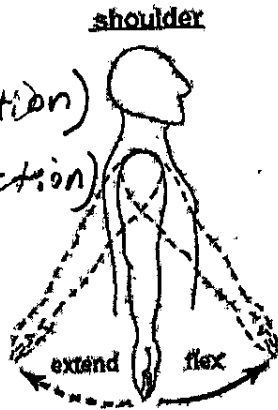


- Extension occurs when the angle between the two bones increases.
- Abduction occurs when a limb or limb segment separates laterally from the midline of the body or a body segment used as reference.
- In Adduction the segment approximates the midline of the body or body part used as reference.
- Circumduction is a compound continuous movement in which the joint goes through the four types of movement described above, thus making the moving body segment describe a circular motion.
- Rotation happens when the bone turns about its longitudinal axis.

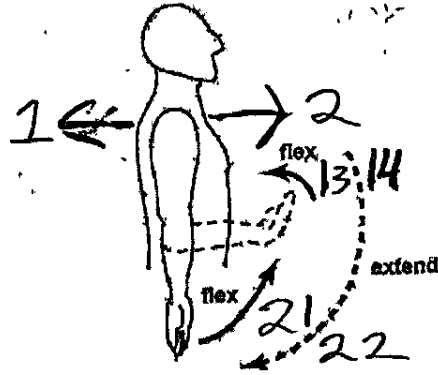
Figure 1-11. Some common joint movements, from the shoulder to the digits. © 2009 Alan H. D. Watson. Reproduced under license.

Sterno-clavical Joint
Shoulder Girdle

1. Adduction (Retraction)
2. Abduction (Protraction)
3. Rotation Upward
4. Rotation Downward
5. Elevation
6. Depression

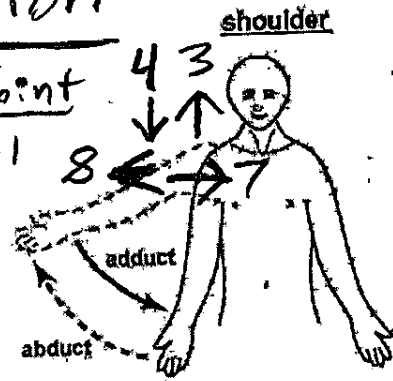


elbow/wrist

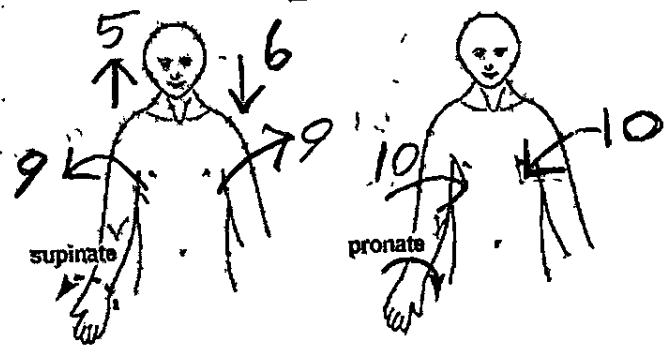


Shoulder Joint

7. Horizontal Flexion
8. Horizontal Extension
9. Outward (lateral) Rotation
10. Inward (Medial) Rotation

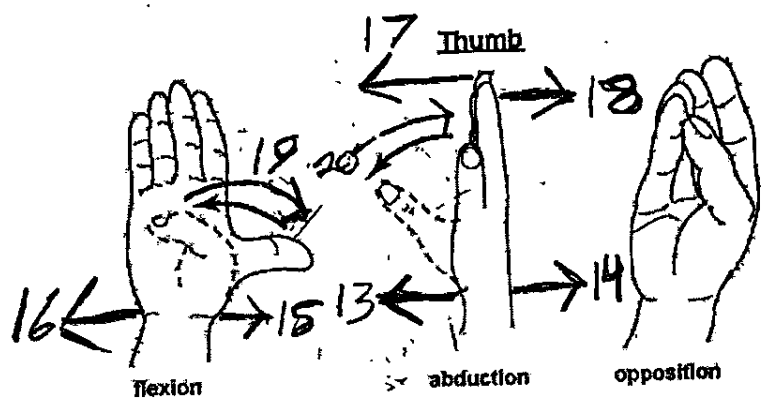
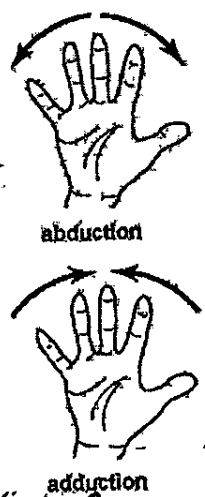


forearm



Fingers

11. supination
 12. Pronation
- Wrist
13. Flexion
 14. Extension
 15. Radial Deviation



Thumb

19. Extension
20. Adduction

Elbow Joint

21. Flexion
22. Extension

Arm Muscle Location

Flexor/pronator/adductor muscles are located in the palmar, anterior or ventral side of the limb and extensor supinators/abductors on the posterior or dorsal side.

Finger Joints

17. Flexion
18. Extension

16. Ulnar deviation

Planes of Motion

With the body standing erect, the anatomical position serves as reference to precisely describe the position and direction of motion of the various body segments in relation to imaginary planes crossing the body (see Figure 1-10).

The front-to-back **sagittal suture** of the skull, uniting its left and right sides, is the point of reference for the **median plane**, which divides the body into symmetrical halves. Planes running parallel to the median plane are, therefore, called **sagittal**.

The **coronal suture**, linking the skull's front and back sides, gives name to the **coronal plane**, determining front or **anterior** and back or **posterior** positions. All planes parallel to it are also called coronal.

The coronal plane is one type of the **transverse plane**, the other being the **horizontal plane**, which divides the body into **superior** and **inferior** halves.

Other terms derive from more localized reference points in the body. For instance, when discussing the hand, the anterior side is also called **palmar**, the thumb side is the **lateral** or **radial side**, since the thumb is aligned with the radius bone in the forearm, and the little-finger side is the **medial** or **ulnar side**, because of its alignment with the other bone of the forearm, the ulna.

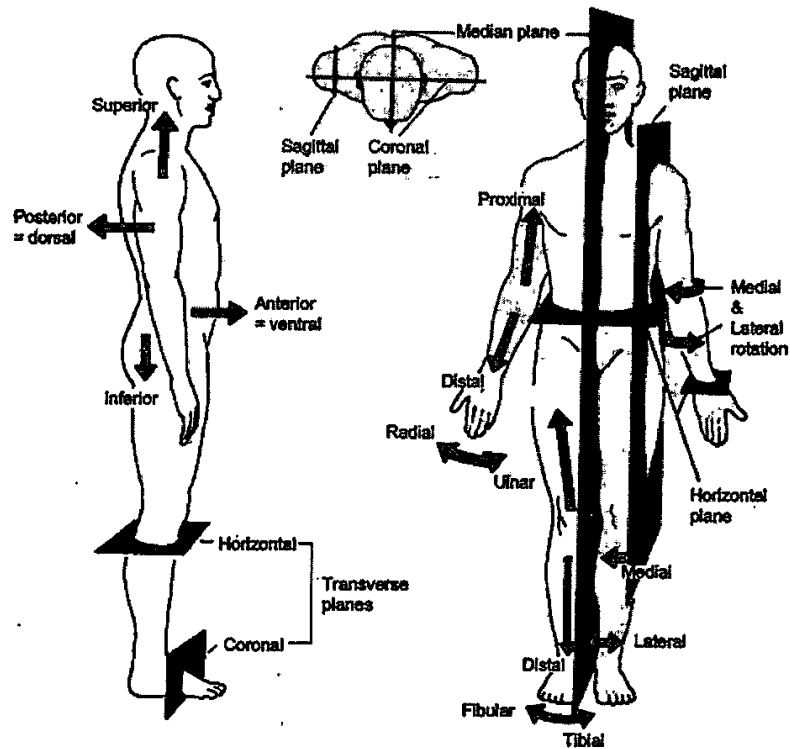


Figure 1-10. Anatomical planes and terms of position. © 2008 Ronan O'Rahilly, www.dartmouth.edu/~humananatomy/index.html/. Reproduced with permission of the authors.

Joint Movements

These general terms are used to identify various forms of movement possible in many skeletal joints (Figure 1-11). Others, described later, identify particular types of movement that happen at certain joints only.