

## Chapter 10 – Skeleton

### *Objectives*

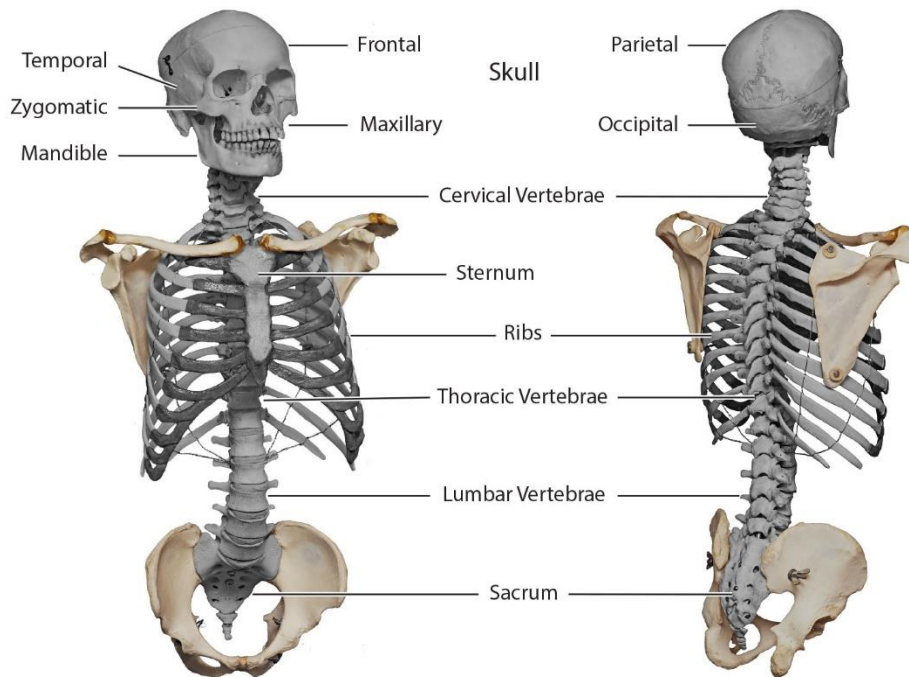
Given the synopsis in this chapter, competence in each objective will be demonstrated by responding to multiple choices or matching questions, completing fill-in questions, or writing short answers, at the level of 75% or greater proficiency for each student..

- A. To describe the general organization of the axial and appendicular skeleton
- B. To describe the structure and general organization of bone.
- C. To locate and name major bones of the skull.
- D. To locate and name major bones and features of the vertebral column, sternum, and ribs.
- E. To locate and name major bones and features of the upper and lower appendicular skeleton.

## Axial Skeleton - Skull, Vertebrae, and Ribs

Anterior View

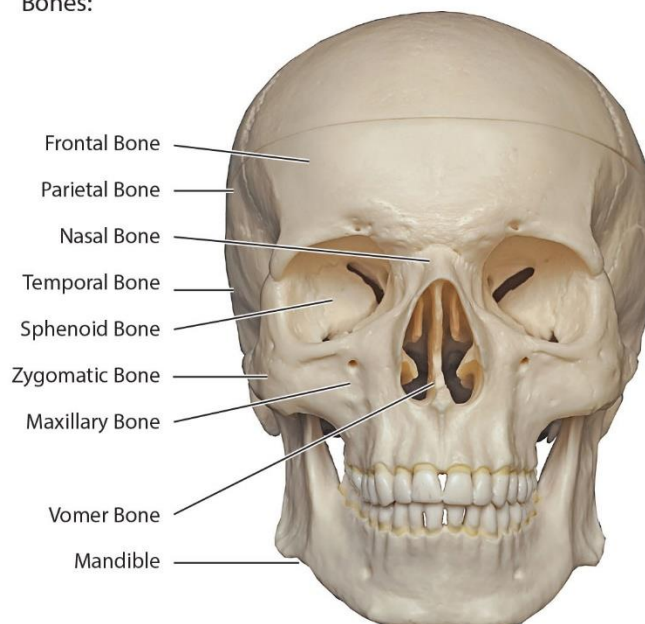
Posterior View



In the images above the skull bones, vertebrae, and ribs of the Axial skeleton are shaded grey.

### Skull - Anterior View

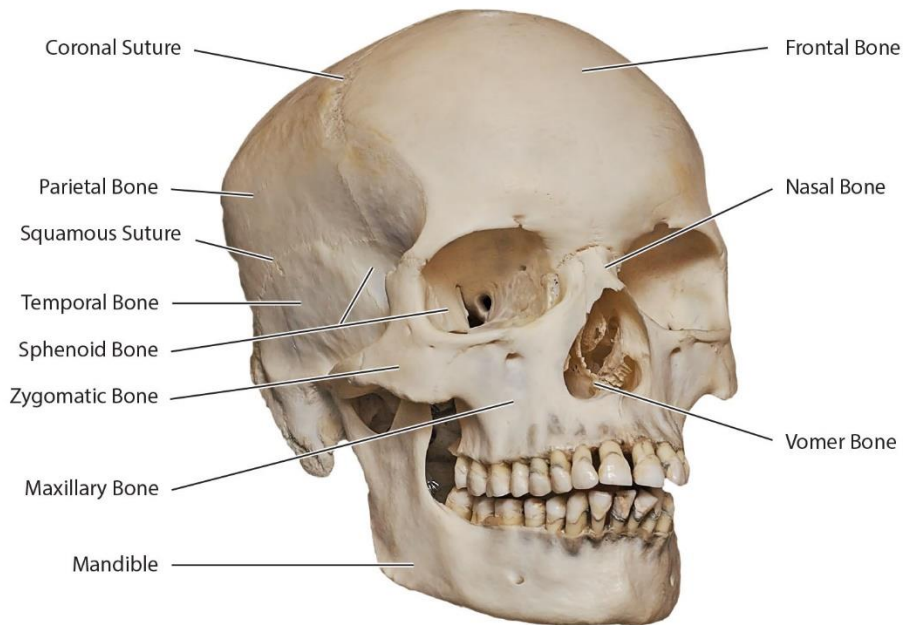
Bones:



**Figure 10.1** © 2014 David G. Ward, Ph.D., *Atlas of Anatomy for Allied Health*, 3<sup>rd</sup> ed.

## Axial Skeleton - Skull

Skull - Anterior / Lateral View



Skull - Lateral View

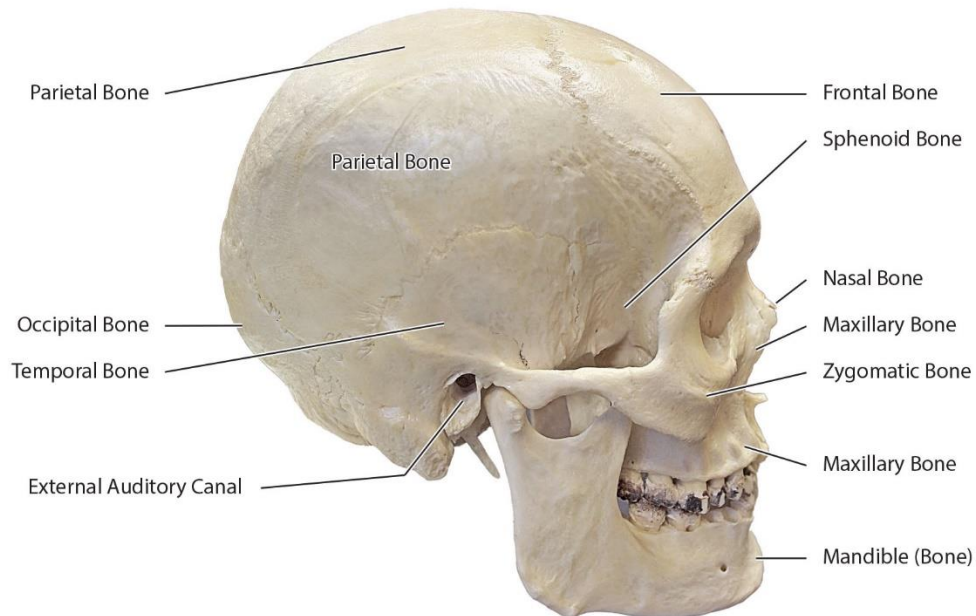
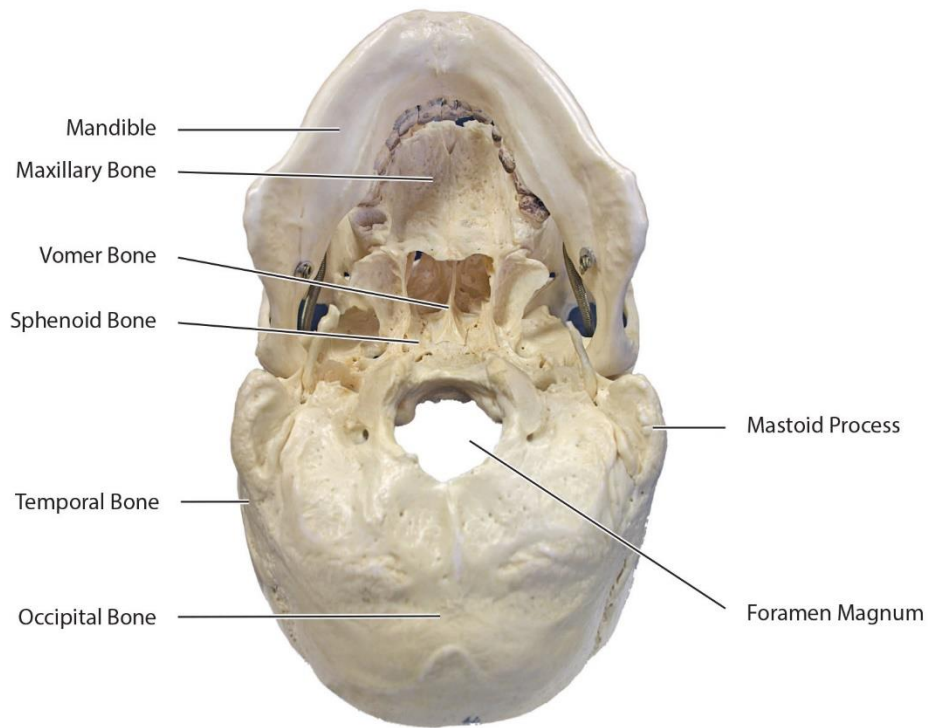


Figure 10.2 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

## Skull - Inferior



**Figure 10.3** © 2014 David G. Ward, Ph.D., *Atlas of Anatomy for Allied Health*, 3<sup>rd</sup> ed.

## Bone and Osseous Tissues

### Long Bone: Femur

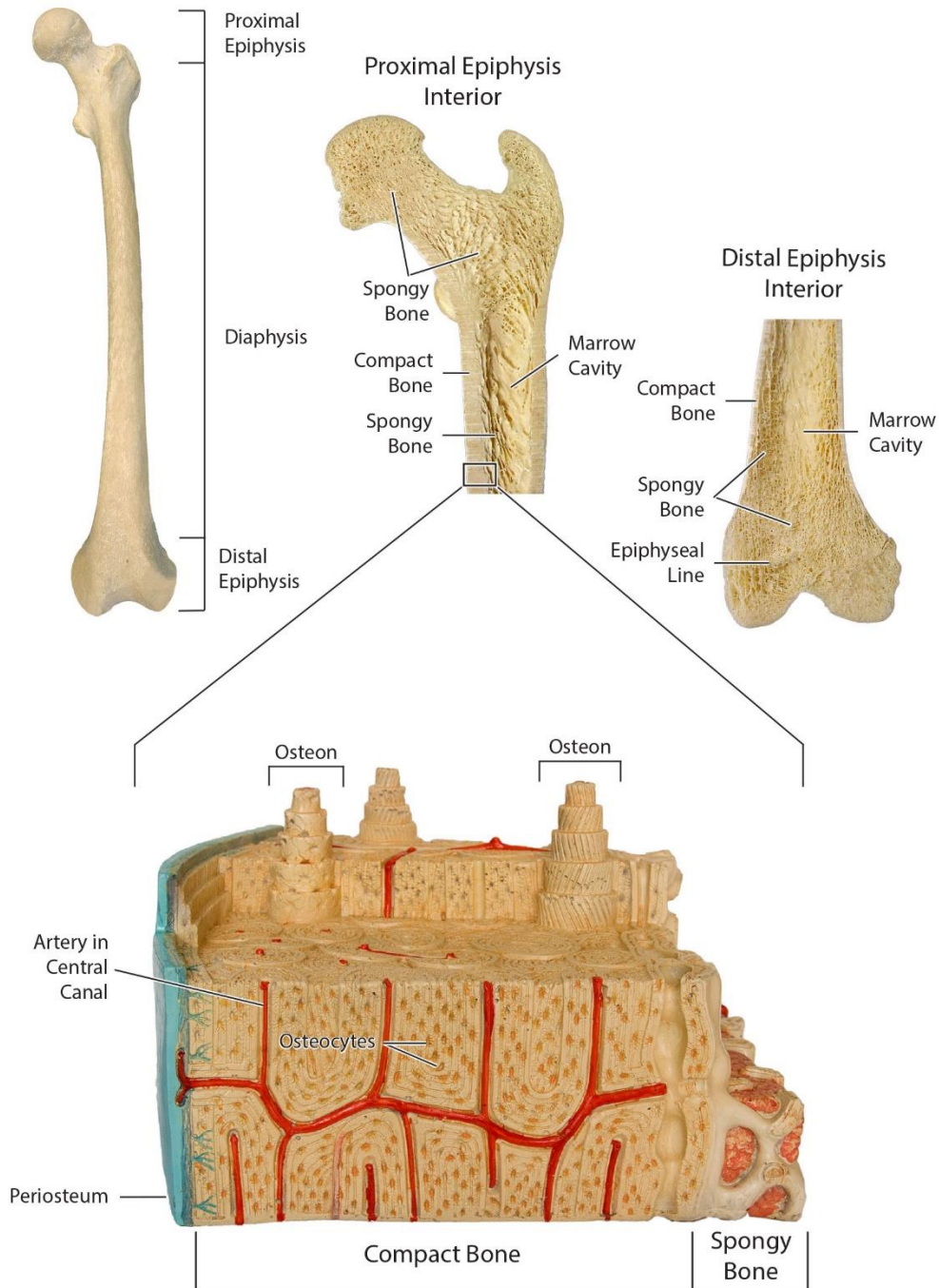
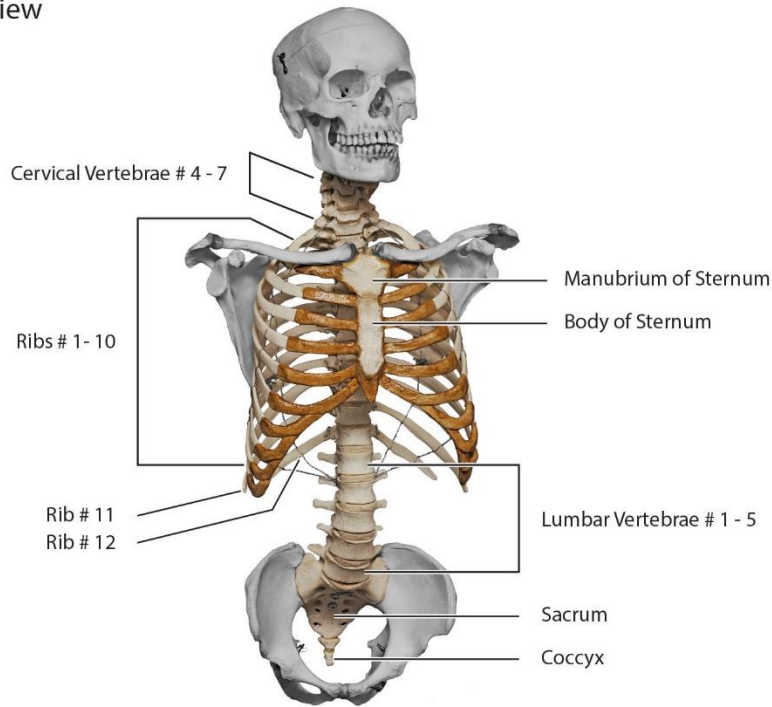


Figure 10.4 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

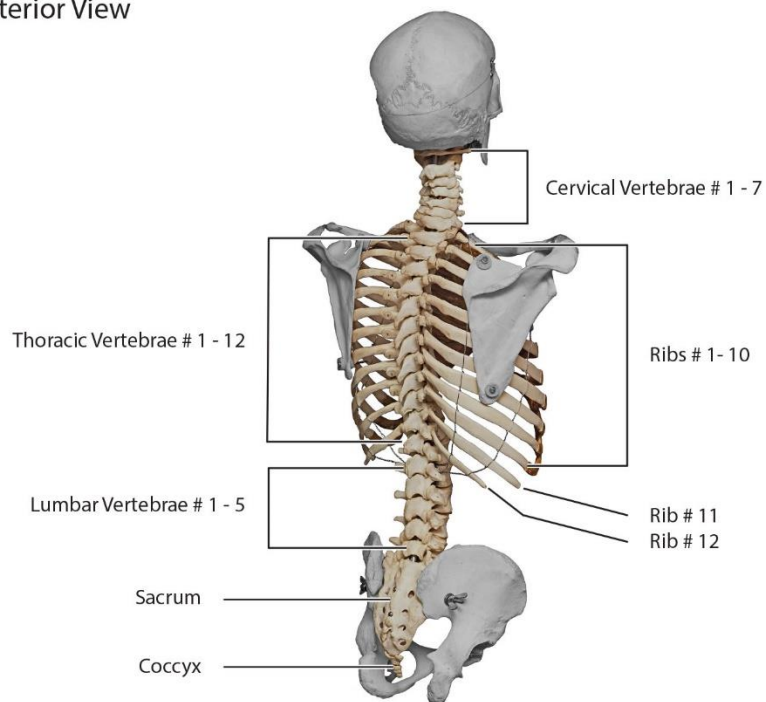
## Axial Skeleton - Vertebrae and Ribs

Anterior View



The skull and appendicular skeleton are shaded grey.

Posterior View

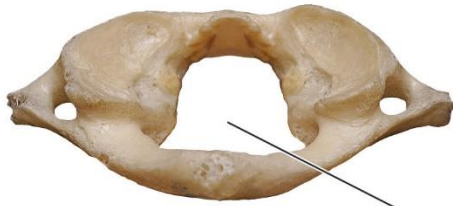


25

Figure 10.5 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

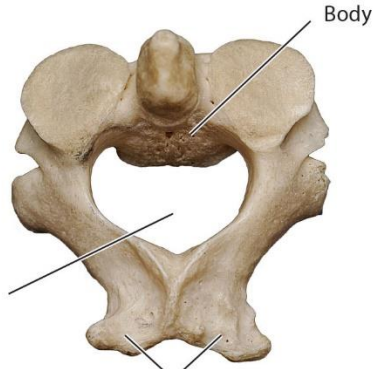
## Vertebrae - Cervical and Thoracic

Cervical: C1 (Atlas) - superior / posterior



Vertebral Foramen

Cervical: C2 (Axis) - superior



Body

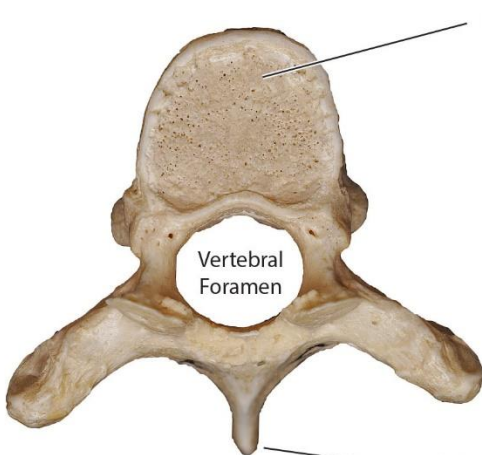
Spinous Processes

Cervical: C1 and C2 - superior / posterior



Spinous Process

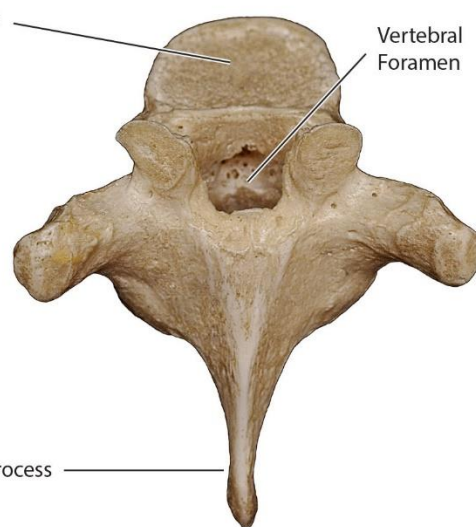
Thoracic: T7 - superior



Vertebral Foramen

Spinous Process

Thoracic: T7 - superior / posterior



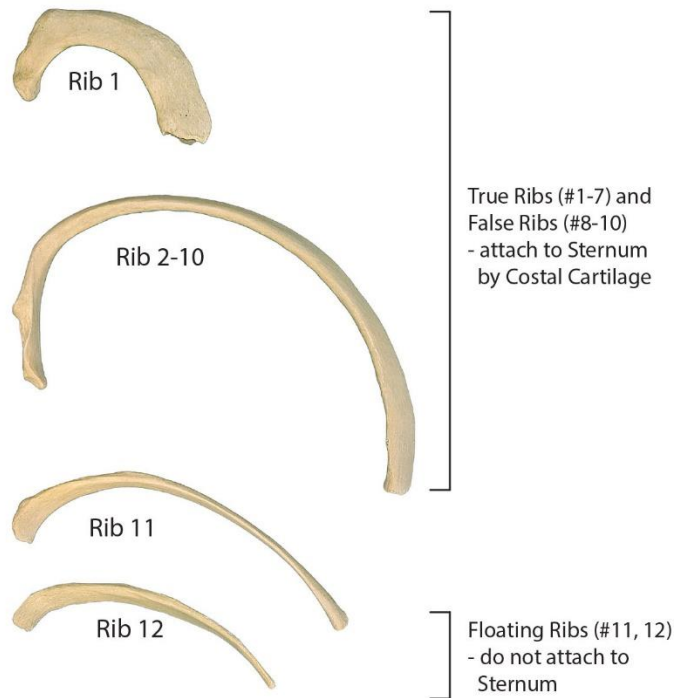
Body

Vertebral Foramen

Figure 10.6 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

### Ribs, Vertebrae, and Sternum

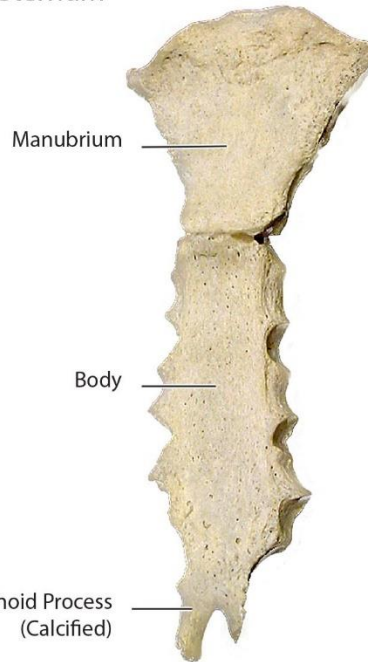
#### Ribs



#### Thoracic: T2-9



#### Sternum



#### Thoracic: T11-12



Figure 10.7 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.



## Upper Appendicular Skeleton - Anterior

Anterior

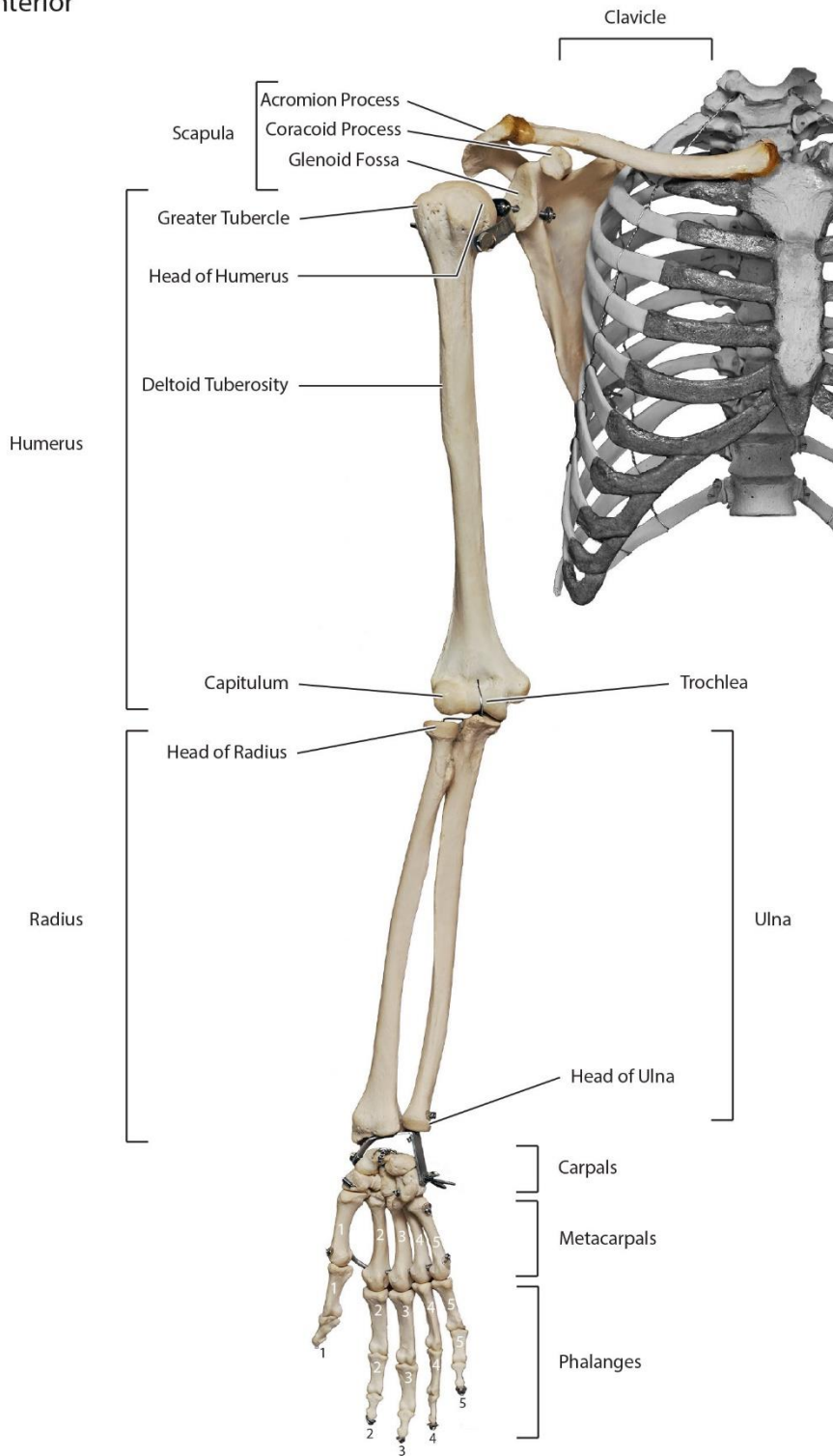


Figure 10.8 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

## Lower Appendicular Skeleton -

Posterior / Lateral

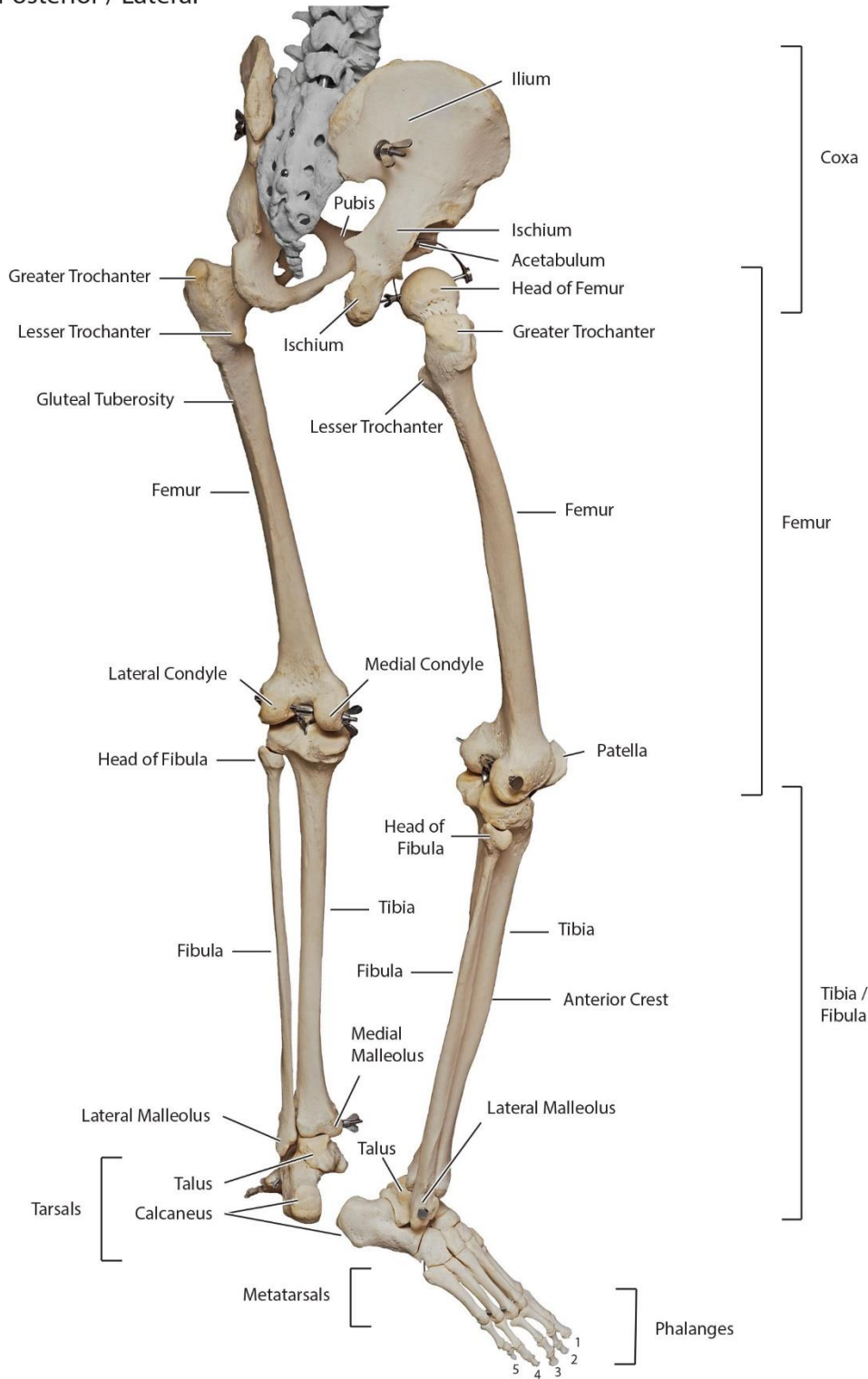


Figure 10.9 © 2014 David G. Ward, Ph.D., Atlas of Anatomy for Allied Health, 3<sup>rd</sup> ed.

## Major Joints (Articulations) of the Appendicular Skeleton

### Upper Appendicular Skeleton

A joint (articulation) is represented by a double headed arrow ( $\leftrightarrow$ )

Manubrium of Sternum  $\leftrightarrow$  Clavicle  
 Clavicle  $\leftrightarrow$  Acromion of Scapula  
 Glenoid Fossa of Scapula  $\leftrightarrow$  Head of Humerus  
 Trochlea of Humerus  $\leftrightarrow$  Head of Ulna  
 Capitulum of Humerus  $\leftrightarrow$  Radius  
 Ulna  $\leftrightarrow$  Carpals  
 Head of Radius  $\leftrightarrow$  Carpals  
 Carpals  $\leftrightarrow$  Metacarpals  
 Metacarpals  $\leftrightarrow$  Phalanges

### Lower Appendicular Skeleton

A joint (articulation) is represented by a double headed arrow ( $\leftrightarrow$ )

Sacrum  $\leftrightarrow$  Coxa  
 Acetabulum of Coxa  $\leftrightarrow$  Head of Femur  
 Condyles of Femur  $\leftrightarrow$  Patella  
 Condyles of Femur  $\leftrightarrow$  Tibia  
 Tibia  $\leftrightarrow$  Fibula  
 Medial Malleolus of Tibia  $\leftrightarrow$  Talus  
 Lateral Malleolus of Fibula  $\leftrightarrow$  Talus  
 Talus  $\leftrightarrow$  Calcaneus  
 Talus and Calcaneus  $\leftrightarrow$  Other tarsal bones  
 Other tarsal bones  $\leftrightarrow$  Metatarsals  
 Metatarsals  $\leftrightarrow$  Phalanges

## Movement at Joints

1. **Flexion** - decrease of angle of bones at a joint (at hinge joints and ball and socket joints)
2. **Extension** - increase of angle of bones at a joint (at hinge joints and ball and socket joints)
3. **Adduction** - bringing bone toward center of body
4. **Abduction** - taking bone away from center of body
5. **Medial rotation** - twisting bone toward center of body at the shoulder or hip joint (at ball and socket joints)
6. **Lateral rotation** - twisting bone toward side of body at the shoulder or hip joint (at ball and socket joints)
7. **Circumduction** - spinning limb in a circle at the shoulder or hip joint (at ball and socket joints)
8. **Inversion** – moving sole of foot toward center of body at the ankle joint
9. **Eversion** – moving sole of foot toward side of body at the ankle joint