

The Human Body: Train It Right

By Emily Sohn and Katie Sharp

Science Objective

As they read this book, children will explore the musculoskeletal system in their bodies. A skeleton is a frame made of bones that keeps the body upright, allows us to move, and protects organs. Without bones, muscles, and joints, the body would not move or bend. Ligaments connect the bones, and tendons connect muscles to bones. Muscles and joints work together to make the body move.

iScience Puzzle: Warming Up

Children are introduced to three important needs of the human body. Bodies need rest, food for energy, and exercise to build muscles. Children will investigate why muscles are needed and how the skeletal system works. Based on this information, children will understand the best way to train to play soccer.

Objectives ► Children will:

- explore the skeletal system.
- understand how muscles work and how they are attached to bones.
- understand how the three types of joints allow the body to bend and move.

Lesson Plan

Before Reading

Investigation

Have children look at the cover of the book. Ask: *Why do we need bones? Are all bones the same size and shape? How many bones do you think the human body has?*

Science Concepts

The bones in the skeletal system keep us upright. Bones allow us to move and some protect organs. Adults have 206 bones.

Have children extend and flex their arm. Ask: *Can you feel a muscle? How do you think bones stay connected?*

Bones are connected by muscles and joints.

Explain that children will learn more about bones and their purposes as they explore the skeletal system. They will also learn that muscles and joints keep bones attached and make it possible for us to bend. Encourage children to think about how they can help keep their bones and muscles healthy.

During Reading

Investigation

pp. 6–7: Discuss the advantages of each choice. Ask: *Why do we need rest? Does food help us grow strong? Do we need to exercise to stay strong?*

Science Concepts

Bones require nutrition to grow strong. Muscles grow stronger through exercise.

pp. 8–9: Children should understand that muscles contract and enable bones to move.

Muscles stretch and contract to move the body.

pp. 10–11: Compare bones that protect organs to protective gear, like helmets and chest pads. Ask: *How is a skull like a helmet?* Distinguish between ligaments and tendons. Ask: *What happens if you tear a ligament?*

Ligaments connect bones, and tendons attach muscles to bones.

pp. 12–13: Ask: *Have you ever noticed the soft center in the bones of chicken you may have eaten?*

Bones have different parts. Each part plays a certain role in the body.

pp. 14–15: Ask: *Why is it important to have strong bones? How can you build strong bones?*

Bones store calcium and nutrients.

pp. 16–18: Ask: *How can you build muscle?* Discuss if children have ever exercised so hard that their muscles hurt. Ask: *Were you able to move as easily when your muscles hurt? Does this help you understand why muscles are so important in the body?*

Some muscles work on their own. Most muscles work only when you control them.

During Reading (continued)

Investigation

Science Concepts

pp. 19–20: Have children stand up and then bend each part of their body. Ask: *Where do you have joints? Show me.* Make sure children include the joints in their fingers and toes.

Three kinds of joints—hinge, ball-and-socket, and pivot—make it possible for parts of the body to move and bend.

pp. 21–22: Invite children to share stories of people they know who have lost a limb.

New technologies allow people to live productive and fulfilling lives even when missing a limb.

pp. 23–24: Have children flex their arm muscles. Ask: *Does your biceps muscle become harder when it contracts?* Explain that exercise contracts and relaxes muscles. Have children flex their cardboard and balloons to reinforce what they are reading.

Muscles contract and relax when they are used.

p. 25: Explain why it is important to exercise muscles that have become damaged. Gentle exercise makes muscles feel better sooner.

Muscles repair themselves with rest and gentle movement.

pp. 26–27: Ask: *How do you think your body would perform without rest? Without good food? Without exercise?*

To be their best, muscles and joints need good nutrition, exercise, and rest.

pp. 28–29: Encourage children to keep a log of their rest, food, and exercise. Review the best foods to eat.

Putting learning into practice is the best way to understand science concepts.

After Reading

Restate the key ideas in this book. The skeleton is made up of bones that keep us upright and protect the body's organs. Bones are attached to each other by ligaments. Muscles are attached to bones by tendons. Muscles and joints allow us to move and bend. Exercise and good nutrition can make strong bones and muscles.

Investigation

Understanding Science

Encourage children to perform simple exercises over a period of two weeks. Ask them if the workout becomes easier the more they do it.

Muscles grow stronger with use, rest, and good food.

Challenge children to learn the names of some of the bones in the human body.

Developing an awareness of bones will help children appreciate what their bodies can do.