POSITIONING TERMINOLOGY USED IN RADIOGRAPHIC TECHNIQUE

Daw Moe Pa Pa

B. P. Sc. (Radiography), M. Med. Tech (MIT)

Lecturer

Department of Medical Imaging Technology

University of Medical Technology, Yangon

Contents

- General terms
- Body planes, sections, and lines
- Body surfaces and parts
- Radiographic projections
- Body positions
- Special projection terms
- Terms related to movements

POSITIONING TERMINOLOGY

Radiographic positioning

Radiographic positioning refers to the study of patient positioning performed for radiographic demonstration or visualization of specific body parts on image receptors (IRs).

General Terms

General Terms

Radiograph (ra′-de-o-graf)

An image of a patient's anatomic part(s), as produced by the action of x-rays on an image receptor. If the radiograph is produced with the use of traditional film-screen technology, the image is stored and displayed on film; if the radiograph is produced via digital technology, the image is viewed and stored with the use of computers.



Fig; Chest radiograph.

Radiography (ra″-de-og′-rah-fe)

The process and procedures of producing a radiograph.

Radiograph versus x-ray film

In practice, the terms radiograph and x-ray film (or just film) are often used interchangeably. However, x-ray film specifically refers to the physical piece of material on which a latent (non-processed) radiographic image is stored. The term radiograph includes the recording medium and the image.

Image receptor (IR)

The device that captures the radiographic image that exits the patient; refers to both film-screen cassettes and digital acquisition devices.

Central ray (CR)

Refers to the center-most portion of the x-ray beam emitted from the x-ray tube; the portion of the x-ray beam that has the least divergence.

Radiographic examination or procedure

A radiologic technologist is shown positioning the patient for a routine chest examination or procedure.



Fig; Radiographic examination.

A radiographic examination involves ***five general functions***:

1. Positioning of body part and alignment with the IR and CR
2. Application of radiation protection measures and devices
3. Selection of exposure factors (radiographic technique) on the control panel
4. Instructions to the patient related to respiration (breathing) and initiation of the x-ray exposure
5. Processing of the IR (film-based [analog] and cassette-based [PSP] system)

Anatomic position

The anatomic (an″-ah-tom′-ik) position is a reference position that defines specific surfaces and planes of the body. The anatomic position is an upright position with arms abducted slightly (down), palms forward, and head and feet directed straight ahead.



Fig; Anatomic position.

Body Planes, Sections, and Lines

Positioning terms that describe CR angles or relationships between body parts often are related to ***imaginary planes*** that pass through the body in the ***anatomic position***.

The study of CT, MRI (magnetic resonance imaging), and sonography (diagnostic medical ultrasound) emphasizes sectional anatomy, which also involves the primary body planes and sections as described subsequently.

PLANE: STRAIGHT LINE SURFACE CONNECTING TWO POINTS

Four common planes as used in medical imaging are as follows:

1. Sagittal plane
2. Coronal plane
3. Horizontal (axial) plane
4. Oblique plane

1. Sagittal plane

A sagittal (saj′-i-tal) plane is any longitudinal plane that divides the body into right and left parts.

The ***midsagittal plane***, sometimes called the ***median plane***, is a midline sagittal plane that divides the body into equal right and left parts. It passes approximately through the sagittal suture of the skull.

Any plane parallel to the midsagittal or median plane is called a sagittal plane.

2. Coronal plane

A coronal (ko-ro′-nal) plane is any longitudinal plane that divides the body into anterior and posterior parts.

The ***midcoronal plane*** divides the body into approximately equal anterior and posterior parts. It is called a coronal plane because it passes approximately through the coronal suture of the skull.

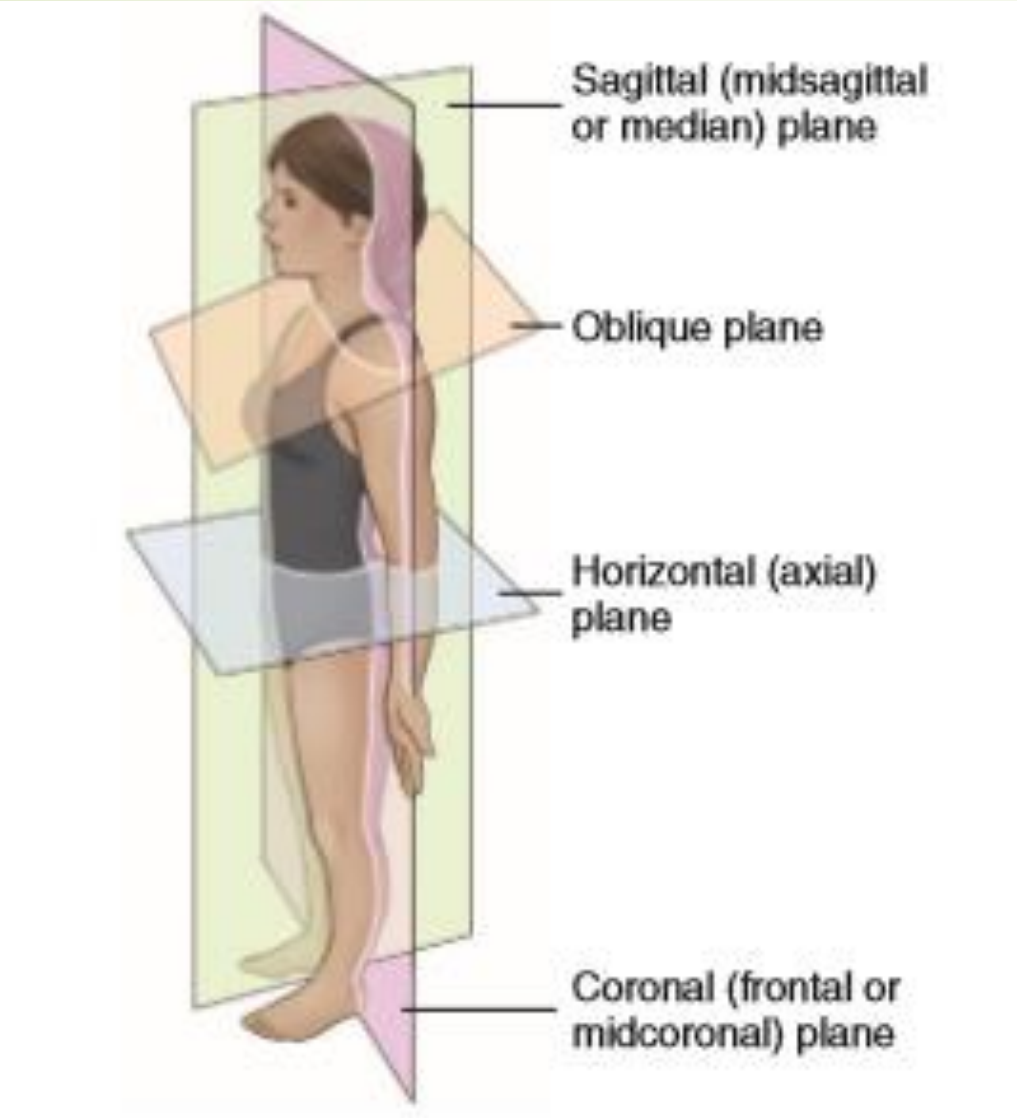
Any plane parallel to the midcoronal or frontal plane is called a coronal plane.

3. Horizontal (axial) plane

A horizontal (axial) plane is any transverse plane that passes through the body at right angles to a longitudinal plane, dividing the body into superior and inferior portions.

4. Oblique plane

An oblique plane is a longitudinal or transverse plane that is at an angle or slant and is not parallel to the sagittal, coronal, or horizontal plane.



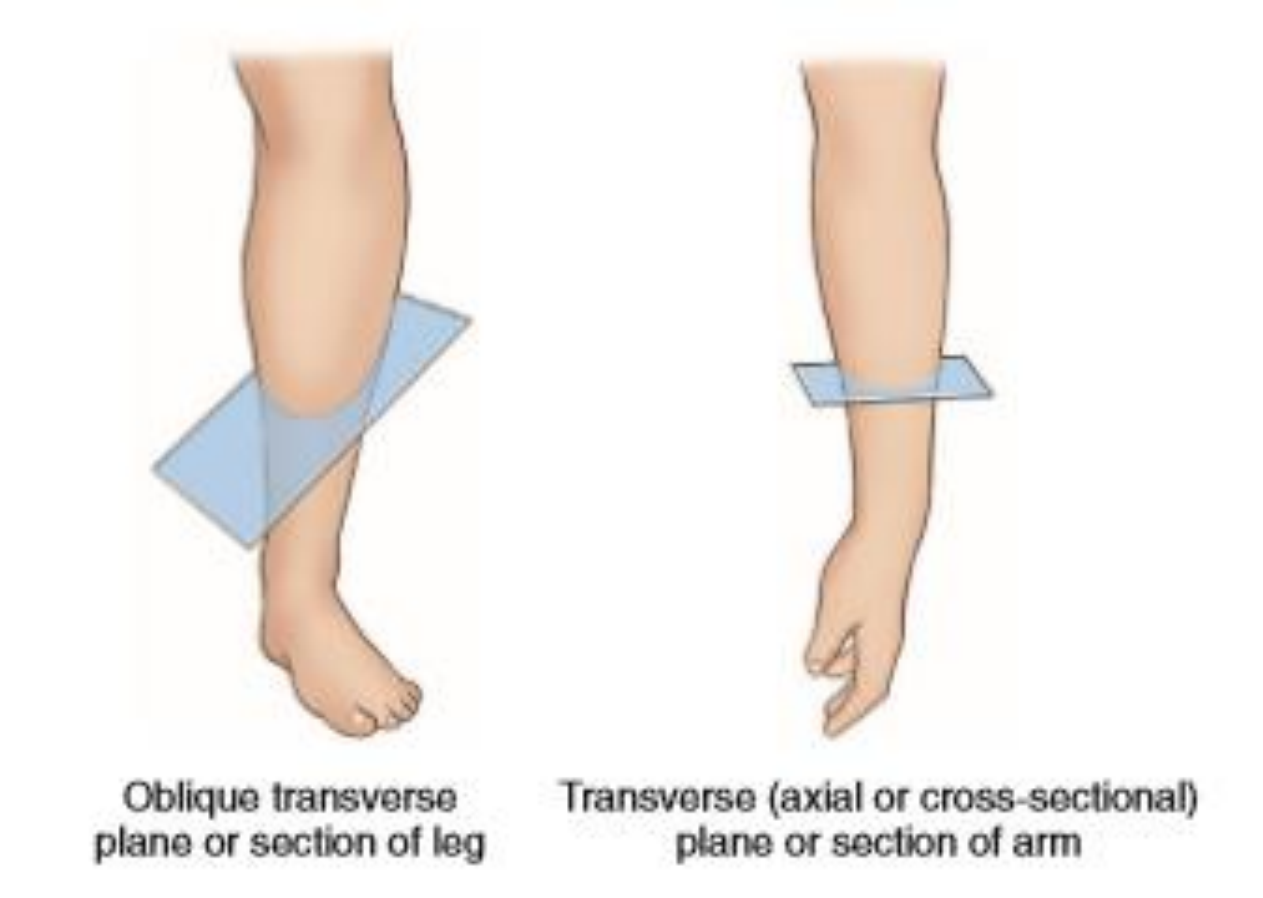
Fig; Sagittal, coronal, oblique, and horizontal body planes.

SECTION: “CUT” OR “SLICE” IMAGE OF BODY PART

Longitudinal sections—sagittal, coronal, and oblique

These sections or images run lengthwise in the direction of the long axis of the body or any of its parts, regardless of the position of the body (erect or recumbent).

Longitudinal sections or images may be taken in the sagittal, coronal, or oblique plane.



Fig; Transverse and oblique sections of body parts.

Transverse or axial sections (cross-sections)

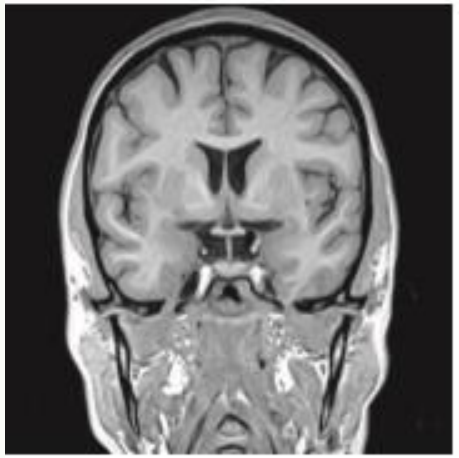
Sectional images are at right angles along any point of the longitudinal axis of the body or its parts.

Sagittal, coronal, and axial images

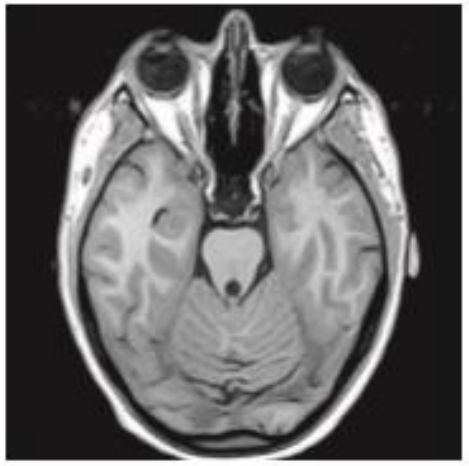
CT, MRI, and sonography images are obtained in these three common orientations or views.



Fig; Sagittal image.



Fig; Coronal image.



Fig; Transverse (axial) image.

PLANES OF THE SKULL

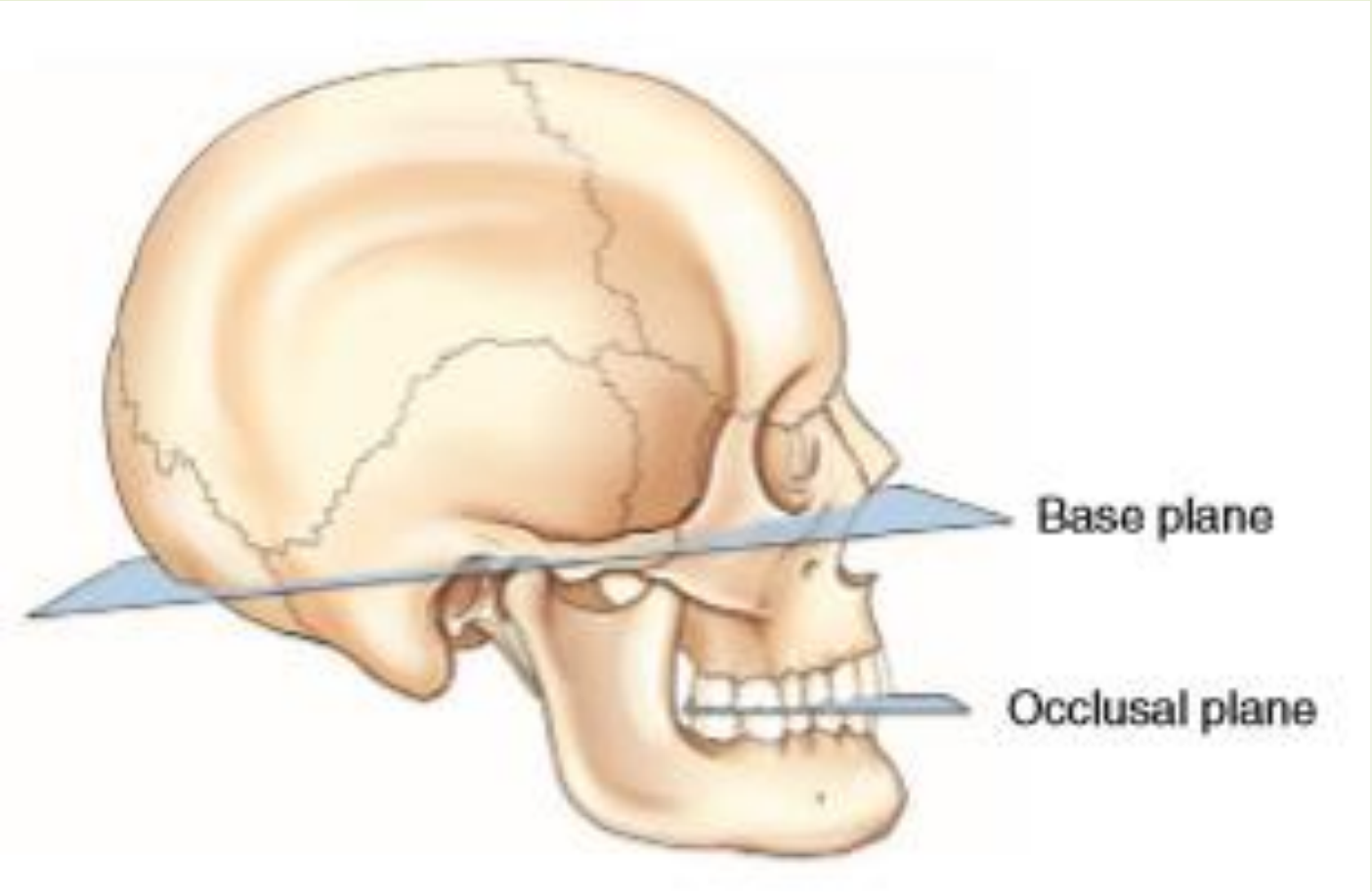
Base plane of skull

This precise transverse plane is formed by connecting the lines from the infraorbital margins (inferior edge of bony orbits) to the superior margin of the external auditory meatus (EAM), the external opening of the ear.

This sometimes is called the ***Frankfort horizontal plane***, as used in orthodontics and cranial topography to measure and locate specific cranial points or structures.

Occlusal plane

This horizontal plane is formed by the biting surfaces of the upper and lower teeth with jaws closed (used as a reference plane of the head for cervical spine and skull radiography).



Fig; Planes of skull.

Body Surfaces and Parts

Body Surfaces and Parts

TERMS FOR THE BACK AND FRONT PORTIONS OF THE BODY

Posterior or dorsal

Posterior (pos-te′-re-or) or dorsal (dor′-sal) refers to the back half of the patient, or the part of the body seen when the person is viewed from the back; includes the bottoms of the feet and the backs of the hands as demonstrated in the anatomic position.

Anterior or ventral

Anterior (an-te′-re-or) or ventral (ven′-tral) refers to front half of the patient, or the part seen when viewed from the front; includes the tops of the feet and the fronts or palms of the hands in the anatomic position.

TERMS FOR SURFACES OF THE HANDS AND FEET

Three terms are used in radiography to describe specific surfaces of the upper and lower limbs.

Plantar Plantar (plan′-tar) refers to the sole or posterior surface of the foot.

Dorsal Foot Dorsal (dor′-sal) refers to the top or anterior surface of the foot (dorsum pedis).

Hand Dorsal also refers to the back or posterior aspect of the hand (dorsum manus).

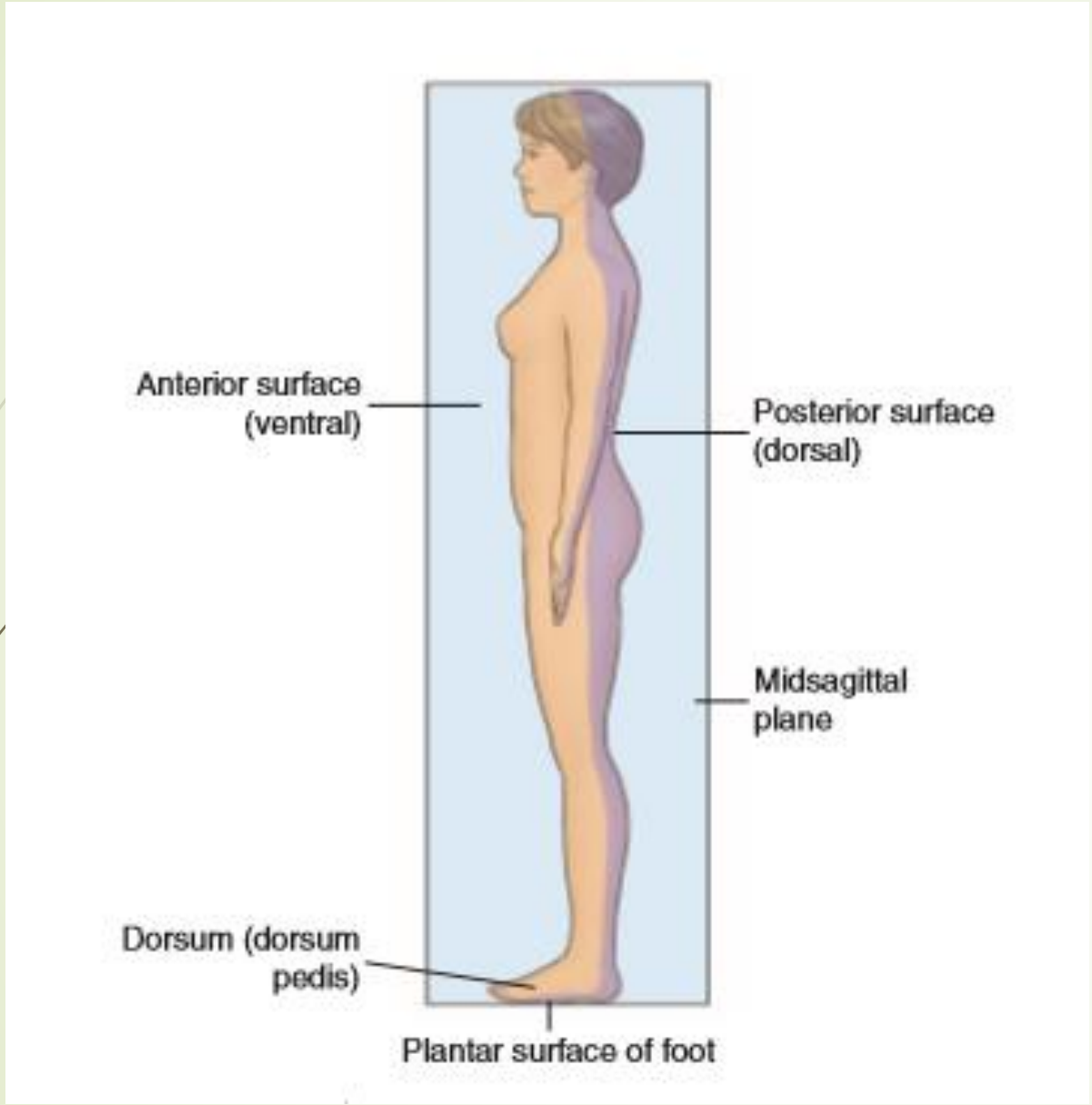
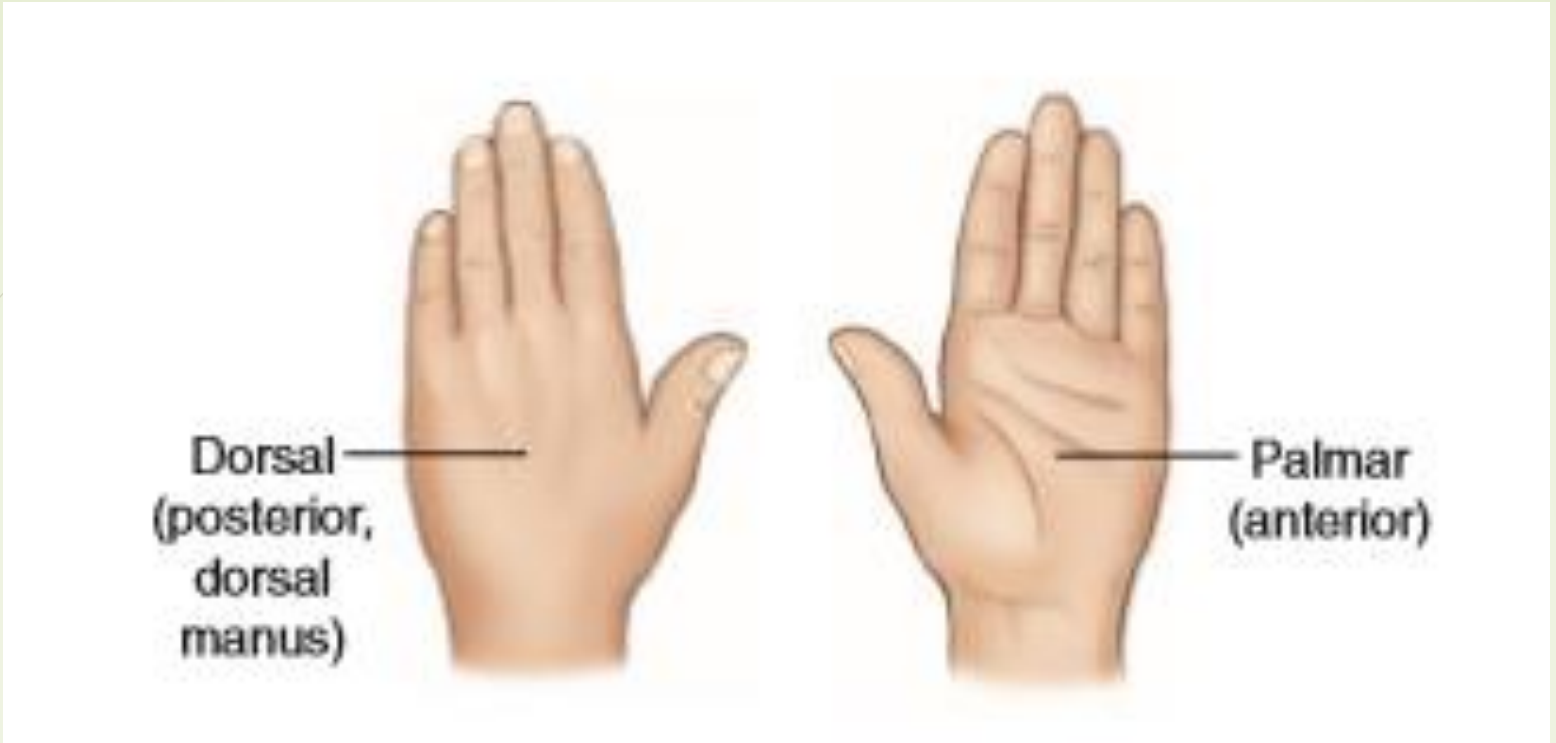


Fig. Posterior vs. anterior.

NOTE: The term dorsum (or dorsal) in general refers to the vertebral or posterior part of the body. However, when used in relationship with the foot, dorsum (dorsum pedis) specifically refers to the upper surface, or anterior aspect, of the foot opposite the sole, whereas for the hand (dorsum manus), it refers to the back or posterior surface opposite the palm.*

Palmar

Palmar (pal′-mar) refers to the palm of the hand; in the anatomic position, the same as the anterior or ventral surface of the hand.*



Fig; Dorsal and palmar surfaces of hand.

Radiographic Projections

Radiographic Projections

Projection is a positioning term that describes the direction or path of the CR of the x-ray beam as it passes through the patient, projecting an image onto the IR. Although the term position is used in the clinical setting, the term projection is considered to be the most accurate term for describing how the procedure is performed. Therefore, the term projection is used most frequently throughout this text.

COMMON PROJECTION TERMS

Posteroanterior (PA) projection

Posteroanterior (pos″-ter-o-an-te′-re-or) (PA) projection refers to a projection of the CR from posterior to anterior. Combines these two terms, posterior and anterior, into one word, abbreviated as PA. The CR enters at the posterior surface and exits at the anterior surface (PA projection). Assumes a true PA without intentional rotation, which requires the CR to be perpendicular to the coronal body plane and parallel to the sagittal plane, unless some qualifying oblique or rotational term is used to indicate otherwise.

Anteroposterior (AP) projection

Anteroposterior (an″-ter-o-pos-te′-re-or) (AP) projection refers to a projection of CR from anterior to posterior, the opposite of PA. Combines these two terms, anterior and posterior, into one word. Describes the direction of travel of the CR, which enters at an anterior surface and exits at a posterior surface (AP projection). Assumes a true AP without rotation unless a qualifier term also is used, indicating it to be an oblique projection.



Fig; PA projection.



Fig; AP projection.

AP oblique projection

An AP projection of the upper or lower limb that is rotated is called “oblique.” This is not a true AP projection and must also include a qualifying term that indicates which way it is rotated, such as medial or lateral rotation. (For oblique of the whole body, see oblique position descriptions later in this chapter.) With an AP oblique projection, the CR enters the anterior surface and exits the posterior surface of the body or body part.



Fig.; AP oblique projection—medial rotation (from AP).



Fig; PA oblique projection—lateral rotation (from PA).

PA oblique projection

A PA projection of the upper limb with lateral rotation (from PA) is shown in Fig. 1-47. (This is applicable to both upper and lower limbs.) This projection is described as a PA oblique. It must also include a qualifying term that indicates which way it is rotated. With a PA oblique projection, the CR enters the posterior surface and exits the anterior surface of the body or body part.

Mediolateral and lateromedial projections

A lateral projection is described by the path of the CR. Two examples are the mediolateral projection of the ankle (Fig. 1-48) and the lateromedial projection of the wrist (Fig. 1-49). The medial and lateral sides are determined with the patient in the anatomic position.



Fig; Mediolateral projection (ankle).



Fig; Lateromedial projection (wrist).

Body Positions

Body Positions

In radiography, the term position is used in two ways, first as general body positions, as described next, and second as specific body positions, which are described in the pages that follow.

GENERAL BODY POSITIONS

The eight most commonly used general body positions in medical imaging are as follows:

1. **Supine (soo′-pine)** lying on back, facing upward.

2. **Prone (prohn)** lying on abdomen, facing downward (head may be turned to one side).

3. **Erect (e″-reckt′)** (upright) An upright position, to stand or sit erect.

4. **Recumbent (re-kum′-bent) (reclining)** lying down in any position (prone, supine, or on side).
   - **Dorsal recumbent**: Lying on back (supine).
   - **Ventral recumbent**: Lying face down (prone).
   - **Lateral recumbent**: Lying on side (right or left lateral).

5. **Trendelenburg* (tren-del′-en-berg) position**

A recumbent position with the body tilted with the head lower than the feet.

6. **Fowler's† (fow′-lerz) position**

A recumbent position with the body tilted with the head higher than the feet.

7. **Sims' position (semiprone position)**

A recumbent oblique position with the patient lying on the left anterior side, with the right knee and thigh flexed and the left arm extended down behind the back. A modified Sims' position as used for insertion of the rectal tube for barium enema

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8. **Lithotomy (li-thot′-o-me) position**

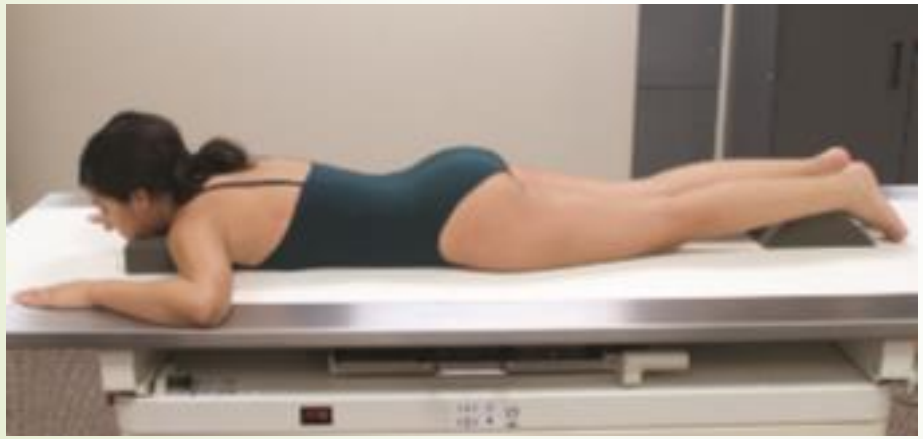
A recumbent (supine) position with knees and hip flexed and thighs abducted and rotated externally, supported by ankle supports.



Fig; Modified lithotomy position (for retrograde urography).



Fig; Supine position.



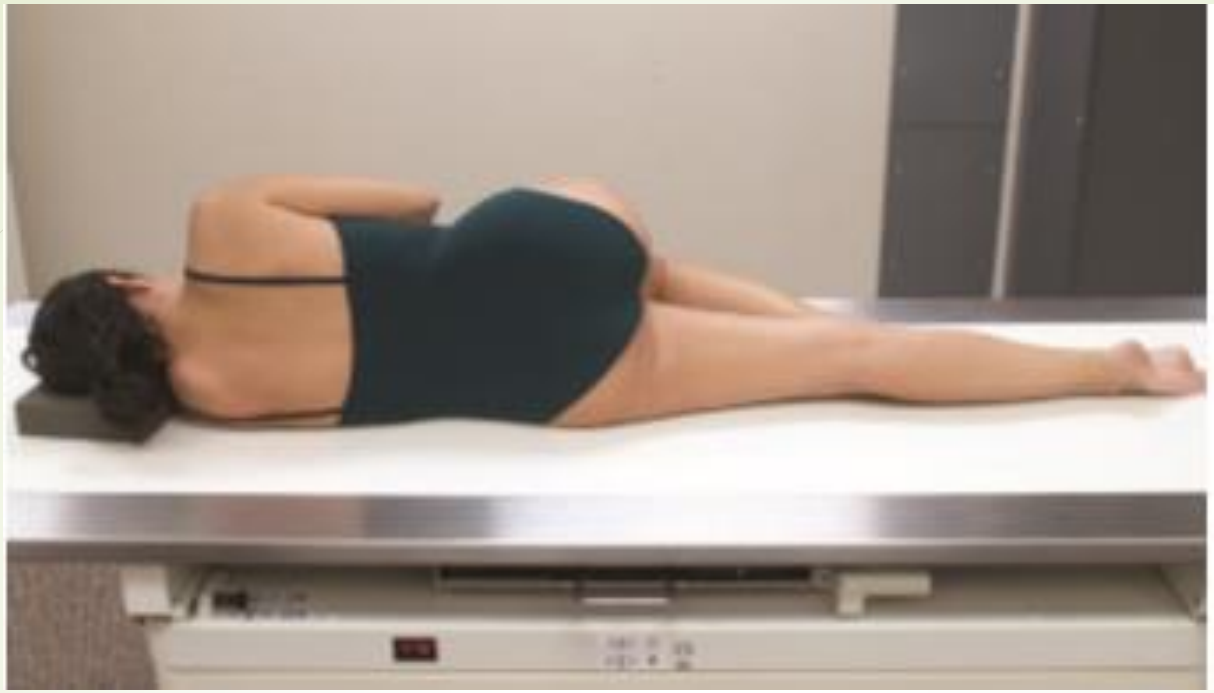
Fig; Prone position.



Fig; Trendelenburg position—head lower than feet.



Fig; Fowler's position—feet lower than head.



Fig; Modified Sims' position.

SPECIFIC BODY POSITONS

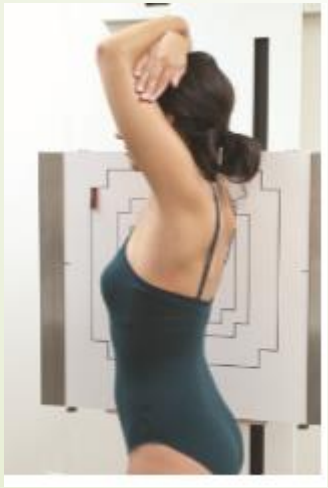
In addition to a general body position, the second way the term position is used in radiography is to refer to a specific body position described by *the body part closest to the IR* (oblique and lateral) or by *the surface on which the patient is lying* (decubitus).

Lateral position

Lateral (lat′-er-al) position refers to the side of, or a side view. Specific lateral positions described by the part closest to the IR or the body part from which the CR exits.

A right lateral position is shown with the right side of the body closest to the IR in the erect position.

A true lateral position is always 90°, or perpendicular, or at a right angle, to a true AP or PA projection. If it is not a true lateral, it is an oblique position.



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Fig; Erect R lateral position.



Fig; Recumbent L lateral position.

Oblique position

Oblique (ob-lek′, or ob-lik′)* (oh bleek′, or oh blike′) position refers to an angled position in which neither the sagittal nor the coronal body plane is perpendicular or at a right angle to the IR.

Oblique body positions of the thorax, abdomen, or pelvis are described by the part closest to the IR or the body part from which the CR exits.

Left and right posterior oblique (LPO and RPO) positions

Describe the specific oblique positions in which the left or right posterior aspect of the body is closest to the IR.

A left posterior oblique (LPO) is demonstrated in both examples. Exit of the CR from the left or right posterior aspect of the body.



Fig; Erect LPO position.



Fig; Recumbent LPO position.

Right and left anterior oblique (RAO and LAO) positions

Refer to oblique positions in which the right or left anterior aspect of the body is closest to the IR and can be erect or recumbent general body positions. (A right anterior oblique [RAO] is shown in both examples.)



Fig; Erect RAO position.



Fig; Recumbent RAO position.

Decubitus (decub) position

Decubitus (de-kuˈbi-tus) = literally means to “lie down,” or “lying down.”*

This body position, meaning to lie on a horizontal surface, is designated according to the surface on which the body is resting. This term describes a ***patient who is lying on one of the following body surfaces***: back (dorsal), front (ventral), or side (right or left lateral). In radiographic positioning, decubitus is always performed with the ***central ray horizontal***.†

Decubitus positions are essential ***for detecting air-fluid levels or free air in a body cavity*** such as the chest or abdomen, where the ***air rises to the uppermost part of the body cavity***.

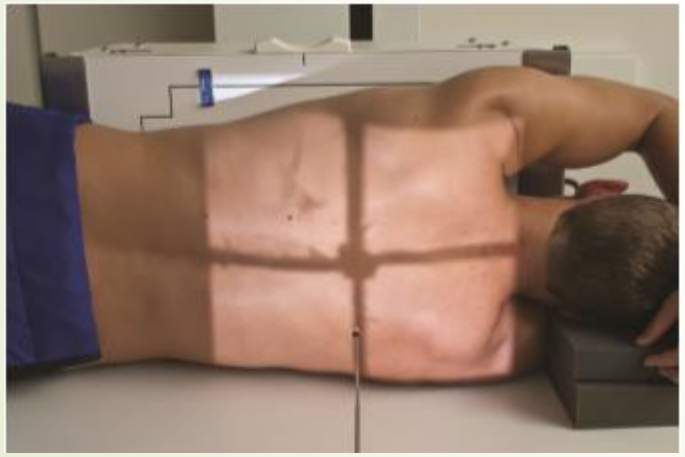
Right or left lateral decubitus position—AP or PA projection

In this position, the ***patient lies on the side***, and the ***x-ray beam is directed horizontally*** from anterior to posterior (AP) or from posterior to anterior (PA). \

This position is either a left lateral decubitus or a right lateral decubitus. It is named according to the ***dependent side (side down)*** and the ***AP or PA projection indication***.



Fig; Left lateral decubitus position (AP projection).

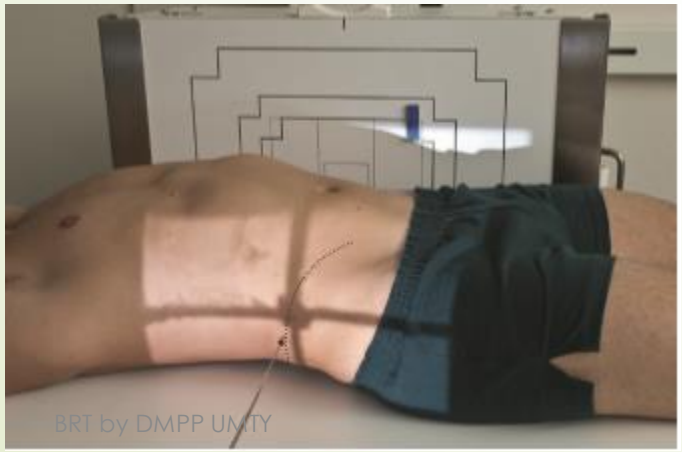


Fig; Right lateral decubitus position (PA projection).

Dorsal decubitus position—left or right lateral

In this position, the **patient is lying on the dorsal (posterior) surface** with the ***x-ray beam directed horizontally***, exiting from the side closest to the IR.

The position is named according to ***the surface on which the patient is lying (dorsal or ventral)*** and by the side closest to the IR (right or left).



Fig; Dorsal decubitus position (L lateral).

Ventral decubitus position—right or left lateral

In this position, the ***patient is lying on the ventral (anterior) surface*** with the ***x-ray beam directed horizontally***, exiting from the side closest to the IR



Fig; Ventral decubitus position (R lateral).

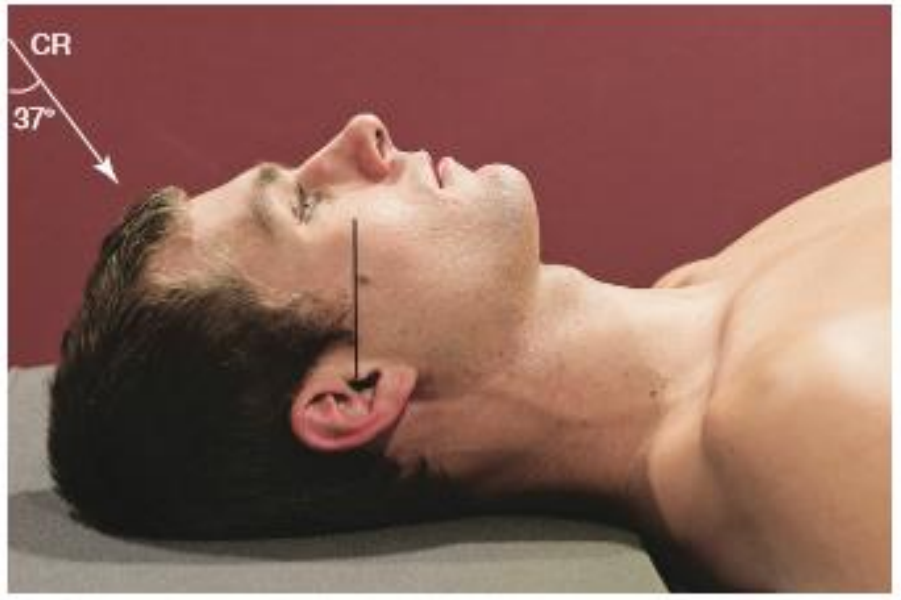
Additional Special Use Projection Terms

Axial projection

Axial (ak′-se-al) refers to the long axis of a structure or part (around which a rotating body turns or is arranged).

Special application—AP or PA axial: In radiographic positioning, the term axial has been used to describe any angle of the CR of 10° or more along the long axis of the body or body part.* However, in a true sense, an axial projection would be directed along, or parallel to, the long axis of the body or part.

The term **semi-axial, or "partly" axial**, more accurately describes any angle along the axis that is not truly along or parallel to the long axis.



Fig; AP axial (semi-axial) projection (CR 37° caudal)

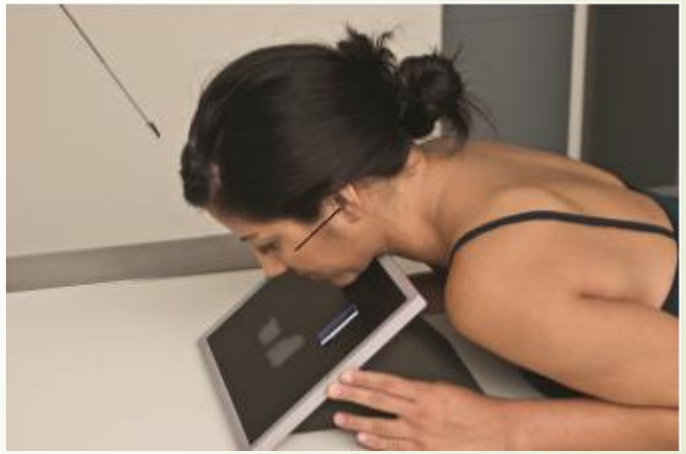
Inferosuperior and superoinferior axial projections

Inferosuperior axial projections are frequently performed for the shoulder and hip, where the CR enters below or inferiorly and exits above or superiorly.

The opposite of this is the **superoinferior axial projection**, such as a special nasal bone projection.



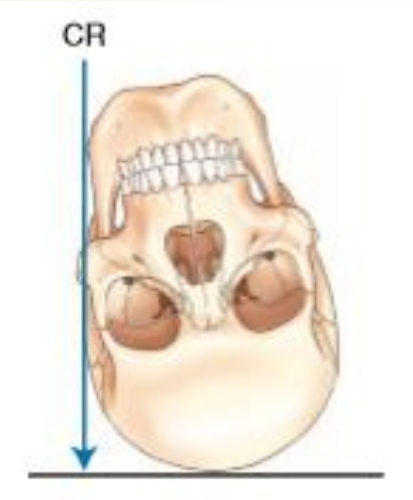
Fig; Inferosuperior axial projection



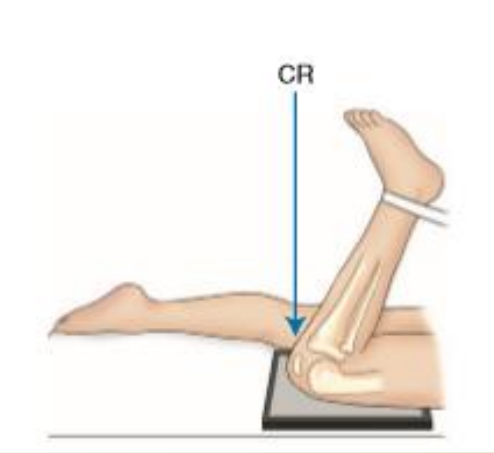
Fig; Axial (superoinferior) projection.

Tangential projection

Tangential (tan″-jen′-shal) means touching a curve or surface at only one point. This is a special use of the term projection to describe a projection that merely skims a body part to project that part into profile and away from other body structures.



Fig; Tangential projection (zygomatic arch).



Fig; Tangential projection (patella).

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AP axial projection—lordotic position

This is a ***specific AP chest projection*** for demonstrating the ***apices of the lungs***. It also is sometimes called the ***apical lordotic projection***. In this case, the long axis of the body rather than the CR is angled.

The term lordotic comes from lordosis, a term that denotes curvature of the cervical and lumbar spine. As the patient assumes this position, the lumbar lordotic curvature is exaggerated, making this a descriptive term for this special chest projection.



Fig; AP axial (Apical) Lordotic chest projection

Transthoracic lateral projection (right lateral position)

A lateral projection through the thorax. Requires a qualifying positioning term (right or left lateral position) to indicate which shoulder is closest to the IR and is being examined.



Fig; Transthoracic lateral shoulder projection (R lateral shoulder position).

Dorsoplantar and plantodorsal projections

These are secondary terms for AP or PA projections of the foot.

Dorsoplantar (DP) describes the path of the CR from the dorsal (anterior) surface to the plantar (posterior) surface of the foot.

A special **plantodorsal projection** of the heel bone (calcaneus) is called an **axial plantodorsal projection (PD)** because the angled CR enters the plantar surface of the foot and exits the dorsal surface.



Fig; AP or dorsoplantar (DP) projection of foot.



Fig; Axial plantodorsal (PD) projection of calcaneus.

Parietoacanthial and acanthioparietal projections

The CR enters at the cranial parietal bone and exits at the acanthion (junction of nose and upper lip) for the parietoacanthial projection. (**PA Waters method**)

The opposite CR direction would describe the acanthioparietal projection. (**AP reverse Waters method**)

These methods are used to visualize the facial bones.



Fig; Parietoacanthial projection (Waters position).

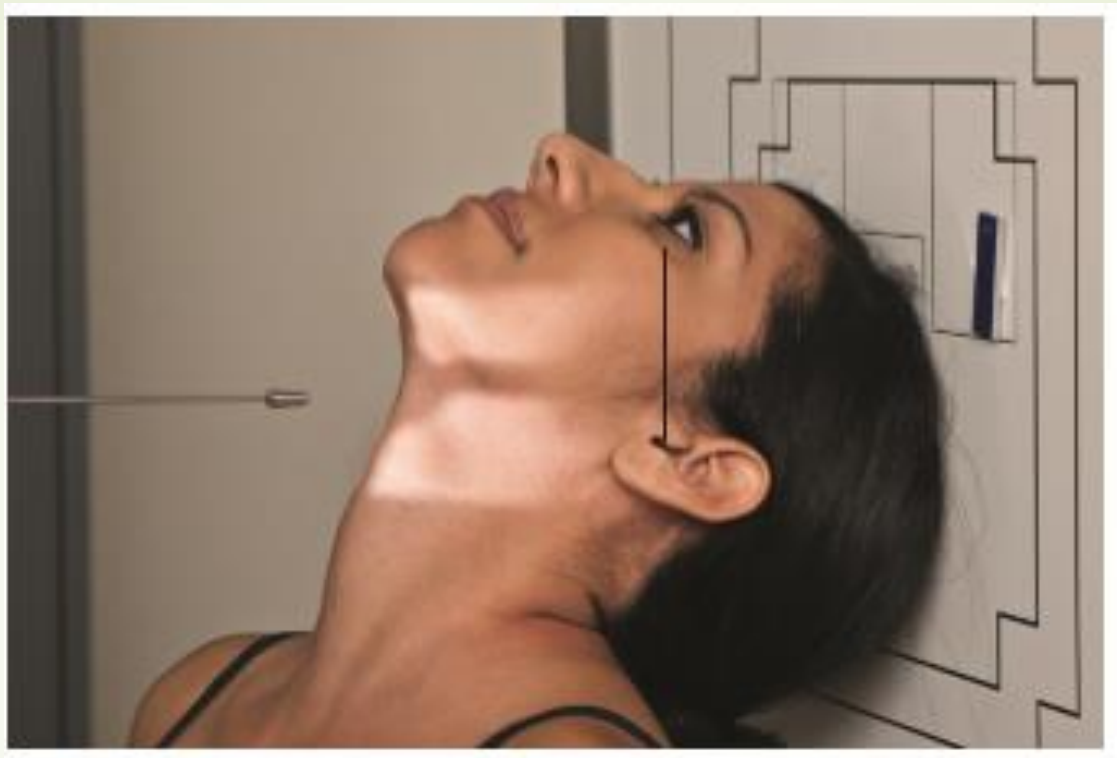


Fig; Acanthioparietal projection. (AP reverse Waters method)

Submentovertex (SMV) and Verticosubmental (VSM) projections

These projections are used for the skull and mandible. CR enters below the chin, or mentum, and exits at the vertex or top of the skull for the **submentovertex (SMV) projection**.

The less common, opposite projection of this would be the **verticosubmental (VSM) projection**, entering at the top of the skull and exiting below the mandible (not shown).



Fig; Submentovertex (SMV) projection.

Relationship Terms

Relationship Terms

Following are paired positioning or anatomic terms that are used to describe relationships to parts of the body with opposite meanings.

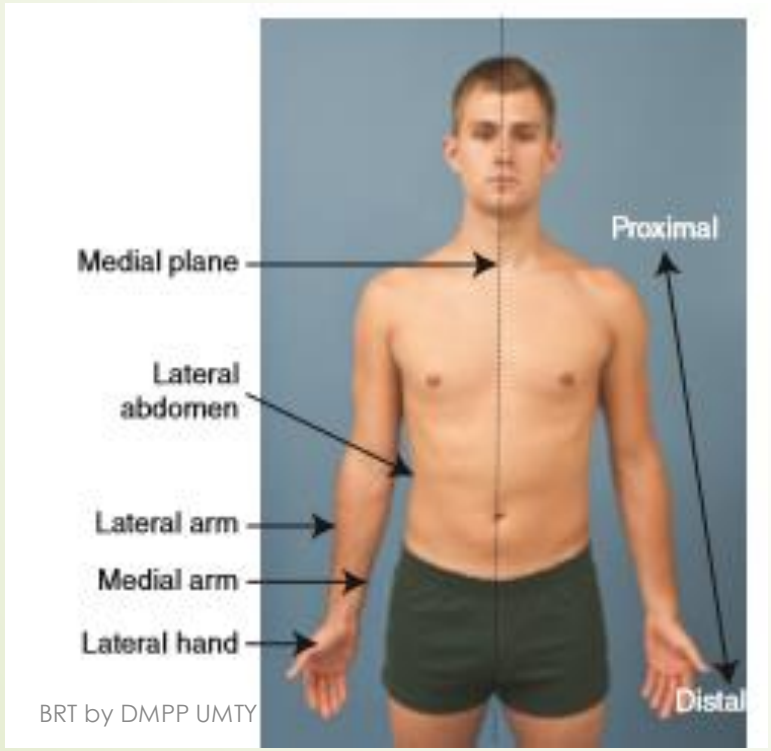
Medial versus Lateral

Medial (me′-de-al) versus lateral refers to toward versus away from the center, or median plane.

In the anatomic position, the medial aspect of any body part is the “inside” part closest to the median plane, and the lateral part is away from the center, or away from the median plane or midline of the body.

Proximal versus distal

Proximal (prok′-si-mal) is near the source or beginning, and distal (dis′-tal) is away from. In regard to the upper and lower limbs, proximal and distal would be the part closest to or away from the trunk, the source or beginning of that limb.



Fig; Medial vs. lateral,
Proximal vs. distal.

Cephalad versus caudad

Cephalad (sef′-ah-lad) means toward the head end of the body.

Caudad (kaw′-dad) means away from the head end of the body.

- A **cephalad angle** is any angle toward the head end of the body. (Cephalad, or cephalic, literally means “head” or “toward the head.”)
- A **caudad angle** is any angle toward the feet or away from the head end. (Caudad or caudal comes from cauda, literally meaning “tail.”)

➢ In human anatomy, cephalad and caudad also can be described as superior (toward the head) or inferior (toward the feet).



Fig; Cephalad CR angle (toward head).



Fig; Caudad CR angle (away from head).



Fig; Cephalic angle (AP axial projection of sacrum).

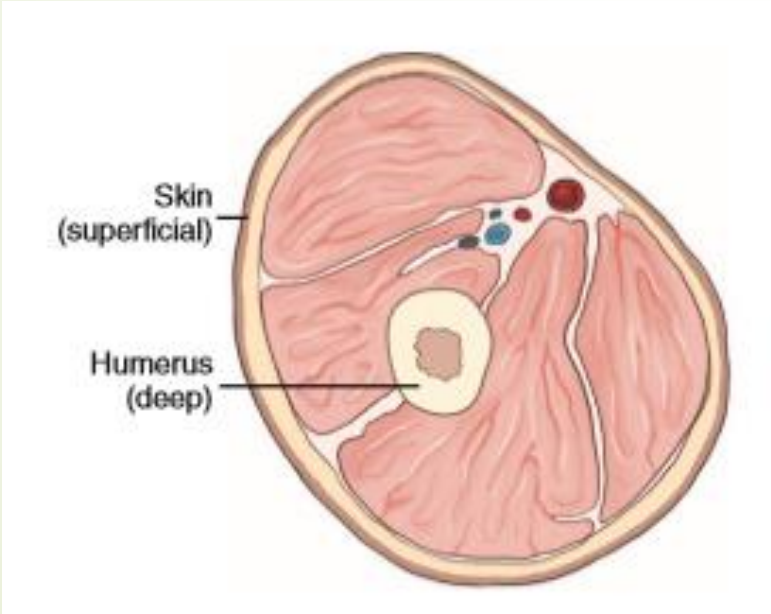
Interior (internal, inside) versus exterior (external, outer)

- **Interior** is inside of something, nearer to the center.
- **Exterior** is situated on or near the outside.

- The prefix **intra-** means within or inside (e.g., intravenous: inside a vein).
- The prefix **inter-** means situated between things (e.g., intercostal: located between the ribs).
- The prefix **exo-** means outside or outward (e.g., exocardial: something that develops or is situated outside the heart).

Superficial versus deep

- Superficial is nearer the skin surface.
- Deep is farther away.



Fig; Cross-section of arm.

Ipsilateral versus contralateral

- **Ipsilateral** (ip″-si-lat′-er-al) is on the same side of the body or part;
- **Contralateral** (kon″-trah-lat′-er-al) is on the opposite side.

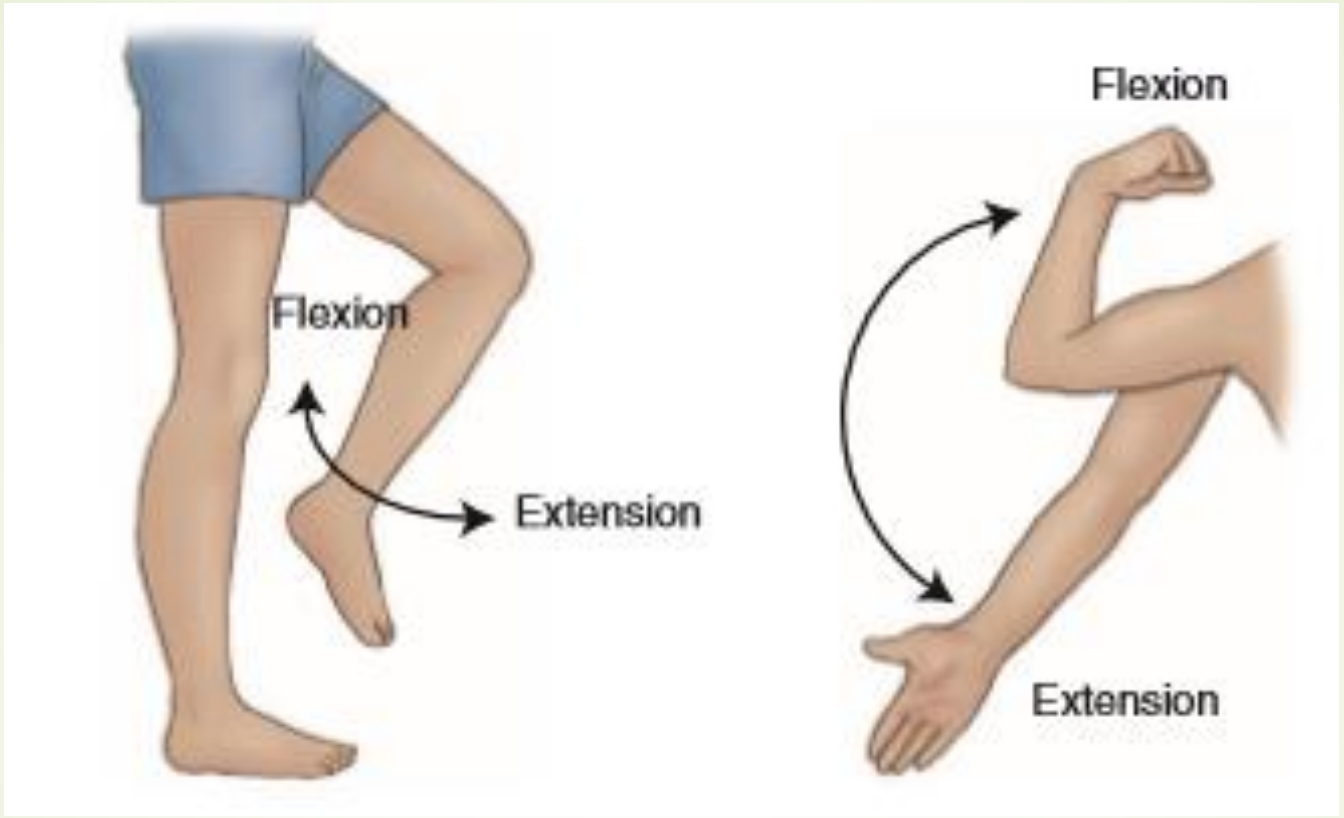
Terms Related to Movements

Terms Related to Movements

Flexion versus extension

When a joint is flexed or extended, the angle between parts is decreased or increased.

- Flexion decreases the angle of the joint.
- Extension increases the angle as the body part moves from a flexed to a straightened position.



Fig; Flexion vs. extension.

Hyperextension

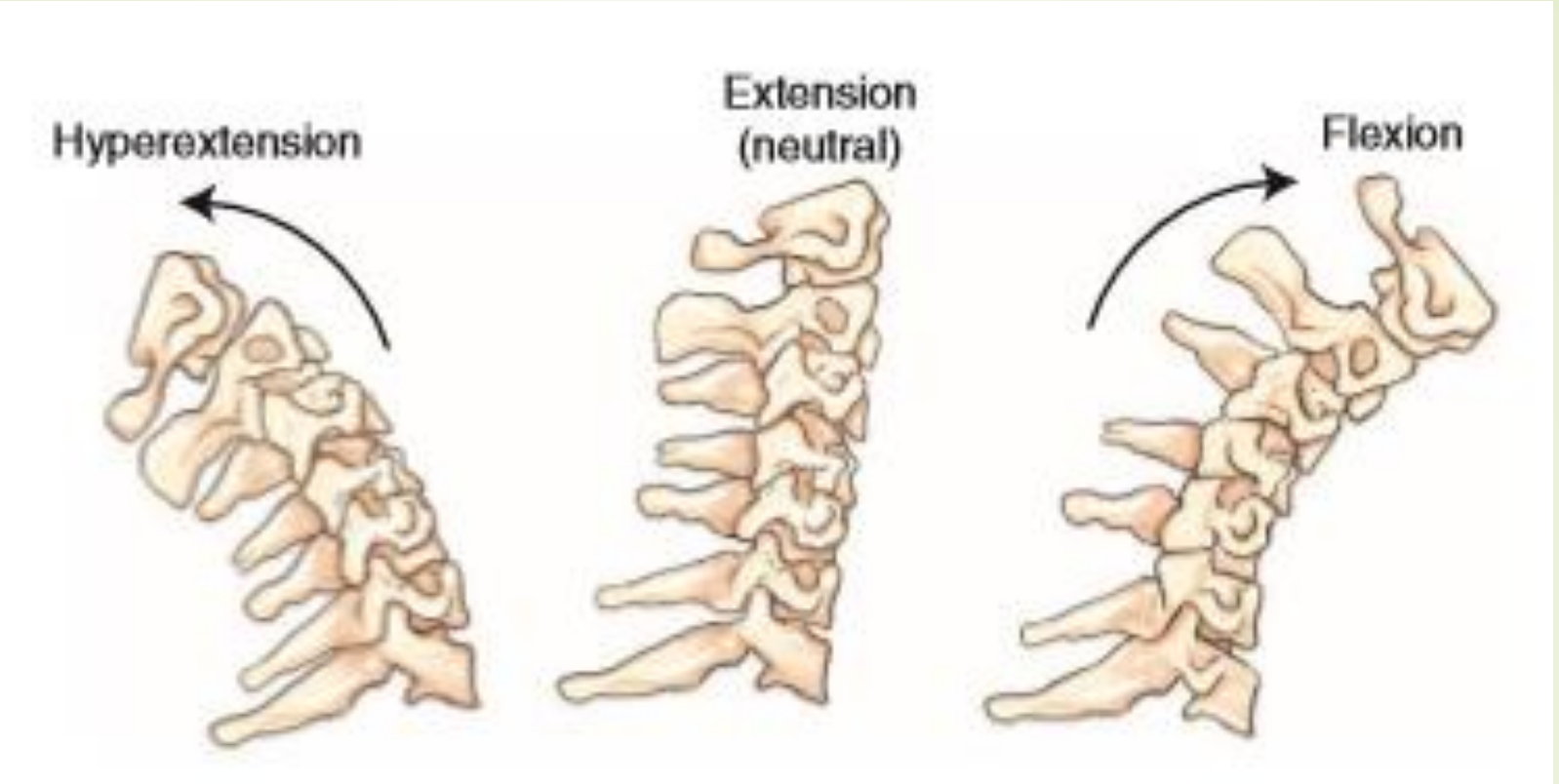
Extending a joint beyond the straight or neutral position.

Abnormal hyperextension

A hyperextended elbow or knee results when the joint is extended beyond the straightened or neutral position. This is not a natural movement for these two joints and results in injury or trauma.

Normal flexion and hyperextension of spine

- **Flexion** is bending forward.
- **Extension** is returning to the straight or neutral position.
- A backward bending beyond the neutral position is **hyperextension**.
- In practice, however, the terms flexion and extension are commonly used for these two **extreme flexion and hyperextension projections** of the spine.



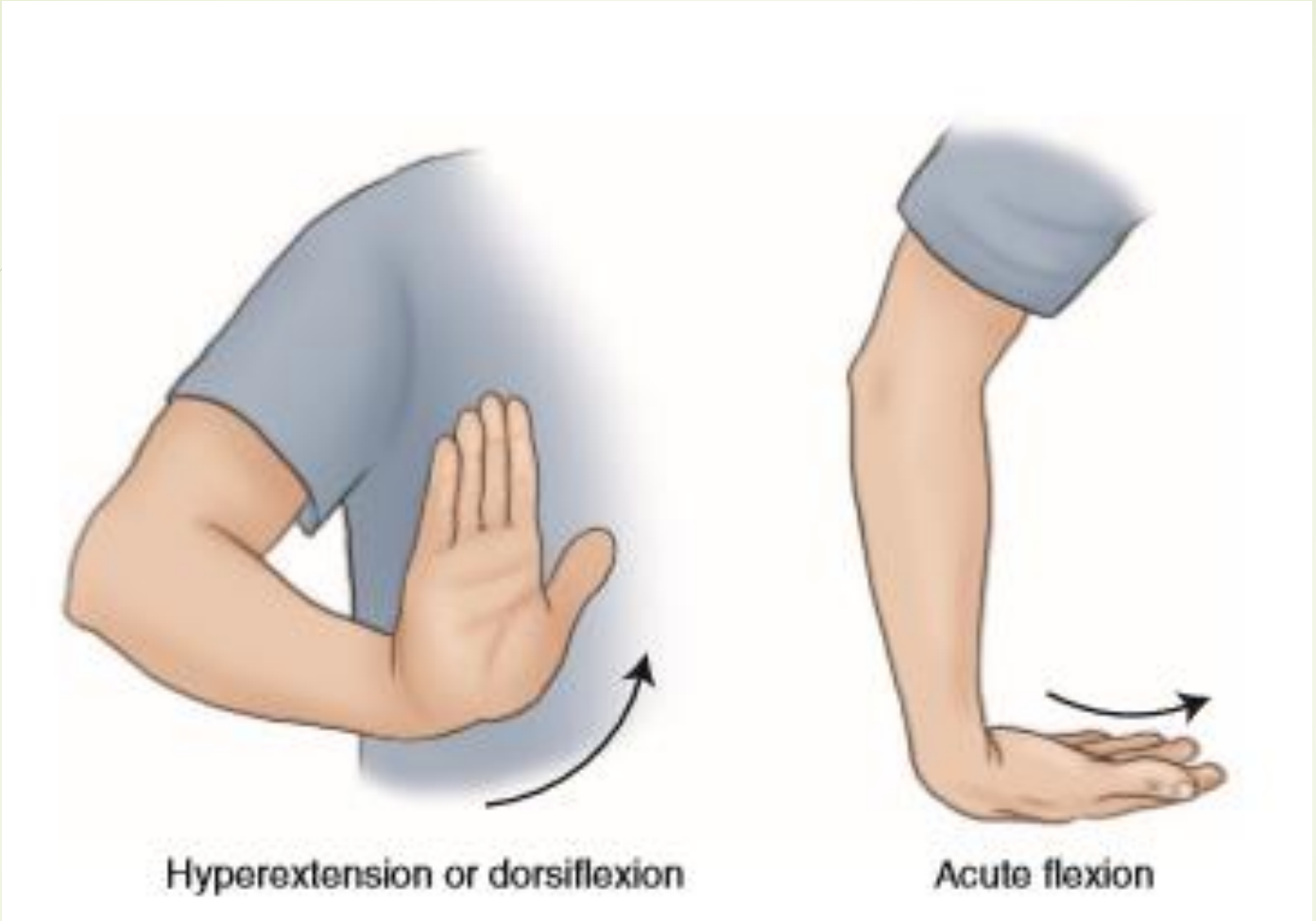
Fig; Hyperextension, extension, and flexion of spine.

Normal hyperextension of wrist

A second example of a special use of the term hyperextension concerns the wrist, where the ***carpal canal or carpal tunnel view*** of the carpals is visualized by a ***special hyperextended wrist movement*** in which the wrist is extended beyond the neutral position. This specific wrist movement is also called ***Dorsiflexion*** (backward or posterior flexion).

Acute flexion of wrist

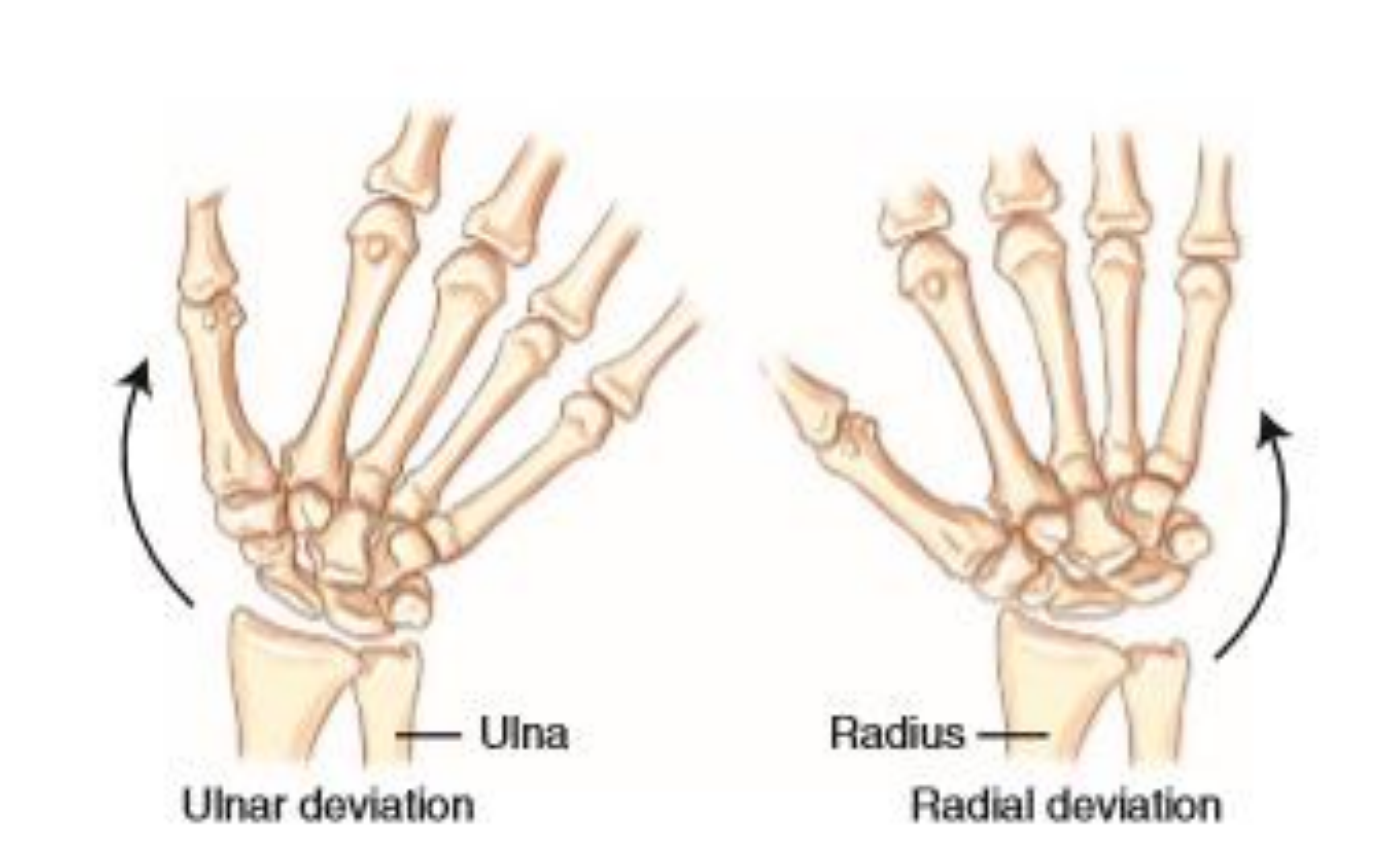
An **acute or full flexion** of the wrist is required for a ***special tangential projection for a carpal bridge view*** of the posterior aspect of the wrist.



Fig; Wrist hyperextension and flexion movements.

Ulnar deviation versus radial deviation of wrist

- **Deviation** literally means “to turn aside” or “to turn away from the standard or course.”*
- **Ulnar deviation** is to turn or bend the hand and wrist from the natural position toward the ulnar side.
- **Radial deviation** is toward the radial side of the wrist.



Fig; Ulnar vs. radial deviation wrist movements

Dorsiflexion versus plantar flexion of foot

- **Dorsiflexion of foot** To decrease the angle (flex) between the dorsum (top of foot) and the lower leg, moving foot and toes upward.

- **Plantar flexion of foot** extending the ankle joint, moving foot and toes downward from the normal position; flexing or decreasing the angle toward the plantar (posterior) surface of the foot.



Fig; Movements of ankle and foot.

Eversion versus inversion

- **Eversion (e-ver’-zhun)** is an outward stress movement of the foot at the ankle joint.
- **Inversion (in-ver’-zhun)** is inward stress movement of the foot as applied to the foot without rotation of the leg.

The plantar surface (sole) of the foot is turned or rotated away from the median plane of the body (the sole faces in a more lateral direction) for eversion and toward the median plane for inversion.

The leg does not rotate, and stress is applied to the medial and lateral aspects of the ankle joint for evaluation of possible widening of the joint space (ankle mortise).

Valgus versus varus

- **Valgus (val′-gus)** describes the bending of the part outward or away from the midline of the body. Valgus sometimes is used to describe ***eversion stress*** of the ankle joint.

- **Varus (va′-rus)**, meaning “knock-kneed,” describes the bending of a part inward or toward the midline. The term varus stress sometimes is used to describe ***inversion stress*** applied at the ankle joint.



Fig; Eversion (valgus stress).

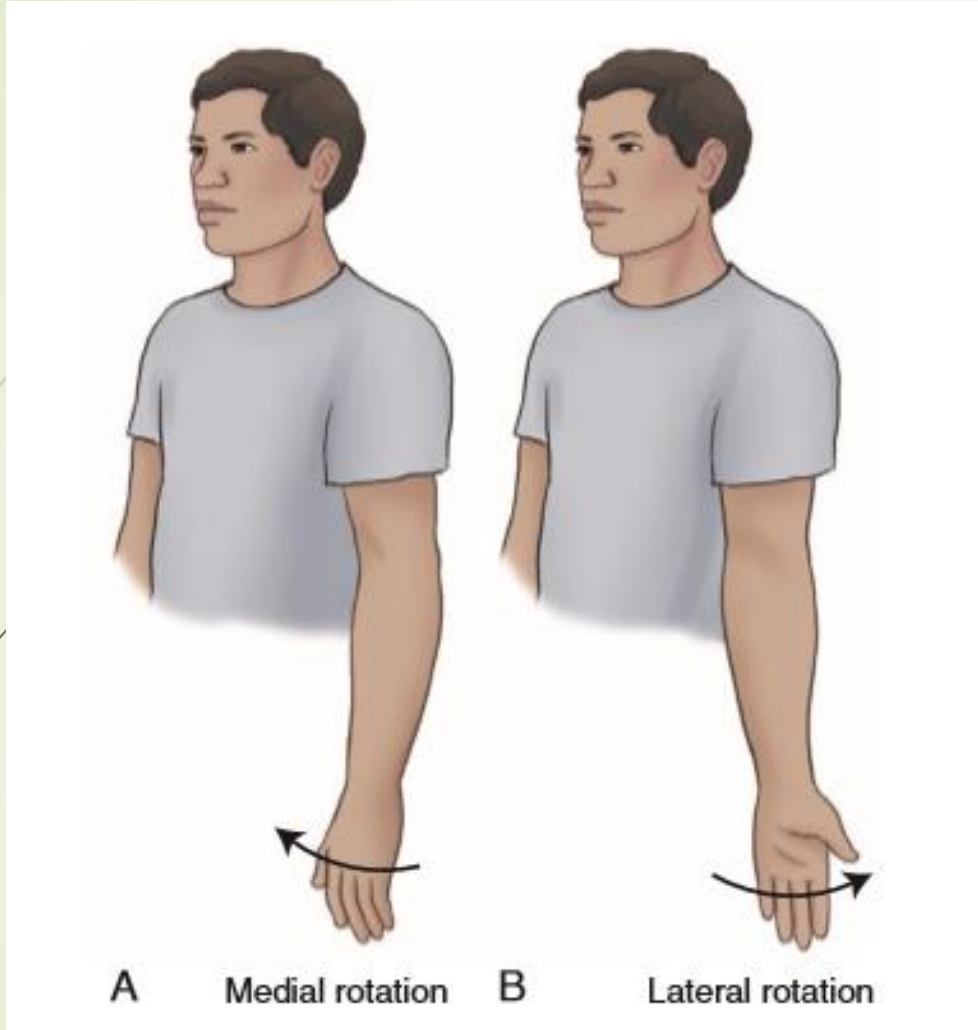


Fig; Inversion (varus stress).

Medial (internal) rotation versus lateral (external) rotation

- **Medial rotation** is a rotation or turning of a body part with movement of the anterior aspect of the part toward the inside, or median plane.

- **Lateral rotation** is a rotation of an anterior body part toward the outside, or away from the median plane.



Fig; Rotational movements of upper limb.
A, Medial (internal) rotation.
B, Lateral (external) rotation.

Abduction versus adduction

- **Abduction (ab-duk′-shun)** is the lateral movement of the arm or leg away from the body. Another application of this term is the abduction of the fingers or toes, which means spreading them apart.

- **Adduction (ah-duk′-shun)** is a movement of arm or leg toward the body, to draw toward a center or medial line. Adduction of the fingers or toes means moving them together or toward each other.

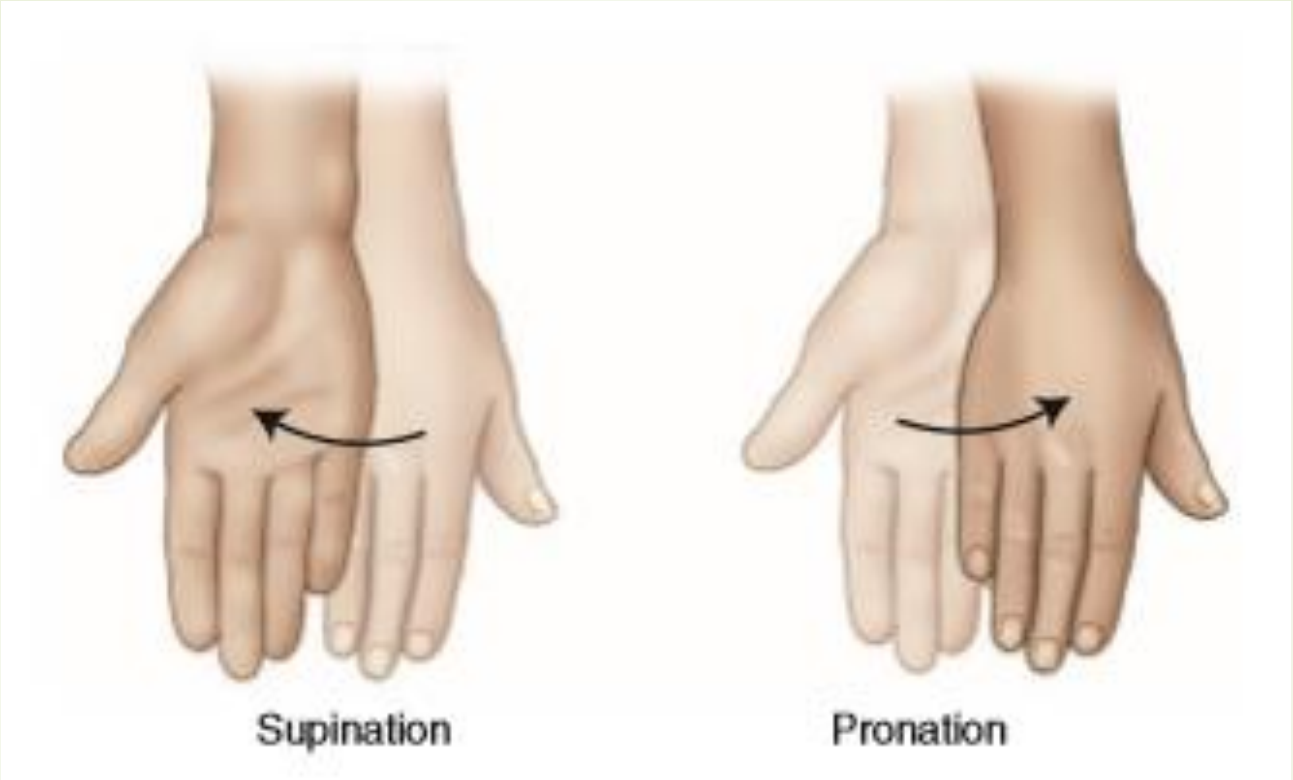


Fig; Movements of upper limb.

Supination versus pronation

- **Supination (su″-pi-na′-shun)** is a rotational movement of the hand into the anatomic position (palm up in supine position or forward in erect position). This movement rotates the radius of the forearm laterally along its long axis.

- **Pronation (pro-na′-shun)** is a rotation of the hand into the opposite of the anatomic position (palm down or back).

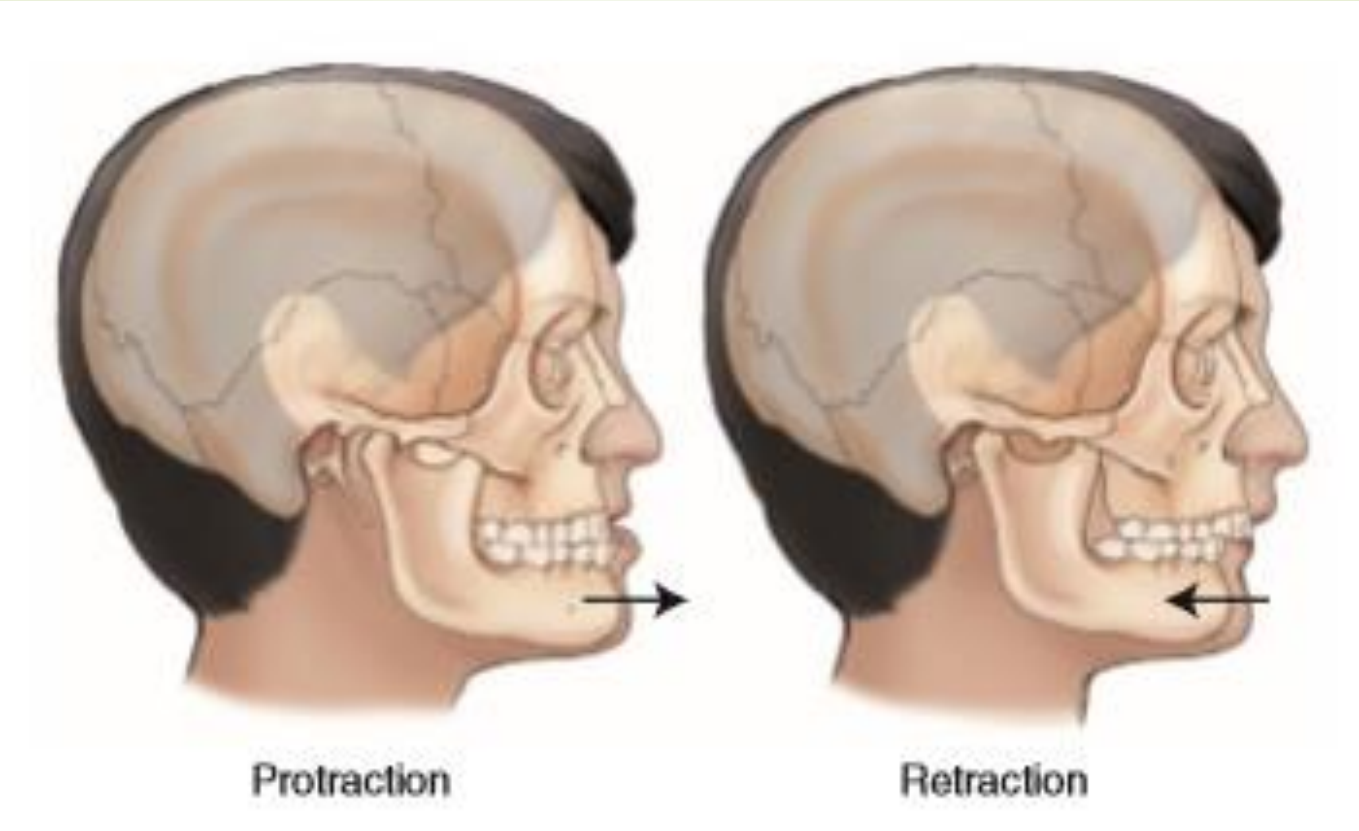


Fig; Movements of hand.

Protraction versus retraction

- **Protraction (pro-trak′-shun)** is a movement forward from a normal position.

- **Retraction (re-trak′-shun)** is a movement backward or the condition of being drawn back.

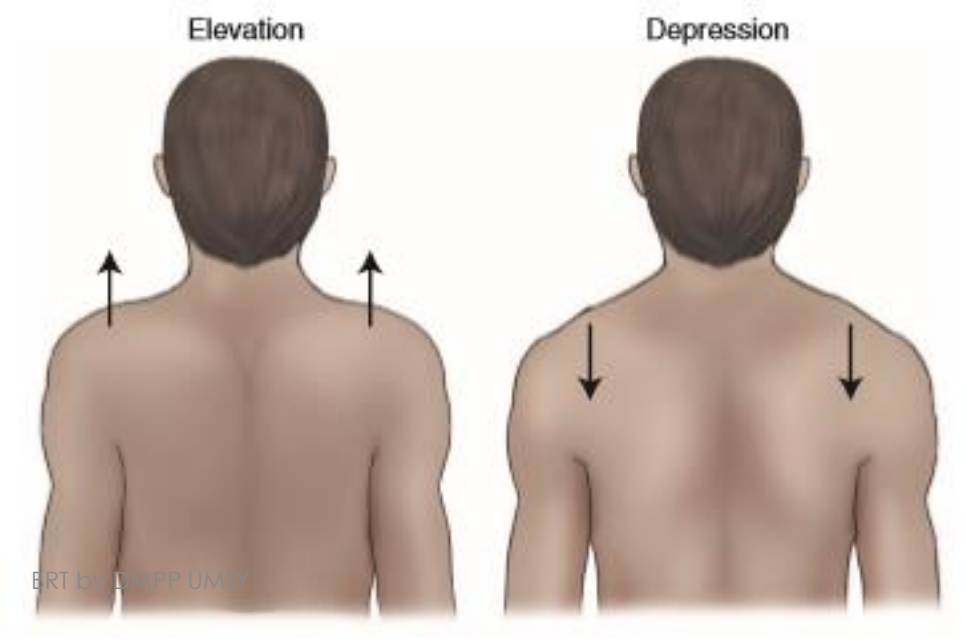


Fig; Movements of protraction and retraction.

Elevation versus depression

- **Elevation** is a lifting, raising, or moving of a part superiorly.

- **Depression** is a letting down, lowering, or moving of a part inferiorly.

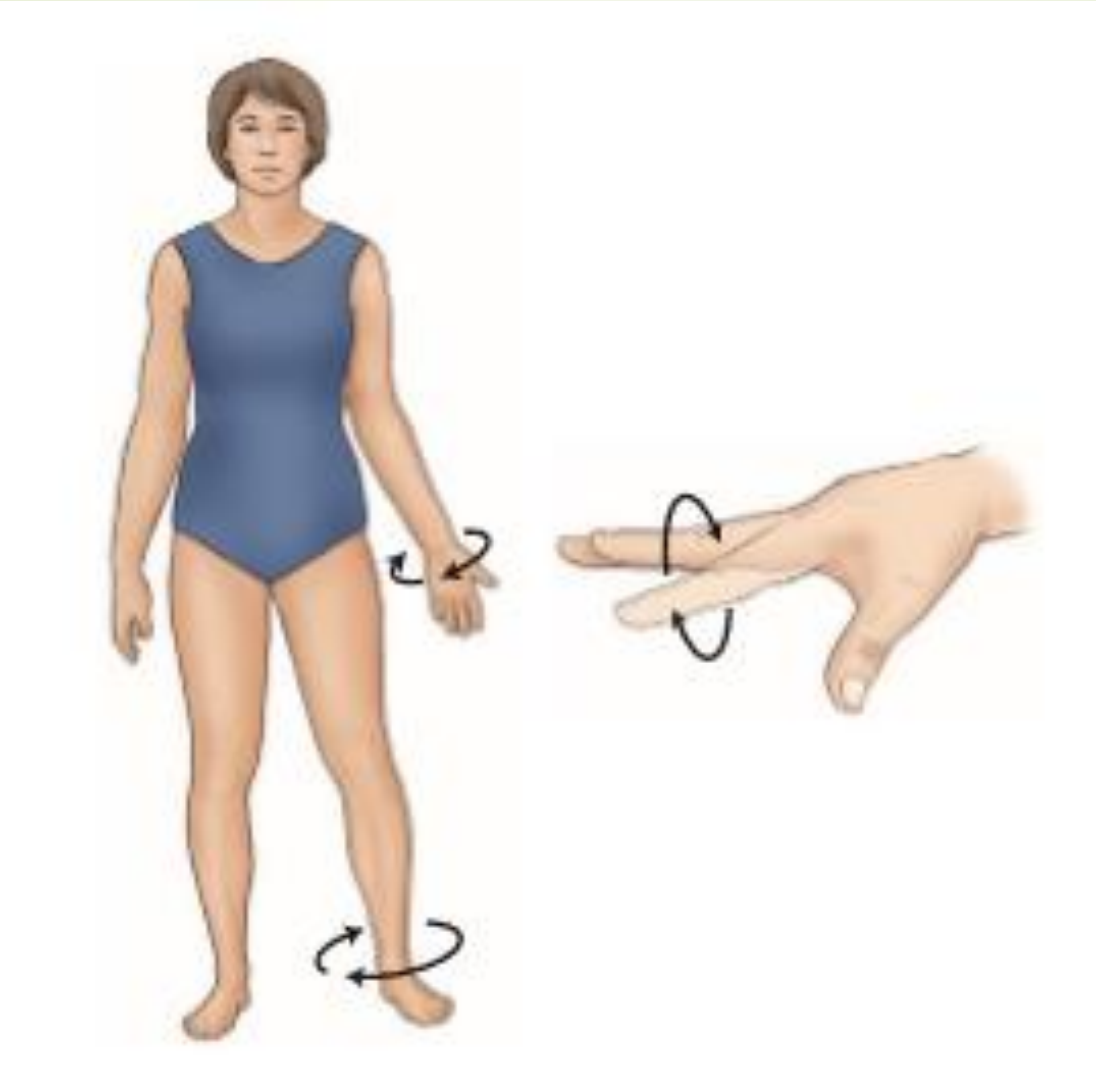


BRT by DMPP UMTY

Fig; Elevation and depression movements of shoulders.

Circumduction

- **Circumduction (ser″-kum-duk′-shun)** means to move around in the form of a circle. This term describes sequential movements of flexion, abduction, extension, and adduction, resulting in a cone-type movement at any joint where the four movements are possible (e.g., fingers, wrist, arm, leg).

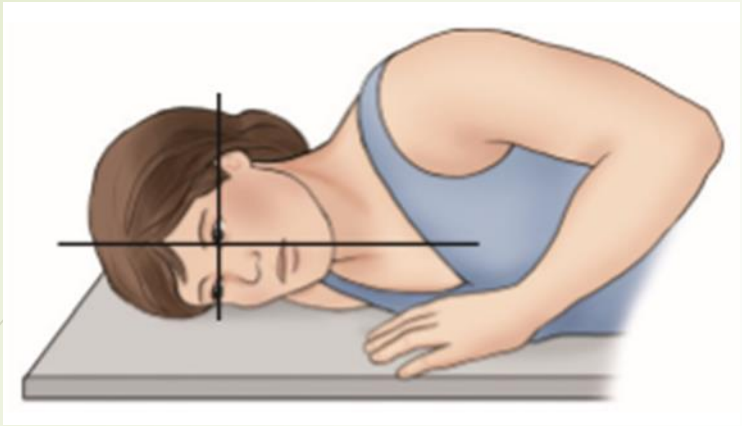


Fig; Circumduction movements

Rotation versus Tilt

- **Rotate** is to turn or rotate a body part on its axis.

- **Tilt** is a slanting or tilting movement with respect to the long axis.



Fig; Rotation—midsagittal plane rotated.



Fig; Tilt—midsagittal plane of head tilted.

Reference Book

1. Bontrager, Kenneth L. (2014). *Textbook of radiographic positioning and related anatomy. 8th ed*. Mosby, an imprint of Elsevier Inc.