

Bone Anatomy

1. Question & Research Task

The skeletal system is a complex organization of many bones. It is important to understand the system as a whole before identifying the significance of a single bone. What do you know about the skeletal system?

Review the basics of the skeletal system by viewing the resources listed below.

- **[Human Skeleton – Discovery Education](#)**

(Watch the video through BCPS Links in your web browser)

- **[Skeleton- World Book Advanced](#)**

(Access through [BCPS Digital Content Access](#))

Test your basic knowledge of the skeletal system by taking the [quiz](#).

In this Slam Dunk, you will conduct brief, focused research to respond to the inquiry question:

How does the structure of a single bone impact the skeletal system?

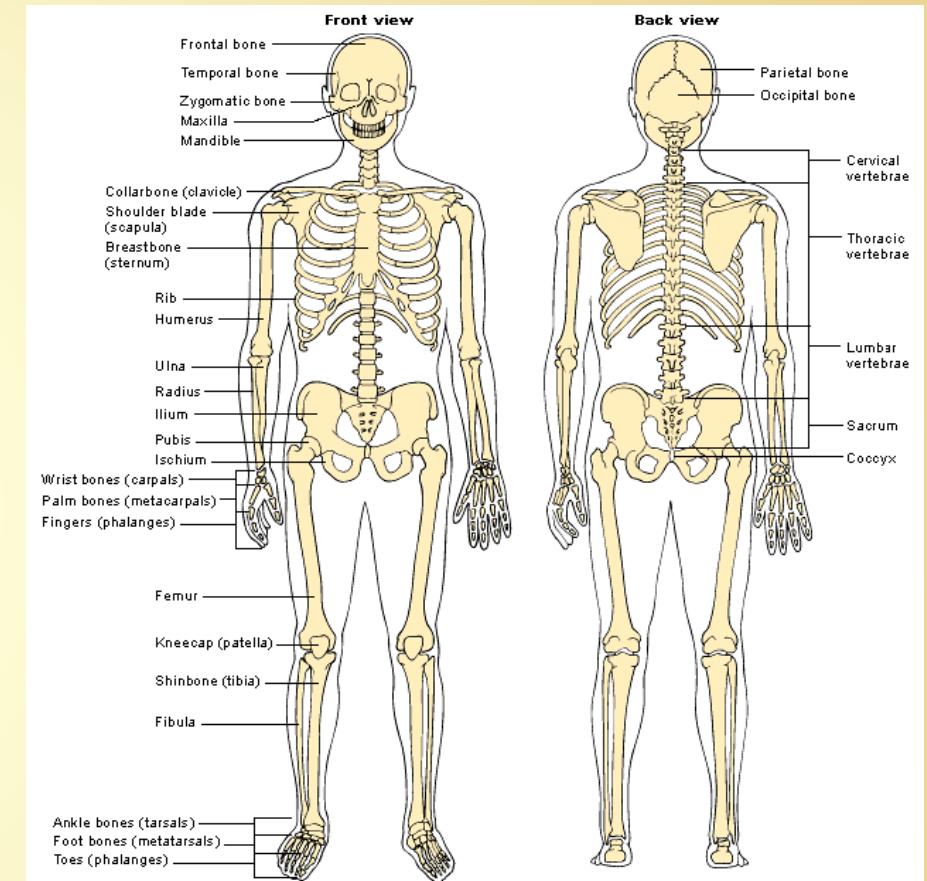


Image Source: [World Book Advanced](#) by subscription

2. Information Sources

Now that you have a basic understanding of the skeletal system, it is time to look closely at one particular bone. The **femur** is the largest bone in the body. While viewing the resources below, consider the following questions:

- What layers exist in the femur?
- Where is the femur located in the skeletal system?
- What function does the femur allow humans to achieve?
- What is the role of the femur?
- Which bones connect to the femur?

Take notes using the [Bones Cornell Notes Sheet](#).

Digital resources:

- [Your Bones](#)
- [3D Human Skeletal System - Discovery Education](#)
(Click through the images to find the ones you need)
- [Leg: Worldbook Online](#)
- [How Bones Make Blood](#)
(Ted-ED video available through Youtube)

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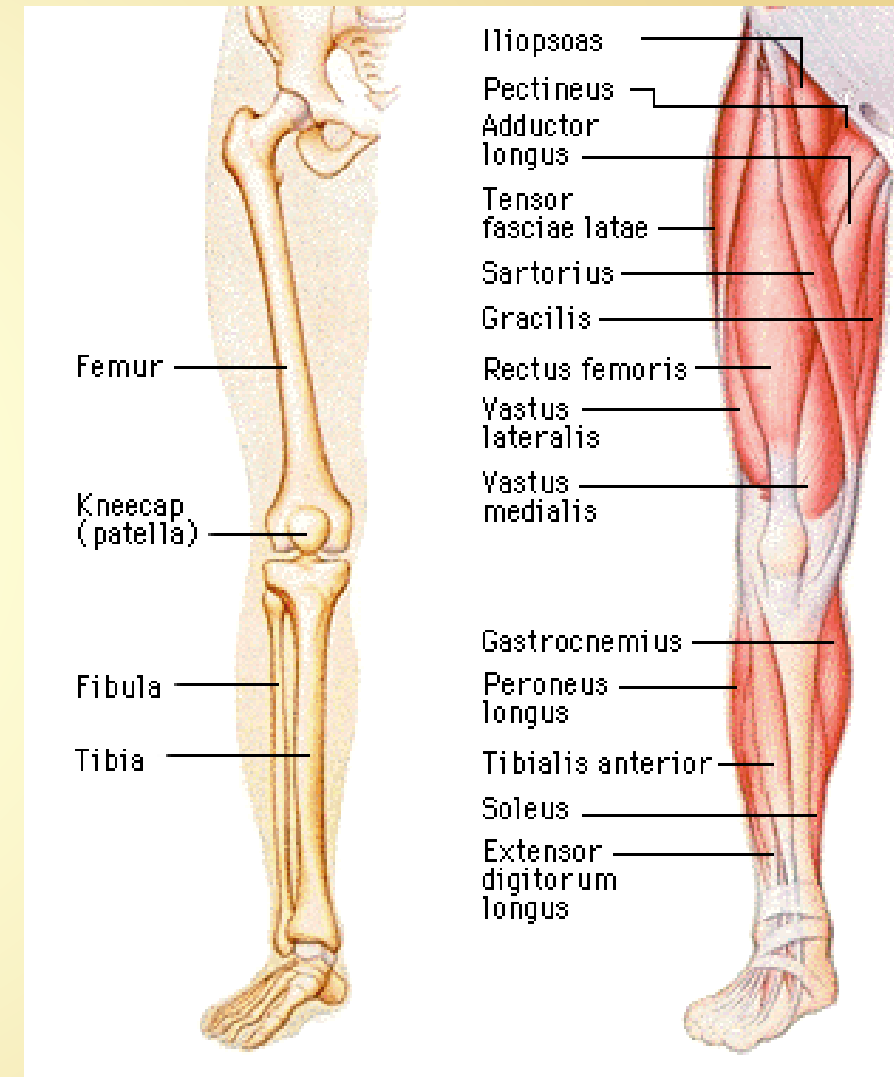


Image Source: [World Book Advanced](#) by subscription

3. Student Activity

Using the notes from the previous resources, complete the following questions about the femur in complete sentences. Click [here](#) to access the document [Bones Organizer](#).

1. What is the function of the femur?

2. How does the structure of the femur impact the strength of the bone?

3. How does the location of the femur impact the significance of the bone?

4. What is the role of the femur in relation to human movement?

4. Assessment Activity

How does the structure of a single bone impact the skeletal system?

Now it is time to put your new knowledge to work. You have researched the **skeletal system** as a whole and the **femur** in detail. Synthesize this information to answer the essential question:

Consider the question in terms of an athlete running. **Choose one** of the following options to explain how the process of running would change if the femur was:

- Shorter
- Longer
- Composed of less layers/different materials

Create a diagram and detailed explanation. Be sure to include:

- Change in appearance
- Change in function
- Change in skeletal system

Diagram and explanation may be graded using the [Bones Assessment Rubric](#).

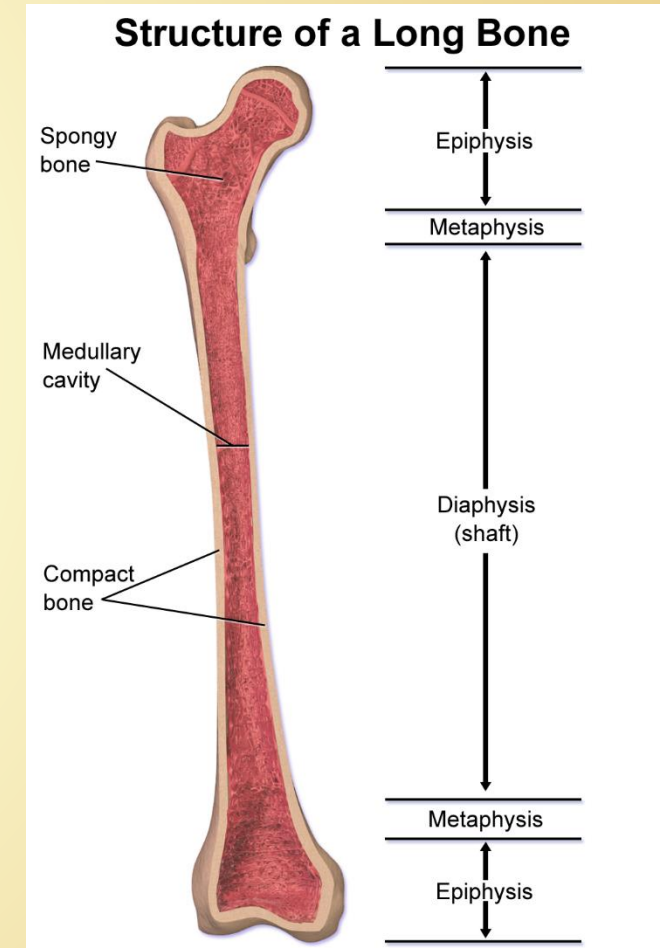


Image Source: Wikimedia Commons

5. Enrichment Activities



There are 205 other bones in the body. Choose one of the bones to research and discover answers to the following questions:

- **What layers exist in the bone?**
- **Where is the bone located in the skeletal system?**
- **What function does the bone allow humans to achieve?**
- **What is the role of the bone?**
- **Which bones connect to the chosen bone?**

Resources:

- [Your Bones](#)
- [World Book Advanced](#) (type in the name of the bone in the search box **Access through [BCPS Digital Content Access](#))

Create a **flash card** summarizing the following information

Left side

- Image of the bone

Right side

- Location in the skeletal system
- Function of the bone
- Connecting bones
- Interesting fact about the bone

After completing your research, share your flash cards and new knowledge with your classmates and teacher.

6. Teacher Resources

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Grade 11/12 Content Area: Anatomy and Physiology Unit

Time Frame: 1 90-minute class period

Notes to the teacher:

- Collaborate with your school library media specialist to plan and implement this lesson.
- Provide students with login information as needed to authenticate BCPS Digital Content. Login information is on the **BCPS Digital Content** page in the [Apps Portal](#).
- Consider using the [Schoology Assignment App](#) feature to assign Google Docs for students to access, edit, and submit through Schoology.

Learning Standards Alignment

Content Learning Standards

Next Generation Science Standards

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

MCCR ELA Standards for Grades 9-12

Reading: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Writing: 7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

AASL Standards Framework for Learners Inquire: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.

Think: Learners display curiosity and initiative by:

I.A.2 Recalling prior and background knowledge as context for new meaning.

Create: Learners engage with new knowledge by following a process that includes:

I.B.1 Using evidence to investigate questions. I.B.3 Generating products that illustrate learning.

Share: Learners adapt, communicate, and exchange learning products with others in a cycle that includes:

I.C.1 Interacting with content presented by others.

Grow: Learners participate in an ongoing inquiry-based process by:

I.D.2 Engaging in sustained inquiry.

P21 Framework: 21st Century Student Outcomes

3. Information, Media & Technology Skills: Information Literacy: Access information efficiently and effectively; Use information accurately and creatively for the issue or problem at hand.

ICT Literacy: Use technology as a tool to research, organize, evaluate and communicate information.

Last updated: July 2022. [Report broken links](#) to BCPS Library Media Programs & Digital Resources.

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