## Laboratory Manual for Clinical Kinesiology and Anatomy 4th Edition Lippert Test Bank

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Basic Clinical Kinesiology and Anatomy

Answers

# Chapter 2 Skeletal System

#### **PRE-LAB WORKSHEETS**

- 1. List five functions of the skeletal system. Supports and gives shape to body Protects vital organs Assists movement Manufactures blood Stores calcium and other mineral salts
- 2. Complete the table that follows, indicating whether the listed body parts are part of the axial or appendicular skeleton.

Body Part	Axial	Appendicular
Arms		<u>x</u>
Head	<u>x</u>	
Vertebrae	<u>x</u>	
Lower extremities		<u>x</u>

3. The organic (living) component of bone provides bone elasticity.

The inorganic (nonliving) component of bone provides bone strength and hardness.

- 4. Match the term to the appropriate description.
  - E Compact bone A. Area at each end of long bones
  - I Cancellous bone B. Flared part of bone
  - **A** Epiphysis
    - C. Center of bone D. Lining of medullary canal

bones

- <u>H</u> Epiphyseal plate E. Hard, dense outer layer of all
- I Diaphysis
- <u>C</u> Medullary canal
- D Endosteum
- **F** Osteoclasts

B

Metaphysis

H. Area of new bone growth

F. Responsible for bone resorption

G. Outer membrane of bone

- I. Main shaft of bone
- <u>G</u> Periosteum J. Porous and spongy interior of bone
- 5. A pressure epiphysis is located at the ends of long bones and is where bone growth occurs. A traction epiphysis is located where tendons attach to bone and is subjected to pulling or tension force.
- 6. Where are osteoclasts located? In the endosteum.

- 7. Enter the letter by the structures in Figure 2-1 next to the correct label for that structure. You can also write the names of the structures on the figure.
  - A Diaphysis
  - D **Epiphysis**
  - B Endosteum
  - H Epiphyseal plate
  - <u>F</u> Medullary canal
  - E Metaphysis
  - <u>C</u> Periosteum
- 8. List five functions of the periosteum.
  - A. Attachment for tendons and ligaments
  - B. Promotes growth of diameter of immature bone
  - C. Contains pain receptors-this alerts to an injury or inflammation
  - D. Contains blood vessels to provide nourishment
  - E. Promotes bone repair
  - F. Covers all bone except articular surfaces, thereby offering some protection to bone
- 9. Where does longitudinal bone growth occur? At the epiphysis.



FIGURE 2-1 Longitudinal cross section of a long bone.

10. Complete the table that follows, indicating whether the terms are related to compact or cancellous bone.

Characteristic	Compact Bone	<b>Cancellous Bone</b>
Porous and spongy		<u>X</u>
Hard and dense	<u>×</u>	
Covers outside of bone	<u>×</u>	
Inside portion of bone		<u>×</u>

 On Figure 2-2, label the bones, using the terms listed below.
 <u>D</u> Flat <u>B</u> Irregular <u>C</u> Long <u>A</u> Short

<u>D</u> Flat	<u><b>b</b></u> Irregular	$\underline{C}$ Long	<u>A</u> Shor
bone	bone	bone	bone

#### LAB ACTIVITIES

- 1. The patella can be considered a sesamoid bone. With your partner long sitting (sitting on a mat or table with knees extended) and with muscles relaxed, grasp the patella with the thumb and index finger of one hand proximally and the thumb and index finger of the other hand distally.
  - Gently move the patella medially and laterally, superiorly and inferiorly. Note the amount of motion in each direction.



• Palpate for other sesamoid bones such as on either side of the flexor hallucis longus on the bottom of the foot, at the head of the first metatarsal, and the flexor tendons of the thumb near the metacarpophalangeal and interphalangeal joints.

# Students' responses may vary.

- 2. A. Using skeletons and models, find examples of the bony landmarks that follow. Describe where the landmark is located (using terms such as *proximal/distal, medial/lateral, superior/inferior,* and *anterior/posterior*) and give the name of the bone where you found the landmark.
  - B. On your partner, palpate as many of the bony landmarks as possible.
     <u>Students' answers may vary.</u>

#### Landmark Location

<b>EXAMPLE</b> Trochanter	Proximal and lateral on femur
Foramen	Vertebral foramen of cervical vertebra
Fossa	Scapula: On posterior surface superior to the spine
Groove	Humerus: On proximal anterior surface between the greater and lesser tubercles
Meatus	Skull: Midpoint of lateral aspect
Sinus	Skull: Anterior aspect, lateral to the nose
Condyle	Femur: Distal end; lateral and medial aspects
Eminence	Tibia: Proximal end, anterior midline
Facet	<u>Rib: Posterior surface near end that</u> articulates with the vertebra
Head	Humerus: Proximal medial aspect
Crest	Ilium: Superior margin
Epicondyle	Humerus: Distal and lateral
Line	Femur: Midline of the posterior surface
Spine	Scapula: Posterior surface and superior
Tubercle	<u>Humerus: Proximal end, anterior medial</u> <u>surface</u>
Tuberosity	<u>Humerus: Distal to the greater tubercle</u> on lateral aspect
Trochanter	Femur: Proximal lateral aspect

FIGURE 2-2 Types of bones.

## **10** PART 1 **■ Basic Clinical Kinesiology and Anatomy**

3. On a skeleton, identify the bones and bone groups that make up the axial skeleton and the appendicular skeleton. List the bones that are found in each group.

Skeleton	Bones and Bone Groups (e.g., carpals, ribs)
Axial	<u>Skull, vertebrae, mandible, ribs,</u> sternum, sacrum, coccyx, hyoid
Appendicular	<u>Scapula, clavicle, humerus, radius,</u> ulna, carpals, metacarpals, phalanges, ilium, femur, tibia, fibula, patella, tarsals, metatarsals, phalanges

4. Using bones in the bone box, arrange the bones of the upper extremity and the bones of the lower extremity in proper anatomical orientation to one another to create the appendicular skeleton. Arrange an entire right side or left side.

Students to arrange an entire right or left side of skeleton using disarticulated bones, if available.

 Compare a cross section of the diaphysis of a long bone and a cross section of the epiphysis of a long bone. Complete the table below.

	Diaphysis	Epiphysis
Type of bone	<u>Compact</u>	<u>Cancellous</u>
Thickness of outer layer of bone	<u>Relatively thick</u>	Relatively thin
In living bone, the outer layer is covered in	<u>periosteum</u>	<u>cartilage</u>

- 6. Using disarticulated bones, identify the structures listed below on several different bones. Can all the parts be found on each bone? <u>Students' answers may vary depending on bones available.</u>
  Epiphysis Epiphyseal plate Diaphysis Endosteum Metaphysis Periosteum
  7. Using the delater and metable.
- 7. Using the skeleton and models:A. Find examples of the types of bones that follow.B. Name an example of each type of bone.<u>Students' answers may vary.</u>

# **POST-LAB QUESTIONS**

- The function of the skull is to protect the brain. As the skull matures, the bones fuse together. Under what circumstances is this a disadvantage of the mature skull? <u>The skull is a rigid sphere that cannot enlarge should the</u> <u>brain swell.</u>
- - B. Appendicular skeleton: <u>The appendicular skeleton attaches to the axial skeleton</u> and consists of the upper and lower extremities. The <u>function of the appendicular skeleton is to provide</u> attachment for muscles and rigidity for leverage.
- 3. What is the result of a loss of the inorganic component of bone?

The loss of the inorganic component of bone results in osteoporosis or weakening of the bone.

- 4. Why is cancellous bone lighter than compact bone? Cancellous bone is lighter than compact bone because it is largely made up of porous and spongy trabecular matter.
- 5. How does a traction epiphysis affect the shape of a bone? <u>A traction epiphysis often causes the bone to enlarge,</u> <u>forming a protuberance or tubercle.</u>
- 6. What is the function of the parts of a bone that follow?

Bone Part	Function
Epiphysis	Location of epiphyseal plate
Epiphyseal plate	Place where bone growth occurs
Diaphysis	Provides the strength for bones
Medullary canal	Place for blood formation and location of arteries
Endosteum	Lines the medullary canal and contains the osteoclasts
Osteoclasts	Responsible for bone regeneration
Metaphysis	Supports the epiphysis
Periosteum	Provides for nourishment and attachment for tendon and muscle

7. Identify whether the types of bones listed below are typically part of the axial or appendicular skeleton.

Type of Bone	Example
Short	Phalanges .
Flat	<u>Skull, ilium</u>
Long	<u>Humerus, radius, ulna, femur, tibia, fibula</u>
Irregular	Sacrum, vertebra
Sesamoid	Patella

Type of Bone	Axial Skeleton	Appendicular Skeleton
Long		<u>×</u>
Short		<u>×</u>
Flat	<u>×</u>	<u>×</u>
rregular	<u>×</u>	

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## CHAPTER 2 Skeletal System 11

- 8. Match the descriptions of bone markings that follow with the correct term. Use each term only once.
  - $\underline{M}$  Projection above a condyle  $\underline{F}$  Rounded projection at
  - the end of a joint
  - <u>E</u> Hole
  - $\overline{\underline{A}}$  Sponge-like space filled with air
  - K Tube-shaped opening
  - J Rounded projection beyond
  - a narrow neck portion  $\underline{N}$  Less prominent ridge
  - <u>I</u> Less prominent fluge <u>I</u> Large, rounded projection
  - $\underline{O}$  Flat articular surface
  - $\underline{\underline{L}}$  Very large projection
  - $\underline{H}$  Large depression
  - $\underline{G}$  Linear depression
  - $\overline{\underline{C}}$  Ridge
  - $\underline{\mathbf{B}}$  Small, rounded projection
  - $\underline{\mathbf{D}}$  Sharp projection

G. Groove

E. Foramen

F. Condyle

- H. Fossa
- I. Tuberosity
- J. Head
- K. Meatus
- L. Trochanter
- M. Epicondyle
- N. Line
- O. Facet

- 9. Where does growth of long bones occur? <u>Epiphysis</u>
  10. Why are epiphyseal plates not found in mature bone?
- 10. Why are epiphyseal plates not found in mature bone? <u>Epiphyseal plates are the areas where bone growth</u> occurs. In mature bone, growth no longer occurs, so the <u>epiphyseal plates close.</u>
- 11. What function do sesamoid bones serve? The function of sesamoid bones is to protect tendons.

dyle A. Sinus B. Tubercle C. Crest d with air D. Spine