

Teen Years

A Once in a Lifetime Chance to Build Bone

Overview

Students will recognize the importance of building bone during their teen years for bone health and osteoporosis prevention later in life.

They will also assess their calcium intake, and compare it to the recommended calcium intake for their age. Finally, they will create a plan to improve their calcium intake to meet their recommendation.

Estimated time: 45-60 minutes.

Learning Outcomes

By the end of this lesson, students will understand the importance of building strong bones. They will be able to identify three ways to build strong bones.

Please refer to the Curriculum Links handout for a list of learning standards achieved in each grade.

Key Concepts

- Recent evidence shows that the food and activity choices teens make can have immediate consequences—a higher bone fracture rate in youth is associated with low calcium intake.
- Though we are accustomed to thinking of bone health as a disease of old age, in reality, the pre-teen and teen years are the most critical years for building healthy bone.
- Calcium-rich diets and weight-bearing activities are necessary for building healthy bone.

Materials

- Class set of Calcium Calculator™ brochures
- Computer, Projector, Screen and Power Point presentation with teacher notes downloaded from www.nutritioneducationbc.ca
- Teacher Backgrounder: Common Calcium Concerns (available from BC Dairy Association)
- Props (measuring cups, measuring spoons, calcium-rich foods)

If preparing calcium rich snacks: (optional learning activity 4)

- Ingredients for smoothie (milk, yogurt, fruit) or muesli (grains, fruit/nuts/seeds, yogurt, milk) or yogurt sundae (granola or grains, fruit/nuts/seeds, yogurt)
- Small cups for tasting, spoons if preparing muesli or yogurt sundae
- Blender for smoothie

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Procedure

Learning Activity 1: Are you getting enough calcium?

- a. Run the Power Point presentation “Teen Years: A Once in a Lifetime Chance to Build Bone”. Introduce the topic of the lesson. (Slide 1)
- b. Ask students to write down on a piece of paper what they ate and drank the day before. Have them assess their calcium intake using the Calcium Calculator™ brochure. Ask students to complete Step 2 of the Calcium Calculator™ brochure. (Slide 2)

Learning Activity 2: Let’s build bone!

- a. Explain to students why it is important to build bone in their teen years. (Slide 3–12)
- b. Explore some of the teen-related risk factors that can affect bone health. (Slide 13–19)
- c. Identify how teens can build healthy bone. (Slide 20–31)

Learning Activity 3: Let’s get dense!

- a. Ask students to complete Steps 3 and 4 of Calcium Calculator™. Students will develop a plan to get the calcium they need. (Slide 32)
- b. Brainstorm with your students a list of challenges they may face when trying to get enough calcium (e.g., time, friends, family, don’t like calcium-rich foods, don’t know how to prepare calcium-rich snacks, lack of appropriate choices available). Use the examples provided in the presentation to help them problem-solve. (Slides 33–36)
- c. Wrap up the presentation by reviewing the key messages. (Slide 37–39)

Learning Activity 4: Prepare calcium-rich snacks (optional)

- Choose a recipe from the recipe handout.
- Make a calcium-rich snack. (Slide 40)

Extension Activities

Distribute the list of assessment activities to your students and have them select one or more.

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Extension Activities

- Visit a grocery store. Besides milk products, what other calcium-rich foods are sold in the store? Check nutrition labels and record the calcium (expressed as % daily value) content of different products. Are there some calcium-rich products you would like to try? Prepare a summary of your grocery store visit and share your findings with the class.
- Form a group and research in your school/public library or on the internet about specific bone health topics. You can also interview the community nutritionist at your local health unit. You may write a paper on the topic, or present your research findings to the class.

Suggested topics:

- How does osteoporosis develop?
 - How do you meet the 1300 mg calcium recommendation if you do not consume any milk products? Develop and share a sample meal plan and tips for boosting calcium intake.
 - What is lactose intolerance? How can a person with lactose intolerance meet his/her calcium needs?
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- Form a student “Super Calcium” cookbook committee; assign responsibilities for promotion, cookbook design/layout, nutritional analysis, financial management, etc. Each student in the class will contribute a calcium-rich recipe. Compile the recipes into a cookbook for sale in the school community as a fundraising event.
 - Use the smoothie recipe provided by your teacher or invent your own to sell smoothies as part of your school fundraising efforts.
 - Use the Bone Zone video (available from BC Dairy Association) and the information provided by your teacher in the Power Point presentation on calcium and bone health to prepare a video on the importance of bone health in teen years.
 - Invent a bone-building exercise (jumping rope, jogging, dancing, weight-lifting, step aerobics) that you will feature in a station in the school gym. This activity can be done as a regular Physical Education class.
 - Bring various calcium-rich foods: milk, flavoured milk, yogurt, cheese, skim milk powder, calcium-fortified beverages, almonds, pudding, oranges, broccoli, etc. Set up calcium-rich food stations in the classroom. Students will then visit each food station to taste the different snacks and record their comments and ideas (taste, appearance, smell, texture, ways to incorporate the calcium-rich food in their diet). Stations can include details of food products, recipes, meal/snack ideas. One or two simple food demonstrations can be done. Examples: fruit milkshakes, cheese and crackers, muesli.



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Curriculum Links

Physical and Health Education

Grade 8

Students are expected to be able to do the following:

Healthy and active living

- Describe how students' participation in physical activities at school, at home, and in the community can influence their health and fitness
- Develop strategies for promoting healthy eating choices in different settings
- Assess factors that influence healthy choices and their potential health effects
- Identify and apply strategies to pursue personal healthy-living goals

Grade 9

Students are expected to be able to do the following:

Healthy and active living

- Describe how students' participation in physical activities at school, at home, and in the community can influence their health and fitness
- Propose healthy choices that support lifelong health and well-being
- Identify and apply strategies to pursue personal healthy-living goals



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Physical and Health Education 10

Students are expected to be able to do the following:

Healthy and active living

- Describe how students' participation in physical activities at school, at home, and in the community can influence their health and fitness
- Propose healthy choices that support lifelong health and well-being, for self and others
- Identify and apply strategies to pursue personal healthy-living goals

Foods and Nutrition 10

Nutrition and Healthy Eating

- C1 Demonstrate an understanding of the importance of nutrients during various stages of the lifecycle, and the effects of deficiencies and excesses
- C3 Analyse individual eating practices as they relate to physical and mental well-being, food fads, and food myths (e.g., comfort foods, trendy diets, exaggerated claims about foods)
- C4 Identify ways to improve the nutritional value of recipes

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Recipes for Calcium-Rich Snacks

Power Strawberry Smoothie

Ingredients

- Unsweetened frozen strawberries 10 (about 200g)
- Milk 2 cups
- Sugar or honey to taste

Equipment

- Blender
- Measuring spoons
- Rubber spatula
- Small serving cups
- Cooler or fridge (to store milk and frozen strawberries)

Makes about 1 litre (4 cups) or 20-3 Tbsp servings

1. Combine ingredients in a blender.
2. Blend until smooth. Serve immediately.

Tip:

- Experiment by adding ingredients such as banana or a few scoops of ice cream or yogurt.
- Substitute other frozen fruit such as raspberries, blueberries, blackberries or peaches for the strawberries.

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Recipes for Calcium-Rich Snacks

Express Muesli

Ingredients*

- Regular rolled oats (not instant) 1 cup
- Barley flakes 1 cup
- Wheat flakes 1 cup
- Raisins ½ cup
- Dried cranberries ½ cup
- Diced dried apricots ½ cup
- Sunflower seeds ½ cup
- Coconut ½ cup
- Chopped nuts ½ cup
- Cinnamon in a shaker
- Sugar for topping
- Milk or yogurt

*These ingredients and quantities are just guidelines. Adjust these to suit your needs in terms of cost, availability of ingredients and food allergies.

Equipment

- Bowls and serving spoons for each ingredient
 - Measuring cup
 - Individual bowls and spoons for each student
1. Portion each ingredient into individual bowls. Use a tablespoon to serve the grains and a teaspoon to serve the dried fruit, nuts and seeds.
 2. Line up the serving bowls in a row.
 3. Invite your friends to take a spoonful of each of the ingredients to mix together in their own bowls. They may sprinkle cinnamon and/or sugar on top of the mix.
 4. Pour milk or yogurt over muesli. Enjoy!

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Recipes for Calcium-Rich Snacks

Yogurt Sundaes

Ingredients

- Plain yogurt 1 container (650 mL)
- Berries
- Bananas
- Apples
- Apricots
- Peaches,
- Pineapple
- Raisins
- Dates
- Coconut
- Granola
- Sunflower seeds,

Equipment

- Small bowls
- Dessert dishes
- Spoons

Here is how

1. Set out an assortment of fresh or unsweetened, canned or frozen fruits, coconut and granola in small bowls.
2. Invite everyone to create his own special yogurt sundae by mixing together fruit and some yogurt and by topping with a spoonful of granola.