



HEALTHY BONES START WITH DAIRY

Use this information and the hands-on activities to encourage students to build strong bones for life!

More tools are available on MidwestDairy.com, including educator resources, nutrition and health information, printable food models, videos, recipes, the Dairy 3 for Me toolkit and much more!

Why Are Strong Bones Important?

Bones, all 206 of them, give the body the structure it needs. Bones also protect organs such as the brain and heart.

Since bones are hard, you may not think about them being living tissue, but they are. And, they require essential nutrients for growth and maintenance.

Up to 90% of bone mass (the amount of bone tissue in the skeleton) is acquired by age 18, which makes it very important for children and teens to build their bone bank!



YOU HAVE
206
BONES!

A HEALTHY LIFESTYLE NOW THROUGHOUT YOUR ADULT YEARS WILL HELP TO MAINTAIN BONE MASS AND A HEALTHY SKELETON.

How to Build Strong Bones:

Good nutrition is important for healthy bones and a healthy heart!

99% of the calcium in the body is found in our bones and teeth.

People ages 9 and older should strive for 3 servings of dairy every day (8 oz./1 cup of milk or yogurt or 1 ½ oz. of cheese) to meet calcium needs.

Exercise is important for bone health, too. Encourage students to be active for 60 minutes a day. Physical activity is good for their heart and their bones!



DAIRY 3 FOR ME OBSTACLE COURSE



Overview

This activity serves as a basic training activity that builds strong bones. Students move through various stations in the time allowed. These obstacles focus on achieving strong bones by being active and consuming 3 servings of dairy every day.

Equipment Needed

2 basketballs, soccer balls or similar sized balls, 3 Frisbees or flyers, 8 hula hoops and 6 jump ropes. You can print the Dairy 3 for Me logos to tape on each Frisbee or flyer from the Dairy 3 for Me toolkit found at MidwestDairy.com/dairy-resource-center/toolkits/.

PLAYING THE GAME

1. Getting Started

- Be sure to provide enough space between obstacles to ensure a safe environment.
- See diagram of layout.
- Divide students into three groups. Go down the line and give each student a food name (milk, cheese and yogurt) for the 3 main dairy foods.
- Demonstrate how to complete each obstacle.
- Students complete the course one at a time, allowing a safe distance between participants. The milk group will go first, cheese second and yogurt will go last.

2. Activity Goal

- Allow students to participate in moderate to vigorous physical activity and learn why they need 3 servings of dairy every day.

3. Activity Instructions

- After instruction, the students complete each activity individually.
- The first student begins at the start signal. After the first student finishes the Dairy Dribble station, the next student can go.

4. Nutrition Integration:

- This activity focuses on the importance of physical activity and 3 servings of dairy every day for strong bones.



STATION ONE: MILK RUN

Stagger the eight hula hoops as the diagram shows below. Students run through by putting one foot in each circle (similar to high knees through tires).

STATION TWO: DAIRY DRIBBLE

Dribble ball around 3 Frisbees or flyers that are lying on the floor in a straight line with 2 ft. between each one. Students need to go up and down once to end up where they started.

STATION THREE: JUMPING FOR DAIRY

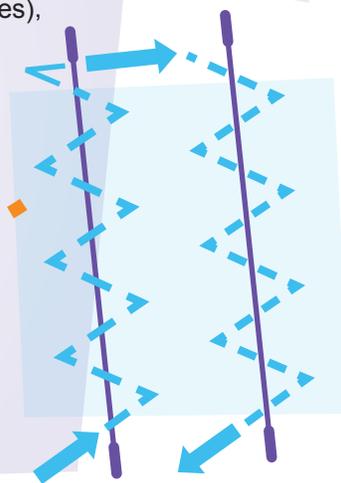
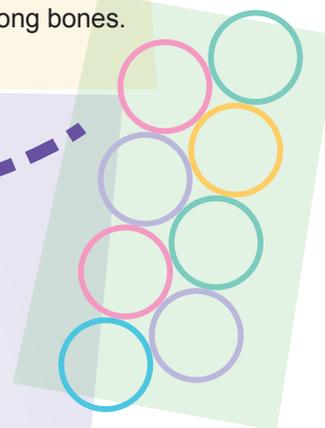
Students grab a jump rope and jump 30 times. Starting by saying "MILK" (jumping ten times), "CHEESE" (jumping another ten times) "YOGURT" (jumping 10 times, one last time).

STATION FOUR: CHEESE ZIG ZAG

Students start at one end of one jump rope and they jump from one side of the rope to the other with both of their feet together. They then do the same with the other rope so they end up back where they started.

STATION FIVE: GO, GO, GO, YOGURT PUSH-UPS

Laying on the ground students do 15 push-ups. They start by saying "MILK" (doing five push-ups), "CHEESE" (doing another five push-ups) and "YOGURT" (doing the last five push-ups). Once they complete the push-ups they are done and should cheer on the remaining students to finish strong!



HOW MUCH CALCIUM IS IN YOUR BONES?

Overview

This activity illustrates how much calcium is found in the bones of people at various ages.

Supplies Needed

- 10 lb. bag of flour
- Measuring cups-sized cups in $\frac{1}{4}$ cup, $\frac{1}{2}$ cup and 1 cup (or 3 1-cup sized ones that students can measure into) will be needed per student team
- Ruler or Spatula
- 5 gallon-sized zipper lock plastic bags
- Large sheet of paper to cover work area (for easy clean up)

ACTIVITY

Divide class into teams of 3 to 5 students each and assign each team member a role.

Scooper: Scoop the measuring cup into the flour and transfer it into the plastic bag.

Leveler: Using a ruler or spatula level out the amount of flour being scooped. Report the amount of flour being used to the quality control person.

Holder: Hold the plastic bag open for the scooper to transfer the flour into the bag. Seal the bag when the measurement is complete.

Quality Control: Check that the measuring cups being used will produce the total amount of flour needed for each age group. Give the “ok” to transfer flour to the plastic bag. Label the bag and keep track of the total amount of flour in the bag.

- 1 Have the teams start by determining which measuring cups to use.
- 2 Teams will measure out the following amounts of flour to represent the amount of calcium found in the bones of people in these age groups.
(One team measures out flour for one age category)
- 3 Have students also make a sign to label the age group that they are doing.

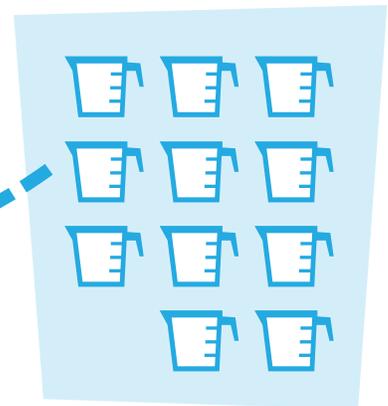
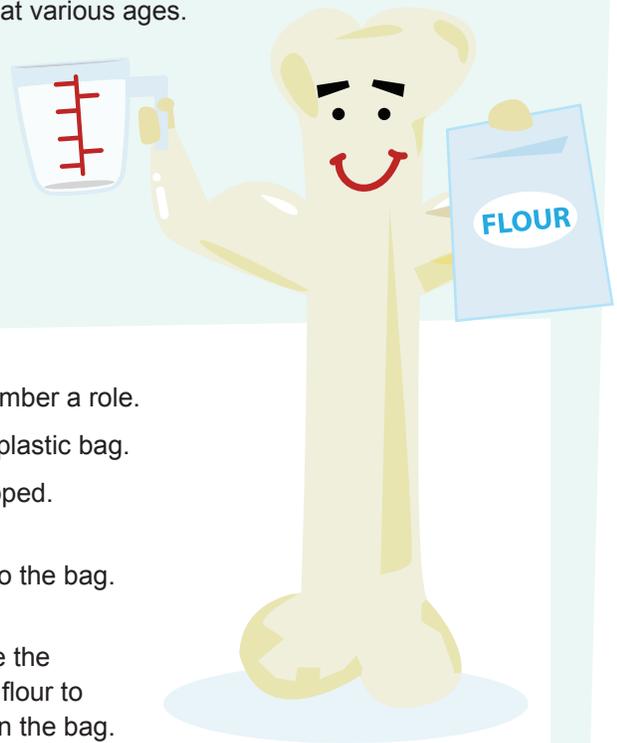
$\frac{1}{4}$ cup flour = newborns

$3\frac{1}{2}$ cups flour = 10-year-old

7 cups flour = 15-year-old

11 cups flour = adult

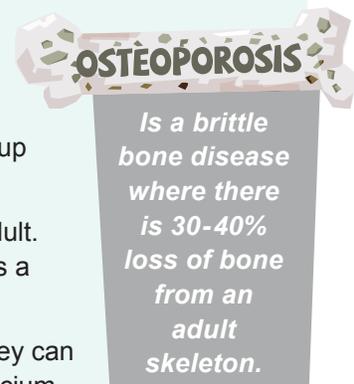
$6\frac{1}{2}$ cups flour = person with osteoporosis



Discussion:

- Display the bags of “calcium” (flour) in age order from newborn through adult. Ask the students what they can conclude by looking at the amount of “calcium” in each bag.
- Explain that as youth grow, their bones require more calcium to reach their full length and size. Your body can’t make calcium on its own. The best sources of calcium come from the Dairy Group which includes foods like milk, cheese and yogurt.
- Display the bag of “calcium” for a person with osteoporosis next to the bag of “calcium” for an adult. Ask students what difference they see between the two. Share with students that osteoporosis is a bone disease where bones become brittle and weak.
- Explain that our bones are growing strength and structure up until the age 30. As people age, they can lose calcium from their bones, especially if they are not eating Dairy Group foods that supply calcium. A healthy lifestyle now and throughout the adult years will help to maintain bone mass and a healthy skeleton.

Note: Flour is used only to visually represent calcium in this activity, but is not a good source of calcium.



Is a brittle bone disease where there is 30-40% loss of bone from an adult skeleton.

BONE DEVELOPMENT AND STRENGTH

Overview

Students will discover how their inner framework strengthens bones.

Supplies Needed

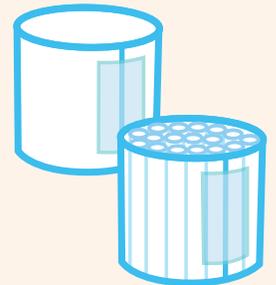
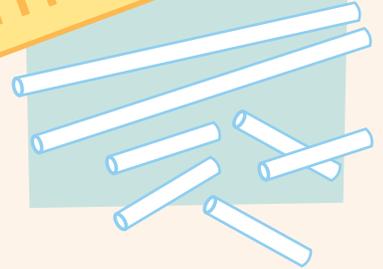
Straws, rulers (one for each group), paper, pencils, scissors, glue or tape and paperback books

Preparation

- Gather materials
- Divide students into work groups
- Optional: cut paper strips and straws

Activity

- Divide students into work groups. Direct the groups to cut a rectangular strip 2 ½ inches tall by 7 inches long. Repeat to make a second rectangular strip.
- Ask the groups to make two identical cylinders by gluing/taping the short edges together.
- While the glue dries, ask students to use the scissors to cut straws into 2 ½ inch lengths. Each group will need about 60 of these shortened straw tubes.
- Tell the students it is now time to discover how bones get their strength. Place both cylinders on a flat surface, side by side. Stand the straw tubes inside one of the cylinders, and leave the other cylinder empty.
- Place paperback books on the empty cylinder one at a time until the cylinder collapses. How many books did it take? Now do the same with the filled cylinder. How many books did it take to collapse the cylinder?
- Review with the students that the cylinder that was filled with small tubes was the strongest. The network of small tubes provides strength that is not found in the empty cylinder. The structure of a healthy bone looks very much like the cylinder with the tubes.



BUILD STRONG BONES!

Why 3 Servings of Dairy Every Day?

The average person's daily dairy intake in the U.S. falls below the 2015 Dietary Guidelines for Americans recommendation of 3 daily servings for people ages nine and older, with children and teens often falling short in their consumption. Dairy products such as milk, cheese and yogurt are packed with nutrition (with nine essential nutrients, including calcium and protein) that help build, repair and maintain growing bodies and are an important part of any healthy diet.

Lactose Intolerant?

Lactose intolerance does not mean dairy-free. For those that may have difficulty digesting lactose, drinking lactose-free milk, consuming small amounts of milk at a time, and choosing lower lactose dairy foods such as some cheeses and yogurt are proven options.



Please share this with other educators who might find these activities useful.

Visit MidwestDairy.com for additional educator resources, nutrition and health information, printable food models, videos, recipes, and much more!



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