

Skeletal System and Articulations

Text: Human Biology, by Mader. pp. 230 -246

1. Introduction
2. Functions (p. 230)
 - A. Support
 - B. Protection
 - C. Hemopoiesis
 - D. Storage
 - i. Minerals
 - ii. Energy
 - E. Movement facilitation
3. Anatomy of a Long Bone (pp. 230 - 231; note diagrams, p. 231)
 - A. Shaft
 - B. Articular Cartilage
 - i. Hyaline Cartilage
 - C. Medullary Cavity
 - i. Yellow Bone Marrow
 - D. Periosteum
 - E. Nutrient Artery

4. Bone Classifications (p. 230)

A. Compact Bone

i. Medulary Cavity

B. Spongy Bone

ii. Spongy Bone

a. Erythropoiesis

5. Function of Cartilage in the Skeletal System

• Chondrocyte

A. Hyaline Cartilage

B. Fibrocartilage

6. Histology - Osseous Tissue

A. Cell Types

i. Osteoblasts

a. Bony Matrix

• Collagen

• Calcification (or mineralization)

ii. Osteocytes

iii. Osteoclasts

B. Structure of Bone Tissue

- i. Compact Bone
 - a. Concentric Ring Structure
 - b. Central Canals
 - c. Concentric Lamellae
 - d. Canaliculi
- ii. Spongy Bone
 - a. Trabeculae

7. Ossification

- A. Endochondral Ossification (p. 223 - 224; see also, fig 11.2, p 232)
- B. Hormonal Regulation (p. 234)
- C. Remodeling

8. Bone Homeostasis

- A. Broken Bone Repair (p. 236)
 - i. Hematoma
 - ii. Fibrocartilaginous Callus
 - iii. Bony Callus

9. The Skeleton

- A. Axial skeleton
- B. Appendicular skeleton

10. Cranial Bones:

- A. Sutures
- B. Frontal Bone
 - i. Frontal Sinus
- C. Parietal Bones
- D. Temporal
- E. Occipital Bone
 - i. Foramen Magnum
- F. Sphenoid Bone
- G. Ethmoid Bone

11. Facial Bones

- A. Nasal Bones
- B. Maxillae
 - i. Teeth Sockets
 - ii. Maxillary Sinuses
- C. Zygomatic Bones
 - i. Zygomatic Arch
- D. Mandible
- F. Lacrimal Bones
- G. Palatine Bones
- H. Inferior Nasal Concha

- I. Vomer
 - J. Hyoid Bone
12. Vertebral Column (p. 140)
- A. “Normal” Vertebral Distribution
 - i. Cervical Vertebrae - (7)
 - ii. Thoracic Vertebrae - (12)
 - iii. Lumbar Vertebrae - (5)
 - iv. Sacral Vertebrae - (5)
 - v. Coccygeal Vertebrae - (4)
 - B. Intervertebral Discs
 - C. Normal Curves
 - i. Cervical and lumbar: convex
 - ii. Thoracic and sacral: concave
 - D. Typical Vertebrae (p. 240 - 241)
 - i. Processes
 - ii. Intervertebral Disks
 - E. Cervical Vertebrae
 - i. Atlas
 - ii. Axis
 - F. Thoracic Vertebrae
 - i. Rib Attachment
 - G. Lumbar Vertebrae (L1-L5)
 - H. Sacral Vertebrae (S1-S5)
 - i. Sacrum
 - ii. Sacroiliac Joint
 - I. Coccygeal Vertebrae

13. Thorax (p. 241)

- A. Sternum
 - i. Manubrium
 - ii. Body
 - iii. Xiphoid process
- a. Abdominal Muscles
- B. Ribs
 - Costal Cartilages
 - i. True ribs
 - ii. False ribs
 - a. Floating Ribs

14. Pectoral Girdle (p. 242)

- A. Clavicle
- B. Scapula
 - i. Glenoid Cavity

15. Upper Extremity (p. 242)

- A. Humerus
- B. Ulna
- C. Radius
- D. Hand Bones
 - i. Carpal
 - ii. Metacarpus
 - iii. Phalanges

16. Pelvic Girdle

- A. Symphysis Pubis
- B. Sacroiliac Joint

17. Lower Extremity (p. 243 - 244)

- A. Femur
- B. Patella
- C. Tibia
- D. Fibula
- E. Foot Bones
 - i. Tarsals
 - ii. Metatarsus
 - iii. Phalanges

18. Introduction to Articulations

- A. Synovial (p. 245)
 - i. Anatomical Characteristics
 - a. Synovial cavity
 - b. Articular Capsule
 - c. Synovial Membrane
 - d. Synovial Fluid (SF)
 - e. Articular Cartilage
 - f. Fibrous Capsule
 - g. Articular Discs (menisci)
 - h. Bursae