











# Bones and Muscles Notes

Chapter 9 Lesson 1

# 9.1 The Musculoskeletal System

## LESSON Vocabulary

- |   |   |
|---|---|
|  skeletal system |  contraction |
|  bone            |  relaxation  |
|  joint           |  tendon      |
|  cartilage       |  flexion     |
|  muscle          |  extension   |



# The Skeletal System

- The **skeletal system** provides support, protection, and movement.
- **Bones** are hard tissue made mostly of cells, collagen, and calcium.

Virtual  
Lab



What are the major  
bones in the human  
body?



Resources

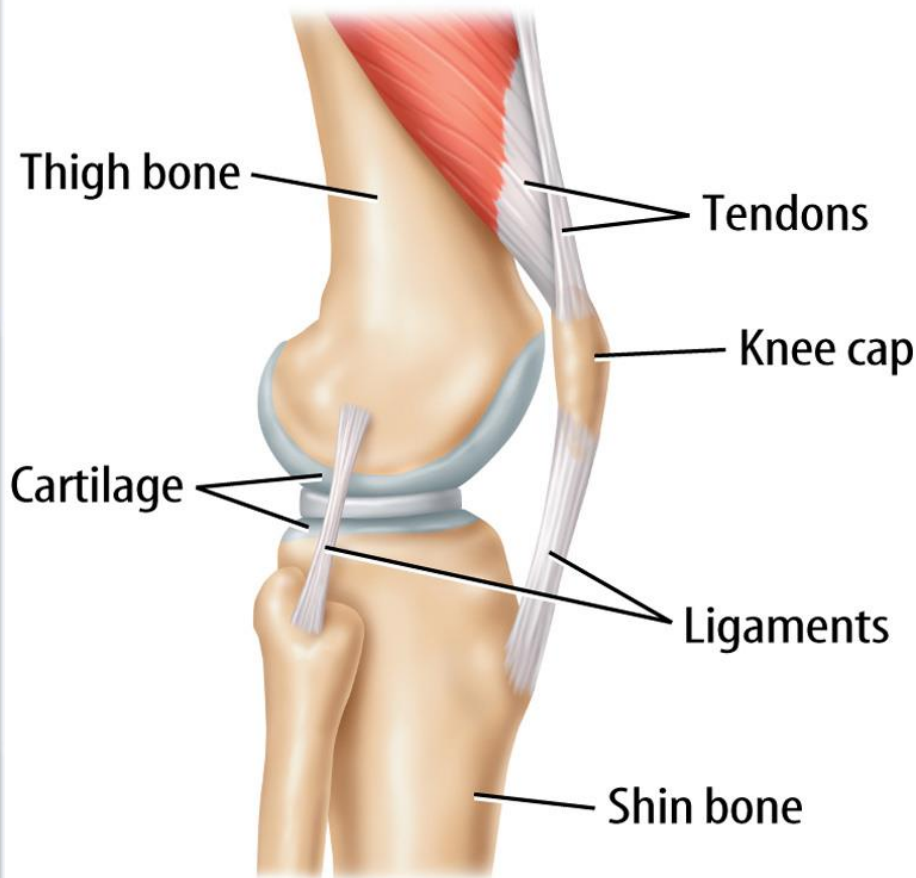


## Functions of the Skeletal System

- Bones protect the soft tissue of the brain, spinal chord, and organs.
- Bones provide attachment points for muscles.
- They store calcium and phosphorous for later use.
- Blood cells are formed in the bone marrow in the middle of some bones.



## Bones Connect at Joints



- Our bodies are flexible because bones connect at **joints**.
- **Cartilage** is a strong yet flexible and elastic tissue that reduces friction and increases flexibility.

# Bones Connect at Joints (cont.)

Interactive  
Table



Joints in the  
Human Body

[Part A](#) [Part B](#)



Resources



# The Muscular System

- **Muscle** is tissue made of long cells that contract.
- Muscles are bundles of muscle cells called muscle fibers.
- Small tubes in the fibers contain bundles of muscle filaments.
- Muscle filaments move closer to each other during muscle **contraction**, and move away during muscle **relaxation**.



## Types of Muscles

- Voluntary muscles can be controlled.
- Involuntary muscles work without your active involvement.
- The three types of muscle tissue are:
  - skeletal
  - cardiac
  - smooth





## How do you move?

- The skeleton provides support for muscles.
- A muscle usually connects to at least two different bones.



– **Tendons** connect bones to muscles and do not stretch as much as ligaments.



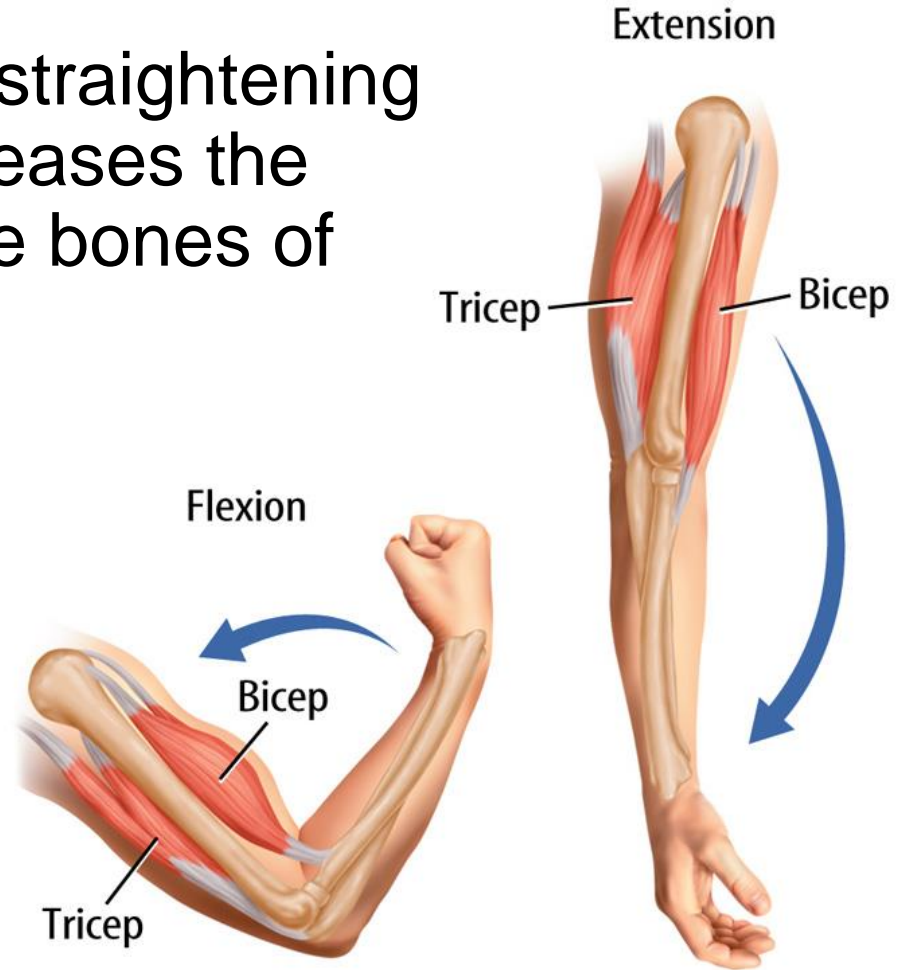
– **Flexion** is the bending of a limb that decreases the angle between the bones of the limb.



## Opposing Muscle Groups



- **Extension** is the straightening of a limb that increases the angle between the bones of the limb.



Brain  
POP™

[How Joints  
Work](#)

[Click here to learn more!](#)



Resources



# Opposing Muscle Groups (cont.)

**con**cepts In **MO**tion

QuickTime™ and a  
Cinepak decompressor  
are needed to see this picture.



Resources

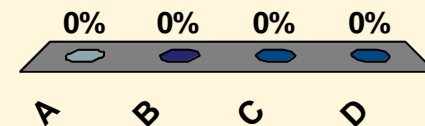


## LESSON 1 Review



Which of the following does not make up bone tissue?

- A calcium
- B cells
- C smooth tissue**
- D collagen



Resources

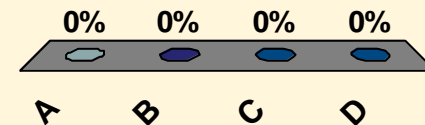


## LESSON 1 Review



What is the term for the location where bones connect?

- A** joints
- B** tendons
- C** ligaments
- D** cartilage



Resources



## LESSON 1 Review



**What does the slight contraction of triceps contribute to the contraction of the biceps during flexion?**

- A** adds strength to the motion
- B** keeps the bicep from contracting too much
- C** keeps the elbow in its proper place
- D** makes the motion smooth and controlled

