


Fiber: It Keeps Things Moving

Overview (for Teacher)

Pre-Class Preparation	None
Teacher Involvement During Class 	<ul style="list-style-type: none">• Assist during and after FIBER RELAY RACE.• Assist in clean-up.• Assist in behavior management of students.
Post-Class Teacher Responsibilities	None
Vocabulary	<p>Absorb- to soak something up, like a sponge soaks up water.</p> <p>Fiber- part of foods such as whole grains, beans, fruits and vegetables that helps food move through the intestines, but is not absorbed.</p>
Critical Thinking Activity	Fiber Relay Race
Supplementary Activities	Student Assessment
Web Resources	<ul style="list-style-type: none">• Fiber for Kids: www.kidshealth.org/kid/word/f/word_fiber.html• Fiber Chart for Teacher: www.wehealny.org/healthinfo/dietaryfiber/fibercontentchart.html
Suggested Books for Reading in the Classroom	<ul style="list-style-type: none">• Inglis, Jane. <u>Fiber</u>. Carolrhoda Books, 1993. (3rd grade)• Showers, Paul. <u>What happens to a Hamburger</u>. Harper Collins Juvenile Books, 2001.

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EALR & GLE Alignment

EALR	GLE	Lesson Applications
<p>Science</p> <p>1.1 Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things</p> <p>1.2 Understand how components, structures, organizations, and interconnections describe systems</p>	<p>1.1.1 Understand simple properties of common natural and manufactured materials and objects</p> <p>1.2.1 Understand that things are made of parts that go together</p>	<ul style="list-style-type: none"> • Fiber • Digestive System
<p>Health and Fitness</p> <p>1.4 Understand the relationship of nutrition and food nutrients to physical performance and body composition</p> <p>3.3 Use social skills to promote health and safety in a variety of situations</p>	<p>1.4.1 Identify the nutrients provided by a variety of foods and describe how bodily functions and physical performance are affected by food consumption</p> <p>3.3.1 Express emotions constructively and form safe and respectful relationships</p>	<ul style="list-style-type: none"> • Fiber Relay Race • Fiber • Nutritional Value Information • Fiber Relay Race
<p>Communication</p> <p>1.2 Listen and observe to gain and interpret information</p> <p>3.1 Use language to interact effectively and responsibly with others</p>	<p>*GLE not available at this time</p>	<ul style="list-style-type: none"> • Fiber • Nutritional Value Information • Fiber Relay Race

Fiber: It Keeps Things Moving

Preparation Outline

Activity Supplies

Digestion

- 1 carrot
- 1 cardboard tube with different colored strings attached to it. Make this model by using a cardboard toilet paper tube, a piece of tape, and 5 pieces of different colored yarn in these lengths (plus 2 inches each for tying): 4 inches (mouth), 10" inches (esophagus), 6 inches (stomach), 17 feet (small intestines), 6 feet (large intestines). Knot strings together in order and tape the end of the large intestines to the toilet paper roll and wrap the string around.

Staying Fit with Fiber-Food Relay Race

- STAYING FIT WITH FIBER - FOOD RACE RELAY Activity worksheet
- 1 narrow bottle brush or thick test tube scrubber
- Dish soap
- 6 – 1 to 1½ foot lengths of clear tubing, approx. ¾ inch lumen (1 per learning team)
- 6 plastic bowls (1 per learning team)
- 1 small container of water
- 6 plastic trays (1 per learning team)
- 6 plastic baggies of food: 3 fiber teams; 3 junk food teams. Each baggie for the fiber team should include 2 tablespoons of finely chopped apples, carrots, and whole sunflower seeds. Each baggie for the junk food team should contain ½ of a snack cake with frosting and 3 chips. It is important that the snack cake has frosting. This aids in the sticking of the junk food in the tubes.
- Wash cloth and hand towels for clean up

Fiber

- 1 apple
- 1 box of apple juice

Review

- Healthy Person Contract
- Fiber pictures for Healthy Person Contract

Overheads

- Digestive Tract
- Fiber Relay Race Observations

Student Handouts

None

Teacher Handouts

Student Assessment and Answer Key

Changes for K and ELL Classes

Omit discussion about fiber nutrition concepts

Rainy Day Activity Supplies

None

Fiber: It Keeps Things Moving

Outline

Content




Introduction and Lesson Overview (1 Min)

- In our last class we talked about something that we put inside our bodies that help keep our digestive system clean and running smoothly – does anyone remember what that was? (WATER)
- There is another nutrient that helps keep our digestive system healthy: FIBER. Fiber is what we will talk about today.

Digestion (10 Min)

- **Discuss the Digestive Tract: What happens to our food once we eat it?**
- **Follow the path of food**
- **Digestive Tract Length**

- Educator shows carrot: when we eat a carrot, the Vitamin A from the carrot doesn't just magically appear in our eyes. And when we eat seeds, the protein doesn't just go into our mouth and magically appear in our muscle, we have to "digest" our food to get the nutrients to the place we need them in our bodies.
- Show overhead of the digestive tract.
- The digestive tract breaks down the food we eat into tiny pieces so we can absorb the nutrients.
- Let's follow the path that our food takes: First food enters the mouth. (Ask students about the body parts as you move through them on the overhead. Get them to tell what each part does as you move through the digestive tract or explain as below.)
- The tongue, teeth and saliva work together to break down food into smaller bits.
- After we swallow, the food moves into a long tube called the esophagus. The esophagus squeezes the food down into the stomach.
- The stomach has muscles and juices that continue to break up the food and prepare it for absorption.
- Next our food enters the small intestine. This is where most of our nutrients are absorbed from the food.
- Food then moves into the large intestine where any water left over is absorbed. What is leftover is called waste. We remove the wastes from our body when we go to the bathroom.
- "If you ate breakfast or lunch today, your body is digesting RIGHT NOW."
- Using string, show students how long each part of our digestive tract is. (See attached "Digestive Tract Demo" in lesson materials section)
- Imagery: walk along the string squeezing to mimic the work of the intestines, and show nutrients coming out of food in the intestines, and into our blood. All our

	<p>nutrients are transported in our blood to all parts of the body.</p> <ul style="list-style-type: none"> • Ask the students: What would happen if you did not go to the bathroom?
<p>Fiber Relay Race (20 Min)</p> 	<p>Refer to the Educator Worksheet for this activity (attached in lesson materials section)</p> <p>5-10 minutes of clean-up time is required after this activity.</p>
<p>Fiber (5 Min)</p> <ul style="list-style-type: none"> • Characteristics of fiber in food • Making fiber-rich food choices  • Function of Fiber  	<ul style="list-style-type: none"> • Fiber is found in the leaves and stems of ALL plants and in the pulp and skin of fruits and seeds (including beans). Some tips to get the most fiber out of your food are: <ul style="list-style-type: none"> • Eat whole fruits- fiber is removed from fruit juice. • Eat the skins of tomato, potato, pears and apples; the skin is fiber-rich. • The stems of spinach, broccoli, celery and chard are good to eat too, as well as the leaves and florets. • Have students brainstorm: What foods have lots of fiber? • Show an apple and a box of apple juice ask the kids “Where is the fiber?” (In the apple only.) • Tell kids that in short, fiber helps us poop. • Fiber is the part of these foods that our bodies DO NOT break down or absorb. It goes through our bodies, scrubbing as it goes. It picks up bits and pieces of other foods that are not absorbed and toxins that could make us sick, and with the help of water, sweeps them out of our bodies. • Together, water and fiber help ‘scrub’ our intestines clean so food does not get stuck and rot there. That’s why we call water and fiber the “clean team”!

Nutritional Value Information and Garden Observation (20 Min)

- **Teach Nutrition Concept about Fiber** (May omit for ELL and K)

- **Garden Observation**



- Since fiber doesn't break down, our bodies have to work harder to get the nutrients out of these foods and into our bodies. This means that foods with fiber take more time for the body to digest.
- The nutrients from fibrous foods go into the body more slowly, a little bit at a time. This means that foods with fiber can give us energy for a long time.
- Foods with fiber help us to feel full longer, and have more energy to play!
- Fiber also soaks up water in our intestines, so we need to make sure we are drinking plenty of water to help fiber do its job. This will help us go to the bathroom easily (and avoid constipation).
- Take students outside to observe the garden. What is growing? Harvest, taste, weed, and water as necessary.
- Bring magnifying glasses for students to use in observations.

Review and Reflection

- "The clean team"

- **Healthy Person Contract: Fiber**

- Ask students to mention a couple of concepts that they learned about water and fiber in the last two lessons.
 - **Why can we call water and fiber the clean team?**
 - We have learned that fresh clean water is important because it keeps us **hydrated** and it flushes out our insides, keeping us clean.
 - We have also learned that **fiber** scrubs out our insides and because our digestive tract doesn't break it down, the energy we get from fiber rich foods lasts longer.
 - Teacher: Do "Find the Fiber" worksheet with the class or assign as homework.
- **Healthy Person Contract: Fiber.** Hang Healthy Person Contract and ask class what foods are high in fiber? How does fiber help our body? Helps our _____ (digestive tract) run smoothly. Draw intestines on the person. Select a student to tape pictures of fibrous foods (grains, fruits, vegetables, and beans) on the intestines.

Lesson Materials

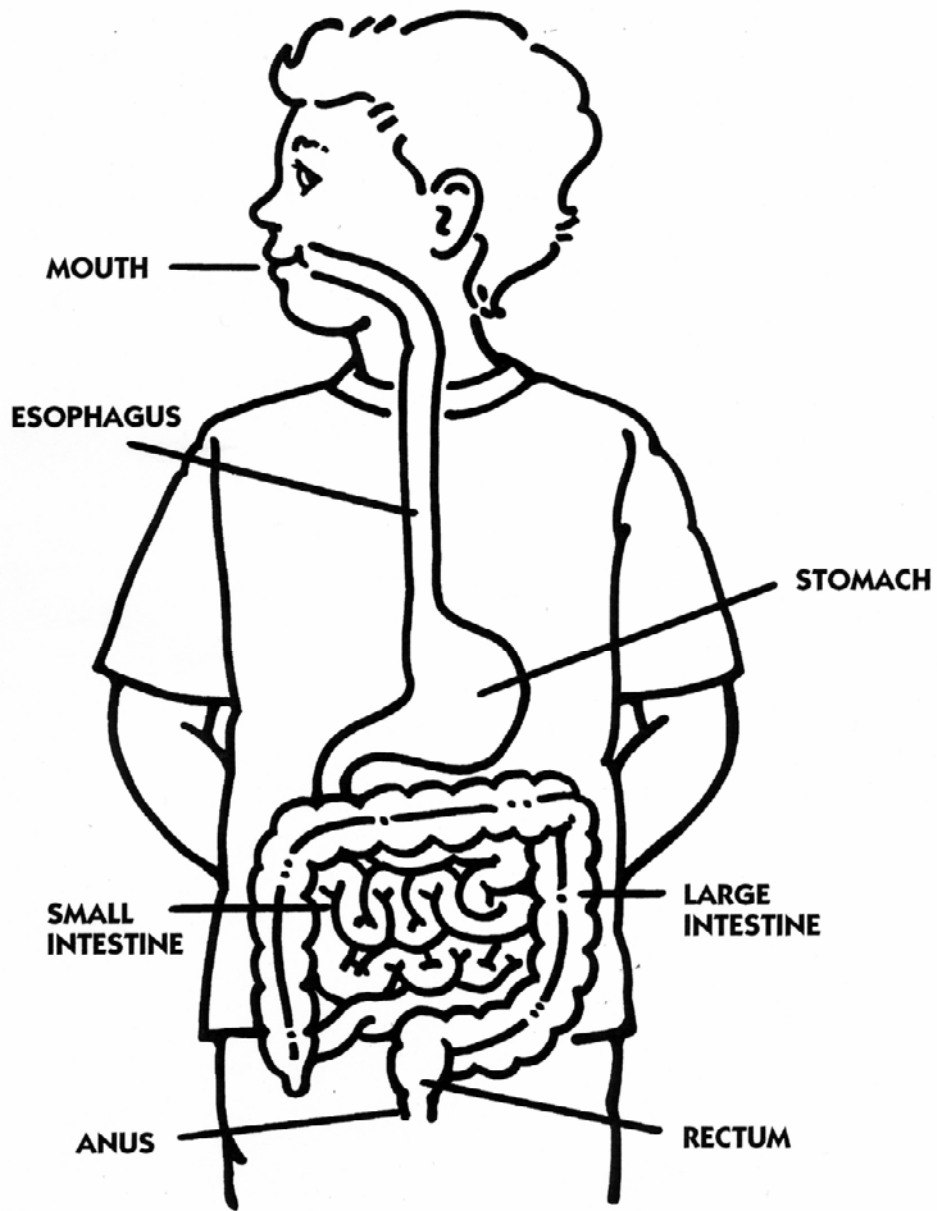
Fiber: It Keeps Things Moving

- **Digestive Tract Diagram**
- **Digestive Tract Demo Instructions**
- **Fiber Relay Race Educator Worksheet and Observations**
- **Fiber pictures for Healthy Person Contract**

Supplementary Activities

- **Student Assessment**
- **Assessment Answer Key**

DIGESTIVE DIAGRAM



Enlarge and reproduce for educational use.

Digestive Tract Demo

The roll of string represents the lengths of the different parts of the digestive system. Start by pulling the loose-ended blue string and explain to the students what each different color represents.

1. The mouth is approximately 10cm or 4 inches. (blue string)
2. The esophagus is approximately 25cm or 10 inches. (black string)
3. The stomach is approximately 15cm or 6 inches. (white string)
4. The small intestine is approximately 500cm or 17ft long (red string)
5. The large intestine (including the rectum and to the anus) is approximately 150cm or 5 ft. (grey string)

* These numbers are approximate for an adult.

EDUCATOR: Staying Fit with Fiber - FIBER RELAY RACE

This activity is designed to help students understand the value of eating foods high in fiber. It demonstrates how digestion rates differ for foods that are high or low in fiber. During the activity students will simulate the processes involved in digestion. Tell students that this is a demonstration only and the process is more complicated in your body but this simplified activity will help show us how fiber and water work in the digestive system.

Materials for each team (of 4 students)

1 bag of chopped fiber rich foods (carrots, jicama, sunflower seeds)

OR

1 bag of chopped junk food (snack cakes, potato chips)

1 large bowl

1 cup of water

1 plastic tube

Half of the groups get a bag of junk food, half get a bag of food that is high in fiber.

Swallow – Students empty cut up food from baggies into their bowl (the baggie represents the mouth where food is chopped up by our teeth and the bowl is our stomach). (Digestion starts in the mouth)

Break down – Students use a few tablespoons of water to moisten and break down the food like stomach acid and other digestive juices. Use a finger or stick to stir.

Digest – We are ready to move the food from the stomach into the intestines. One team member will hold the intestine model (clear plastic tube) horizontally so that the tubes openings are pointing up and form a wide U shape. The other team member will start feeding the food into ONE END ONLY. (This will take some time for all students to fill their tubes.) Ask students to wait patiently and hold their tubes carefully until everyone is done.

GO! - Now we race to see who can empty all of their food into the bowl the quickest and cleanest. Kids will twist and flex the tube to simulate the muscular actions of intestines. They may not shake or poke the tubes.

After a while, offer more water to students who are stuck. Water should help the food to move more smoothly. Tell them that drinking water will have a similar effect in our bodies. Fibrous foods should win. Make sure that the teams with junk food hold up their tubes and tell the kids that this is what can happen if this is the kind of food you eat all day. Your insides will not be clean and healthy and they can even get clogged up by these kinds of foods. Have a brief discussion about the results and/or fill out “Food Relay Race Observations” on the overhead.

Fiber Relay Race Observations

1. Which foods moved through the tube the quickest? Why?

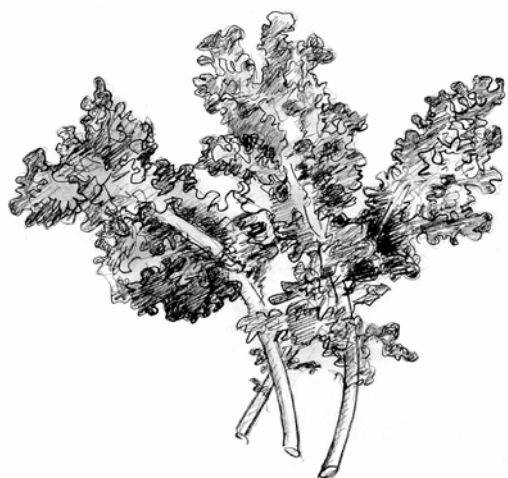
2. Which foods moved through the tube the slowest? Why?

3. Why are foods with fiber good for us?

4. List 3 foods that are high in fiber:

5. List 2 foods that are low or have no fiber:

Pictures for Healthy Person Contract



**Kale
Fiber**



**Beans
Fiber**



**Wheat
Fiber**

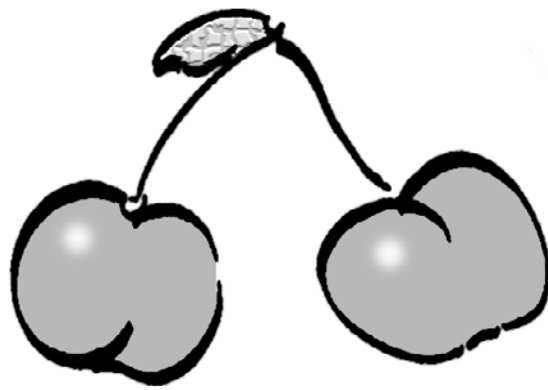


**Pear
Fiber**

Pictures for Healthy Person Contract



**Grain
Fiber**



**Cherries
Fiber**

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Name: _____ Date: _____

List three foods that are high in fiber

1. _____

2. _____

3. _____

Where is fiber found? (Please write a complete sentence)

True or False (circle the best answer)

T F Beans and seeds have lots of fiber.

T F Fruit juice has more fiber than whole fruits.

T F Your tongue is not part of your digestive system.

T F The esophagus squeezes the food down into the stomach.

T F Water and fiber can be called the “clean team”

Fiber: It Keeps Things Moving

List three foods that are high in fiber (possible answers)

Answers will vary but should go along with lesson

- Fresh fruits (apples, oranges, strawberries, etc.)
- Veggies, beans, seeds, nuts, brown rice, whole wheat bread, etc.

Where is fiber found? (Please write a complete sentence)

Fiber is found in the leaves and stems of all plants and in the pulp and skin of fruits and seeds (including beans).

True or False (circle the right answer)

- T** Beans and seeds have lots of fiber.
- F** Fruit juice has more fiber than whole fruits.
- F** Your tongue is not part of your digestive system.
- T** The esophagus squeezes the food down into the stomach.
- T** Fiber can be called “the body’s scrub brush”.