



[KidsHealth.org/classroom](http://KidsHealth.org/classroom)

## Teacher's Guide

This guide includes:

- Standards
- Related Links
- Discussion Questions
- Activities for Students
- Reproducible Materials

## Standards

This guide correlates with the following National Health Education Standards:

Students will:

- Comprehend concepts related to health promotion and disease prevention to enhance health.
- Demonstrate the ability to access valid information and products and services to enhance health.
- Demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
- Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
- Demonstrate the ability to advocate for personal, family, and community health.

National Health Education Standards:  
[www.cdc.gov/healthyschools/standard/index.htm](http://www.cdc.gov/healthyschools/standard/index.htm)

The following activities will help your students understand and appreciate the work of their bones, muscles, and joints.

## Related KidsHealth Links

### Articles for Kids:

#### Your Bones

[KidsHealth.org/en/kids/bones.html](http://KidsHealth.org/en/kids/bones.html)

#### Movie: Bones & Skeletal System

[KidsHealth.org/en/kids/ssmovie.html](http://KidsHealth.org/en/kids/ssmovie.html)

#### Your Muscles

[KidsHealth.org/en/kids/muscles.html](http://KidsHealth.org/en/kids/muscles.html)

#### Movie: Muscular System

[KidsHealth.org/en/kids/msmovie.html](http://KidsHealth.org/en/kids/msmovie.html)

#### The Facts About Broken Bones

[KidsHealth.org/en/kids/broken-bones.html](http://KidsHealth.org/en/kids/broken-bones.html)

#### Cool Cast Facts

[KidsHealth.org/en/kids/casts.html](http://KidsHealth.org/en/kids/casts.html)

#### Strains and Sprains Are a Pain

[KidsHealth.org/en/kids/strains-sprains.html](http://KidsHealth.org/en/kids/strains-sprains.html)

#### Getting an X-ray (video)

[KidsHealth.org/en/kids/video-xray.html](http://KidsHealth.org/en/kids/video-xray.html)

## Discussion Questions

*Note: The following questions are written in language appropriate for sharing with your students.*

1. Can you name some of the bones you have in your body? Where can you find them?
2. Bones are so hard! Would it be easier for people to move around without them?
3. Where do you have joints in your body? How do joints move? What would happen if you didn't have joints?
4. You've got more than 600 muscles in your body, but what can they do? Where can you find muscles in your body? Are all of the muscles in your body alike?
5. Have you ever broken a bone? Or strained a muscle, or sprained a ligament? How did it happen? How did you get better?
6. Your bones, muscles, and joints keep you moving and grooving. How can you take care of each of these important body parts?



## Activities for Students

*Note: The following activities are written in language appropriate for sharing with your students.*

### A Winning Combination

#### Objectives:

Students will:

- Learn how bones, muscles, and joints work together to move the body

#### Materials:

- Computer with Internet access
- Word processing program, or pen and paper

#### Class Time:

- 1 hour

#### Activity:

Think of a physical activity, exercise, or sport that you like. To find out how bones, muscles, and joints work together, we'll focus on one area: the knee. First, check out the slideshow at [KidsHealth.org/en/kids/muscles.html](http://KidsHealth.org/en/kids/muscles.html), then write about how your knee works when you do your activity or exercise, or play your sport.

Make sure to include:

- The names of the bones that meet at the knee joint
- The jobs of all the parts of the knee (bones, cartilage, muscles, ligaments, and tendons)
- How these parts work together

#### Extension:

Pick one important way to be safe and protect your bones, muscles, and joints when you're being active, exercising, or playing sports. Make a poster that illustrates your safety tip. Hang your posters in the school gym or near the playground.



## Dr. Build-A-Bone's Laboratory

### Objectives:

Students will:

- Learn about the materials that make up bone
- Label a cross section of bone

### Materials:

- Computer with Internet access
- “Dr. Build-A-Bone’s Laboratory” handout

### Class Time:

35 minutes

### Activity:

Test tubes fizzing. Bunsen burners heating flasks full of mysterious chemicals. Electricity sizzling along wires. You’ve just entered the laboratory of the mad scientist, Dr. Build-A-Bone! Dr. Build-A-Bone has dedicated his life to discovering what mysterious substances are in bones, and to developing a process for growing new bone. For years scientists have been searching for his laboratory – now you are the lucky one who has found it! But you don’t have much time to look around, because the mad doctor will soon return. You grab some documents and make a quick getaway. Once home, though, you discover that Dr. Build-A-Bone’s papers are incomplete, and parts of the bones are not labeled (see the “Dr. Build-A-Bone’s Laboratory” handout). Use the articles at KidsHealth.org, especially the slideshow at KidsHealth.org/en/kids/bones.html, to help you fill in the blanks.

## Reproducible Materials

### Handout: Dr. Build-A-Bone's Laboratory

[KidsHealth.org/classroom/3to5/body/systems/bones\\_handout1.pdf](http://KidsHealth.org/classroom/3to5/body/systems/bones_handout1.pdf)

### Answer Key: Dr. Build-A-Bone's Laboratory

[KidsHealth.org/classroom/3to5/body/systems/bones\\_handout2.pdf](http://KidsHealth.org/classroom/3to5/body/systems/bones_handout2.pdf)

### Quiz: Bones, Muscles, and Joints

[KidsHealth.org/classroom/3to5/body/systems/bones\\_quiz.pdf](http://KidsHealth.org/classroom/3to5/body/systems/bones_quiz.pdf)

### Answer Key: Bones, Muscles, and Joints

[KidsHealth.org/classroom/3to5/body/systems/bones\\_quiz\\_answers.pdf](http://KidsHealth.org/classroom/3to5/body/systems/bones_quiz_answers.pdf)



Name:

Date:

## Dr. Build-A-Bone's Laboratory

Instructions: Conduct some research on KidsHealth.org (check out the slideshow at KidsHealth.org/en/kids/bones.html), then label the parts of the bone, and complete the notes and other documents.

*Diagram of Bone*

*Notes*  
Adult human beings have \_\_\_\_\_ bones in their bodies. We also have more than \_\_\_\_\_ muscles.

*Experiments*  
Which substance is needed in the diet to keep bones strong?  
a) Sugar  
b) Calcium  
c) Bonium

*Results*  
Is cartilage important for movement?  
Yes  
No

These are the names of the two bones I will try to create in the lab:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Answer Key: Dr. Build-A-Bone's Laboratory

*Diagram of Bone*

periosteum

compact (hard) bone

cancellous (spongy) bone

bone marrow

*Notes*

Adult human beings have 206 bones in their bodies. We also have more than 600 muscles.

*Experiments*

Which substance is needed in the diet to keep bones strong?

a) Sugar  
b) Calcium  
c) Bonium

*Results*

Is cartilage important for movement?

Yes  
No

These are the names of the two bones I will try to create in the lab:

Any two individual bones, or group of bones, such as the skull



Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Quiz

Instructions: Answer each question.

1. True or false: The bones of your skeleton are alive. \_\_\_\_\_
2. What is the innermost part of the bone called?
  - a. periosteum
  - b. compact bone
  - c. cancellous bone
  - d. bone marrow
3. What are the 26 bones of the spine called? \_\_\_\_\_
4. Which bones protect your heart, lungs, and liver? \_\_\_\_\_
5. List three ways to take care of your bones:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. The place where two bones meet is called a \_\_\_\_\_.
7. Name two types of moving joints:  
\_\_\_\_\_  
\_\_\_\_\_
8. Which of the following is NOT a type of muscle?
  - a. smooth muscle
  - b. rough muscle
  - c. cardiac muscle
  - d. skeletal muscle
9. Skeletal muscles are held to the bones with the help of \_\_\_\_\_.
10. Which of the following cushions and protects the bones where they meet?
  - a. ligaments
  - b. tendons
  - c. cartilage
  - d. muscle



## Quiz Answer Key

1. True or false: The bones of your skeleton are alive. true
2. What is the innermost part of the bone called?
  - a. periosteum
  - b. compact bone
  - c. cancellous bone
  - d. bone marrow
3. What are the 26 bones of the spine called? vertebrae
4. Which bones protect your heart, lungs, and liver? ribs
5. List three ways to take care of your bones:  
any of the following: wear a helmet; wear wrist supports and elbow and knee pads; wear all of the right equipment for sports like football, soccer, lacrosse, or ice hockey; don't play on trampolines; eat foods with calcium; be active
6. The place where two bones meet is called a joint.
7. Name two types of moving joints:  
hinge joints  
ball-and-socket joints
8. Which of the following is NOT a type of muscle?
  - a. smooth muscle
  - b. rough muscle
  - c. cardiac muscle
  - d. skeletal muscle
9. Skeletal muscles are held to the bones with the help of tendons.
10. Which of the following cushions and protects the bones where they meet?
  - a. ligaments
  - b. tendons
  - c. cartilage
  - d. muscle