your raisin. Let your eyes explore every part; examine the highlights where light shines, its darker crevasses, its folds and ridges.
3. Hold the raisin between your fingers and turn it. Notice its texture. What does it feel like?
4. Hold the raisin to your ear. Squish it a bit. Does it make a sound? Take note of any sensations you feel.
5. Hold the raisin under your nose, and with each inhalation drink in any smell, aroma or fragrance that may arise, noticing as you do this if there's anything interesting happening in your mouth or stomach.
6. Simply notice any thoughts that you may have, such as likes or dislikes, without trying to push them away. Just notice, without any judgment. Let your thoughts float by.
7. With awareness, slowly bring the raisin to your lips, noticing how your hand and arm know exactly where to position it, perhaps noticing that saliva starts to secrete as you bring the raisin towards your mouth.
8. Gently place the raisin in your mouth. Without chewing, notice the process of how it gets into your mouth in the first place. Spend a few moments exploring the sensations of having it in your mouth, exploring it with your tongue.
9. Notice which side your tongue pushes the raisin.
10. When you're ready, prepare to chew the raisin.
11. Take one or two bites into the raisin. Resist the urge to swallow the raisin. Notice the sensation of taste—the juice of the raisin and its texture in your mouth and how these change over time, as well as any changes in the raisin itself.
12. See if you can first detect the intention to swallow as it comes up, so that you experience this sensation consciously before you actually swallow the raisin.
13. Finally, swallow the raisin—see if you can feel the raisin going down towards your stomach and even entering your stomach. Perhaps noticing what it feels like to be one raisin heavier.
14. Sense how the body as a whole feels after completing this mindful eating exercise. Notice your thoughts.

Activity	Resting/Sitting	Walking	Jogging	Jumping Jacks	Squat Jumps
Heartrate					

Heartrate (beats per minute)

- Count for 60 seconds= heartrate (bpm)
- Count for 30 seconds and multiply by 2 = heartrate (bpm)
- Count for 6 seconds and multiple by 10= heartrate (bpm)

Heartrate (bpm)

Activity