

National Health Education Standard

STANDARD 1*

Students will comprehend concepts that enhance personal, family, and community health.

Learning Objectives

After completing this lesson, students will be able to meet the following objectives:

- **Recognize** foods that provide calcium.
- **Make** connections between the foods they choose and their health.
- **Demonstrate** an understanding of the recommended daily amount of calcium for tweens and teens.
- **Understand** the goal of consuming 1,300 milligrams (mg) of calcium per day.
- **Understand** that delicious, easy-to-make snacks can also be healthy.
- **Create** smoothies and other snacks that provide calcium.
- **Make** sample recipes to taste.

Activity Overview

This activity will provide the following learning opportunities:

- Teach students that choosing foods with calcium is as easy as it is important.
- Provide students with an opportunity to create a recipe book of fruit smoothies and other simple, healthful snacks that provide calcium.
- Give students an opportunity to sample snack options that provide calcium and offer models for creating their own recipes.

This activity has three parts:

- Classroom activity (create recipes)
- Classroom discussion
- Classroom activity (make smoothies)

This activity is geared toward youth ages 11 to 13.

*Joint Commission on National Health Standards. (2007). *National Health Education Standards*, (2nd ed.). New York: McGraw-Hill.

Planning Considerations

- This activity involves handling foods and making and drinking fruit smoothies. Please ensure that none of the students is allergic to any of the foods involved in these activities before you begin. If allergies are a concern, modify the activity as needed. For example, use a calcium-fortified soy beverage or juice for students with lactose intolerance or an allergy to milk.
- To ensure safety, students should be supervised while using the blenders. As an alternative, you may want to lead a demonstration of how to make smoothies rather than having the entire class engage in this activity.

Materials

- *Smart Snack Cookbook Snack Ingredients List* (provided)
- *Smart Snack Cookbook Smoothie Recipes* (provided)
- *Smart Snack Cookbook Recipe Cards* (provided)
- Ingredients for a *Smart Snack Cookbook Smoothie Recipe*, blenders, and cups
- Optional: *Milk Matters Calcium Fact Sheet* and *Milk Matters Glossary of Terms* (found at <http://www.nichd.nih.gov/milk/teachers>)

Lesson Duration

- Task 1: 10 minutes
- Task 2: 10 minutes
- Task 3: 40 minutes

Teacher Preparation Time

- 60 minutes

Teacher Preparation Activities

- Make enough copies of the ingredients list, smoothie recipes, and blank recipe cards for each student.
- Collect any decorating materials that students will use for their recipe cards.
- Assemble ingredients for the smoothie recipe that the class will make/that you will demonstrate to the class.
- Optional: Duplicate and punch holes in the *Smart Snack Cookbook Recipe Cards* for inclusion in a loose-leaf cookbook, or tie the cards together with string or ribbon to create your cookbook.

Task 1: Classroom Activity (Create Recipes)

Activity Steps (For Teachers):

1. **Distribute** the ingredients list, smoothie recipes, blank recipe pages, and other decorating materials to each student.
2. **Discuss** the importance of a diet that provides calcium and meets the calcium needs of young people ages 9 to 18 (1,300 mg daily). (Refer to the *Milk Matters Calcium Fact Sheet* if you need additional background information about calcium and bone health to prepare for this discussion. The fact sheet is available at <http://www.nichd.nih.gov/milk/teachers>)
3. **Explain** to students that this activity entails creating their own cookbooks, which will be filled primarily with snack recipes that provide calcium and are easy for students to make on their own. **Emphasize** that students will learn about quick-and-easy snacks to help them understand that choosing healthy foods is as simple and fast as choosing the alternatives. **Add** that the cookbooks will include original recipes as well as existing recipes that students receive from you or find on their own, and that they can continue to add recipes they find as the year/course progresses.
4. **Direct** students to use the ingredients list as a reference and to create original snacks that provide calcium by completing the recipe cards.
5. **Direct** students to put recipes in their cookbooks/assemble their collections.

Task 2: Classroom Discussion

Activity Steps (For Teachers):

1. **Direct** students to share their original recipes with each other.
2. **Ask** the students the following questions to guide the discussion:
 - Do you think it is easy to create healthy and delicious recipes that provide calcium?
 - Does creating your own recipes make it easier and more fun for you to include foods that provide calcium in your diet?
 - Why is it important to include foods that provide calcium in your diet?

Task 3: Classroom Activity (Make Smoothies)

Activity Steps (For Teachers):

1. **Direct** students to silently read the smoothie recipe they will make.
2. **Put** students into small groups for making smoothies.
3. **Direct** students to make the smoothies, to taste them, and to discuss the results.

Optional Activities

- If you do not have access to a blender, you can choose ingredients that can be shaken rather than blended, or prepare smoothies for students in advance of the class.
- If making the smoothies is not an option, try conducting a taste test of foods that provide calcium, such as different low-fat or fat-free yogurts or milk products. Be mindful of any food allergies or restrictions if you choose to do a taste test.

Assessment

Here are some ideas for testing students' achievement of the learning objectives. More ideas are available at <http://www.nichd.nih.gov/milk/teachers>:

- Instruct students to create posters showing meals that have a high calcium content or advertisements to their peers that “sell” snacks that provide calcium.
- Conduct an essay test in which students explain why it’s important for young people ages 11 to 13 to get 1,300 mg of calcium a day and list examples of foods that provide calcium.
- Consider a true/false or multiple-choice quiz to test students’ knowledge about foods that provide calcium. Conduct the quiz orally and reward correct answers with snacks that provide calcium, such as low-fat or fat-free chocolate milk or low-fat or fat-free fruit yogurt.

Resources

More information about calcium and bone health can be found in *Milk Matters: For Strong Bones... For Lifelong Health*. You can read this booklet or order free copies at <http://www.nichd.nih.gov/publications/pubskey.cfm?from=milk> or by calling 1-800-370-2943.

Snack Ingredients List

Not all of the foods on the list below have high calcium values, so when “building” your recipes, think about combining foods that taste good together and provide a lot of calcium, too!

Milk, Yogurt, and Ice Cream	Milligrams of Calcium
Milk, 1% low-fat (1 cup)	290
Milk, fat-free (1 cup)	306
Plain yogurt, fat-free (1 cup)	452
Fruit yogurt, low-fat (1 cup)	345
Rice pudding, ready-to-eat (5 oz.)	74
Frozen yogurt, soft-serve vanilla (1/2 cup)	103
Cheese	
Swiss cheese, low-fat and fat-free (1 1/2 oz.)	336
Cheddar cheese, low-fat and fat-free (1 1/2 oz.)	307
American cheese, low-fat and fat-free (2 oz., or about 3 slices)	323
Mozzarella, part skim (1 1/2 oz.)	311
Cottage cheese, low-fat 1% (1/2 cup)	69
Fish	
Sardines (2 sardines)	92
Salmon, canned with bone (3 oz.)	181
Nuts	
Almonds (1 oz., approx. 23 nuts)	70
Fruit and Fruit Juice	
Dried figs (10 figs)	140
Raisins (1/2 cup)	36
Strawberries (1 cup)	21
Orange (1 medium orange)	50
Orange juice with added calcium (1 cup)	351

Snack Ingredients List (continued)

Breads	
English muffin, whole wheat (1 muffin)	175
English muffin, plain, enriched with calcium (1 muffin)	93
Bagel, plain, enriched with calcium (1 bagel)	63
Pita bread, whole wheat (1 large pita, 6½" diameter)	10
Waffle, homemade with low-fat or fat-free milk (1 waffle, 7")	191
Beans and Vegetables	
Blackeyed peas, boiled (1 cup)	211
Broccoli, raw (1 cup chopped)	43
Broccoli, cooked (1 cup chopped)	62
Peas, green, boiled (1 cup)	38
Spinach, cooked from frozen (½ cup)*	146
Carrot, raw (1 medium)	20
Baked potato with skin (1 medium)	26
Bok choy, boiled (1 cup)	158
Tofu, firm, with added calcium sulfate (½ cup)	253

*Calcium from this food may not be as well absorbed as from some other greens.

Smoothie Recipes

Tutti-Frutti Smoothie

1 cup fat-free milk
1 cup low-fat fruit yogurt
1 banana
1/2 cup strawberries
Ice as needed to thin*

Directions: Combine the fat-free milk, low-fat fruit yogurt, banana, and strawberries in a blender and blend. Slowly add ice until your Tutti-Frutti Smoothie is the consistency you like.

Berry Berry Good Smoothie

1 cup low-fat strawberry yogurt
1/2 cup orange juice with added calcium
1/3 cup frozen strawberries
1/3 cup frozen blueberries
1/3 cup frozen raspberries

Directions: Combine the low-fat yogurt and the orange juice in a blender and blend. Slowly add the frozen berries while blending. If your smoothie is too thick, add more orange juice until your Berry Berry Good Smoothie is the consistency you like.

Creamsicle Smoothie

1 cup orange juice with added calcium
1 cup fat-free vanilla frozen yogurt
1 orange peeled and sectioned (remove seeds)
Ice as needed to thin*

Directions: Combine the orange juice, vanilla frozen yogurt, and orange in a blender and blend. Slowly add ice until your Creamsicle Smoothie is the consistency you like.

Tropical Smoothie

1/2 cup low-fat vanilla or banana yogurt
1/2 cup orange juice with added calcium
1 banana**
1/2 cup frozen pineapple
1/2 cup frozen tropical fruit

Directions: Combine the low-fat yogurt and the orange juice in a blender and blend. Slowly add the banana, frozen pineapple, and frozen tropical fruit. If your smoothie is too thick, add more orange juice until your Tropical Smoothie is the consistency you like.

* Freeze fruit juice (pineapple, orange, apple, white grape) in ice cube trays beforehand and then save them in a resealable bag. Substitute the frozen fruit juice for plain ice for an extra flavorful smoothie.

** Try peeling, slicing, and freezing the banana in a resealable bag for an extra cold and creamy Tropical Smoothie.

Recipe Cards
