

**Ministry of Higher Education and Scientific Research**  
**College of Health and Medical Techniques/Kufa**  
**Dept. Asthetic and Laser Techniques**

Learning package in field of  
**Medical Terminology**

Presented to the 1st class students

Designed by  
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# Medical Terminology

- **Medical Terminology** is the standardized language used by healthcare professionals to describe the human body, medical conditions, diseases, procedures, and treatments.
- **Importance of Medical Terminology**
  - Enhances Communication – Ensures clear and precise communication among doctors, nurses, pharmacists, and other healthcare professionals,.
  - Saves Time and Improves Efficiency – Abbreviations and medical terms allow professionals to document and relay information quickly and efficiently.
  - Facilitates Accurate Documentation – Essential for medical records, ensuring proper patient history, treatment plans, and insurance claims.
  - Supports Global Understanding – Since medical terminology is used worldwide, it allows healthcare providers across different countries to understand diagnoses, procedures, and treatments.
  - Aids in Medical Education and Research – Helps students and professionals learn and share medical knowledge more effectively.

# Medical Terminology

- Consists of specialized words and phrases used in healthcare to describe conditions, procedures, anatomy, and diseases. It is primarily based on Latin and Greek roots, prefixes, and suffixes.

# Medical Roots

- **Root** – the main part of a medical term that provides its fundamental meaning. It typically refers to a body part, system, or function.
- **Cardi-** → Heart (Cardiology = Study of the heart)
- **Gastr-** → Stomach (Gastritis = Inflammation of the stomach)
- **Neur-** → Nerve (Neurology = Study of the nervous system)
- **Hemat-** → Blood (Hematology = Study of blood)
- **Derm-** → Skin (Dermatitis = Inflammation of the skin)
- **Oste-** → Bone (Osteoporosis = Condition of porous bones)

# Medical Prefixes

➤ **Prefix** is a part of a medical term added at the beginning of a word to modify its meaning. Prefixes often indicate location, time, number, or status.

Prefix	Meaning	Example	Definition
Brady-	Slow	Bradycardia	Slow heart rate
Tachy-	Fast	Tachypnea	Rapid breathing
Hyper-	Excessive, high	Hypertension	High blood pressure
Hypo-	Below, low	Hypoglycemia	Low blood sugar
Pre-	Before	Prenatal	Before birth
Post-	After	Postoperative	After surgery
Dys-	Difficult, abnormal	Dyspnea	Difficulty breathing
Poly-	Many, excessive	Polyuria	Excessive urination
Oligo-	Few, scanty	Oliguria	Decreased urine output
A-/An-	Without, lack of	Anemia	Lack of red blood cells
Anti-	Against	Antibiotic	Against bacterial infection
Auto-	Self	Autoimmune	Disease where the immune system attacks itself



# Medical Suffixes

➤ A **suffix** is added to the end of a medical term to modify its meaning. Suffixes often indicate a procedure, condition, disease, or disorder.

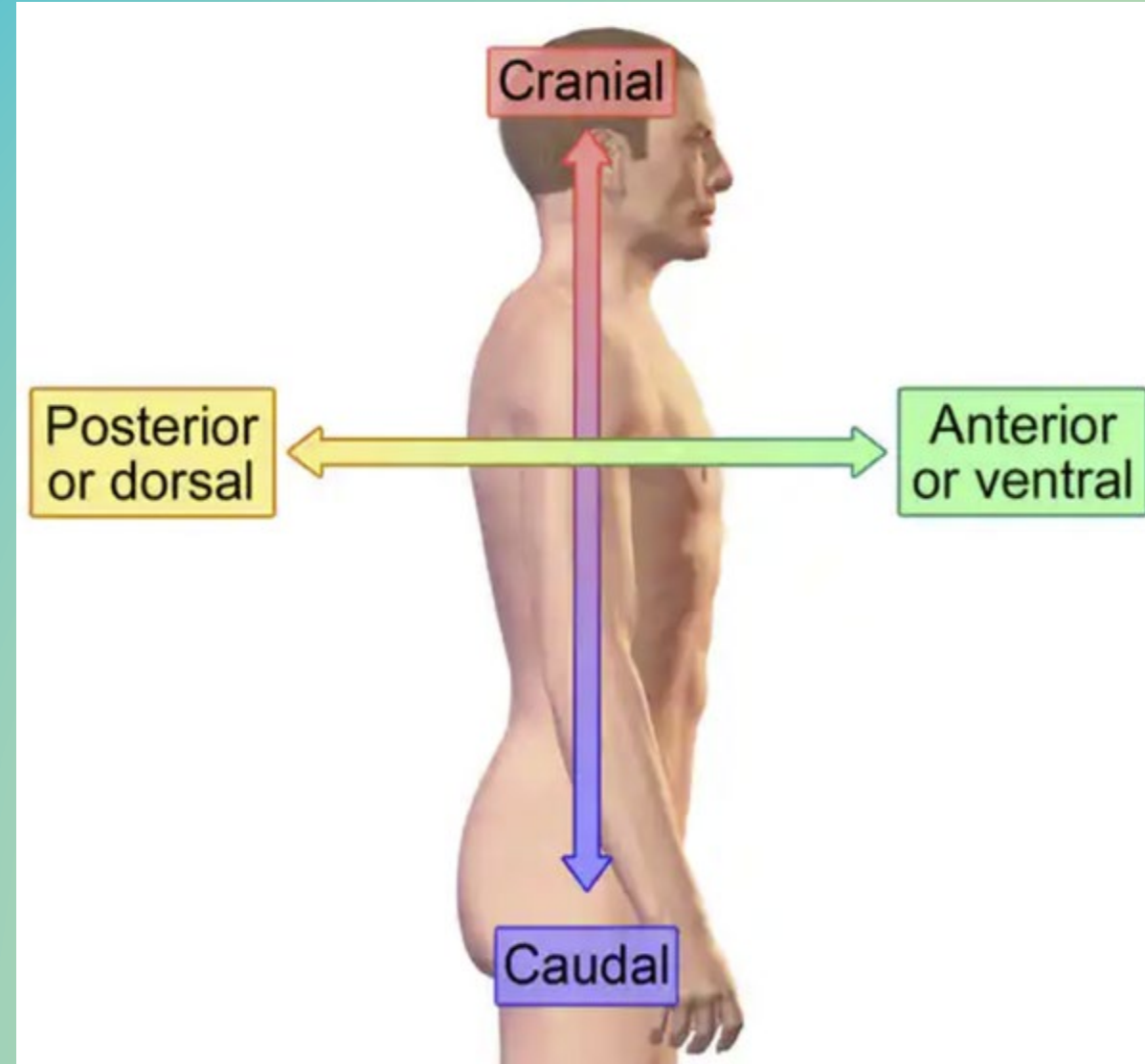
Suffix	Meaning	Example	Definition
-itis	Inflammation	Arthritis	Inflammation of the joints
-ology	Study of	Neurology	Study of the nervous system
-ectomy	Surgical removal	Appendectomy	Removal of the appendix
-algia	Pain	Neuralgia	Nerve pain
-emia	Blood condition	Anemia	Lack of red blood cells
-pathy	Disease	Neuropathy	Nerve disease
-oma	Tumor, mass	Melanoma	Skin cancer
-graphy	Process of recording	Mammography	X-ray imaging of the breast
-scopy	Visual examination	Endoscopy	Examining inside the body using a scope
-stomy	Creating an opening	Colostomy	Creating an opening in the colon
-megaly	Enlargement	Hepatomegaly	Enlargement of the liver
-plasia	Formation, growth	Hyperplasia	Excessive cell growth
-lysis	Destruction, breakdown	Hemolysis	Breakdown of red blood cells

# Combining Vowel

- A combining vowel is a letter, usually "o", that is used between a root word and a suffix or another root word to make pronunciation easier.
- Rules for Using a Combining Vowel
  - If the suffix begins with a vowel (a, e, i, o, u), the combining vowel is usually not needed. Example: Arthritis (not Arthroitis).
  - If the suffix begins with a consonant, the combining vowel is used. Example: Arthroscope (Arthroscope).
  - When connecting two root words, a combining vowel is always used, even if the second root starts with a vowel. Example: Gastroenterology (Gastroenterology).

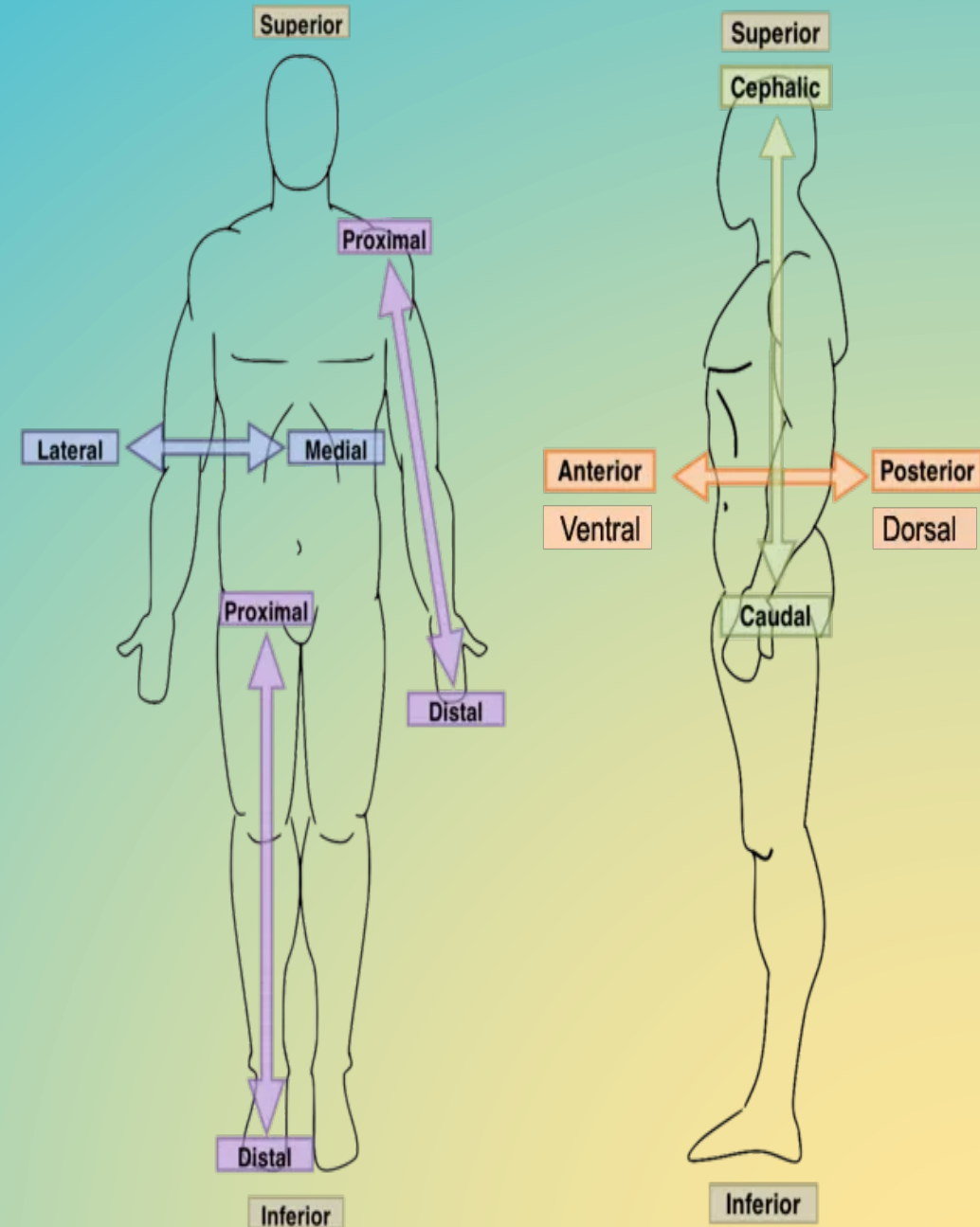
# Anatomical Directions and Planes

- Used in medicine to describe the locations and movements of body structures with precision.
- **Anatomical Directions** are describe the positions of body structures relative to one another.
  - Anterior (Ventral) → Front of the body → The chest is anterior to the spine.
  - Posterior (Dorsal) → Back of the body → The spine is posterior to the heart.

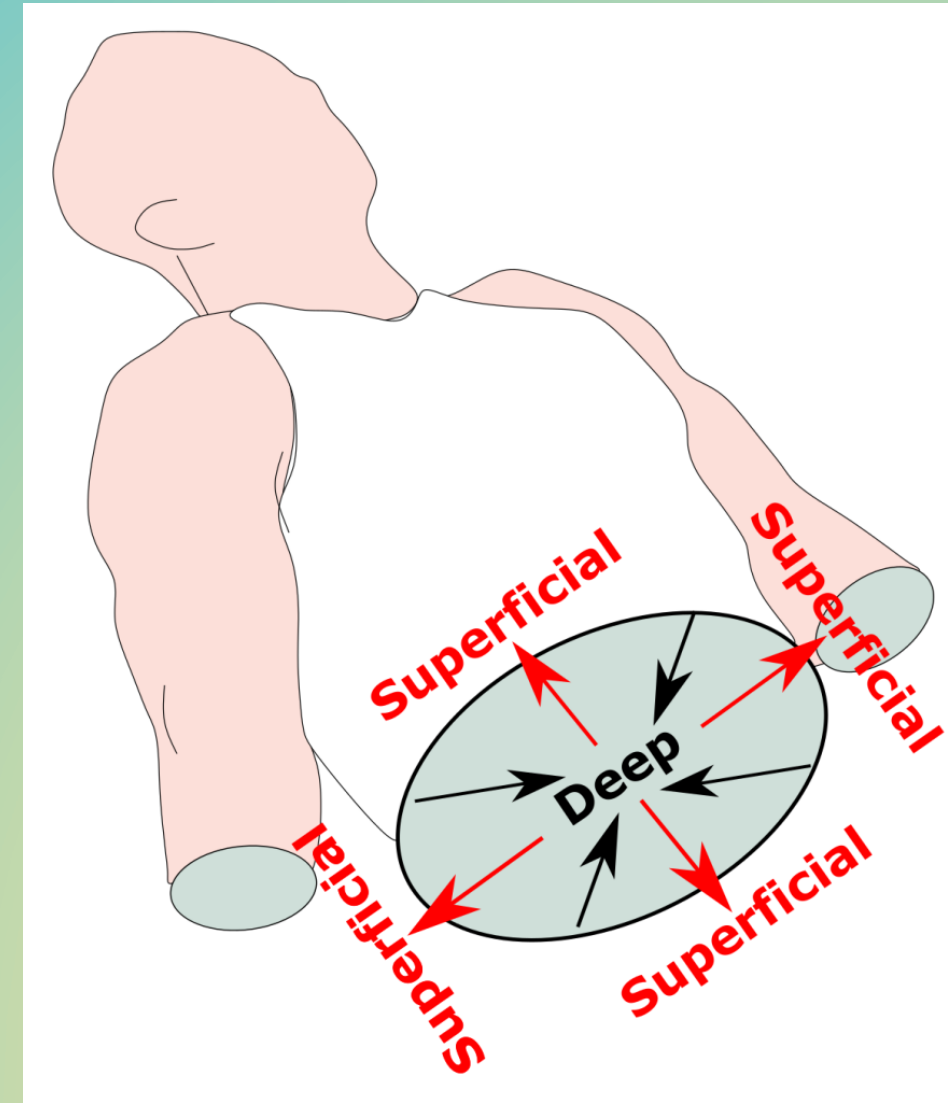




- Superior (Cranial) → Above or toward the head → The head is superior to the neck.
- Inferior (Caudal) → Below or toward the feet → The stomach is inferior to the heart.
- Medial → Toward the midline of the body → The nose is medial to the ears.
- Lateral → Away from the midline of the body → The arms are lateral to the chest.
- Proximal → Closer to the point of attachment (limbs) → The shoulder is proximal to the wrist.
- Distal → Farther from the point of attachment (limbs) → The fingers are distal to the elbow.



- Superficial → Close to the surface of the body → The skin is superficial to the muscles.
- Deep → Further inside the body → The bones are deep to the muscles.



# Anatomical Planes

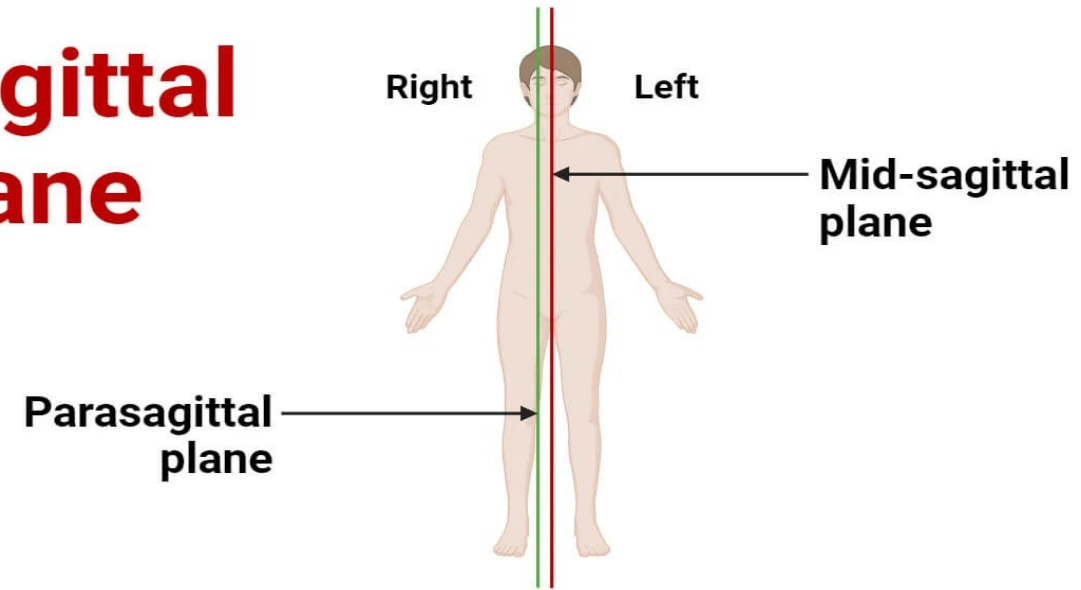
## ➤ Sagittal Plane (Median Plane)

- Divides the body into left and right halves
- If the division is equal, it's called the **mid-sagittal plane**.
- If the division is unequal, it's called the **parasagittal plane**.

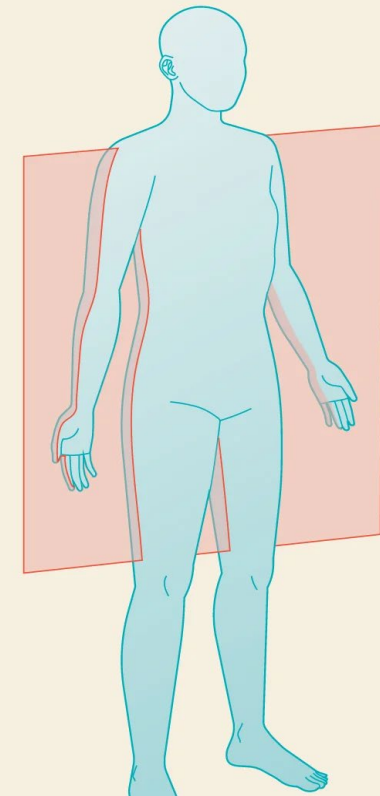
## ➤ Frontal Plane (Coronal Plane)

- Divides the body into front (anterior) and back (posterior) sections.
- Used to describe movements that go side to side, like jumping jacks..

## Sagittal Plane



## Coronal Plane



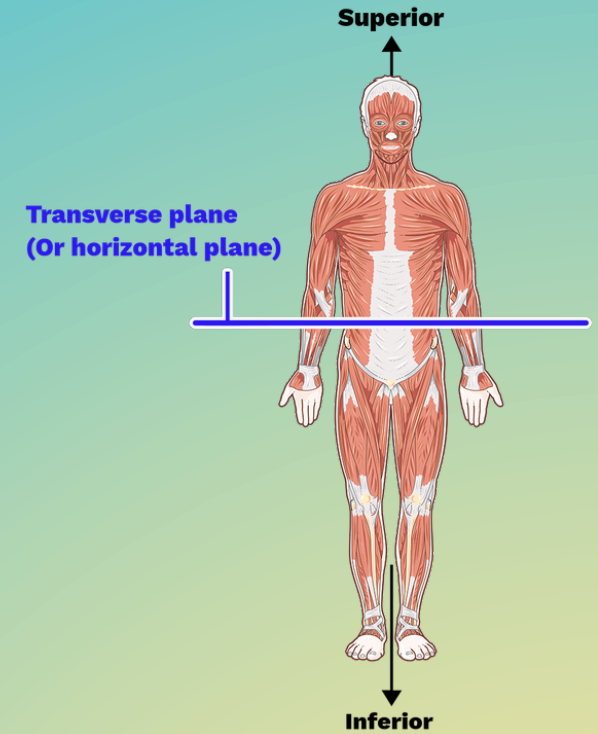
# Anatomical Planes

## ➤ Transverse Plane (Horizontal Plane)

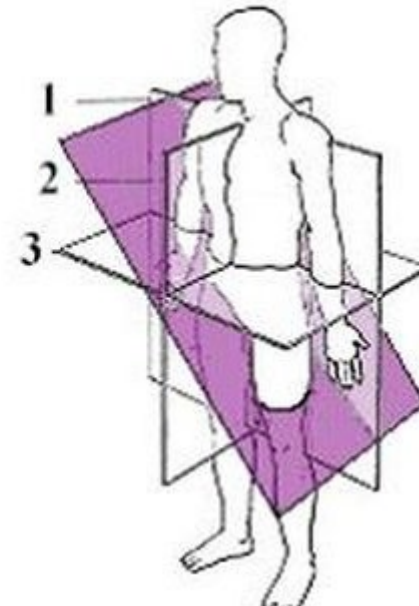
- Divides the body into upper (superior) and lower (inferior) parts.
- Often used in CT scans and MRI imaging..

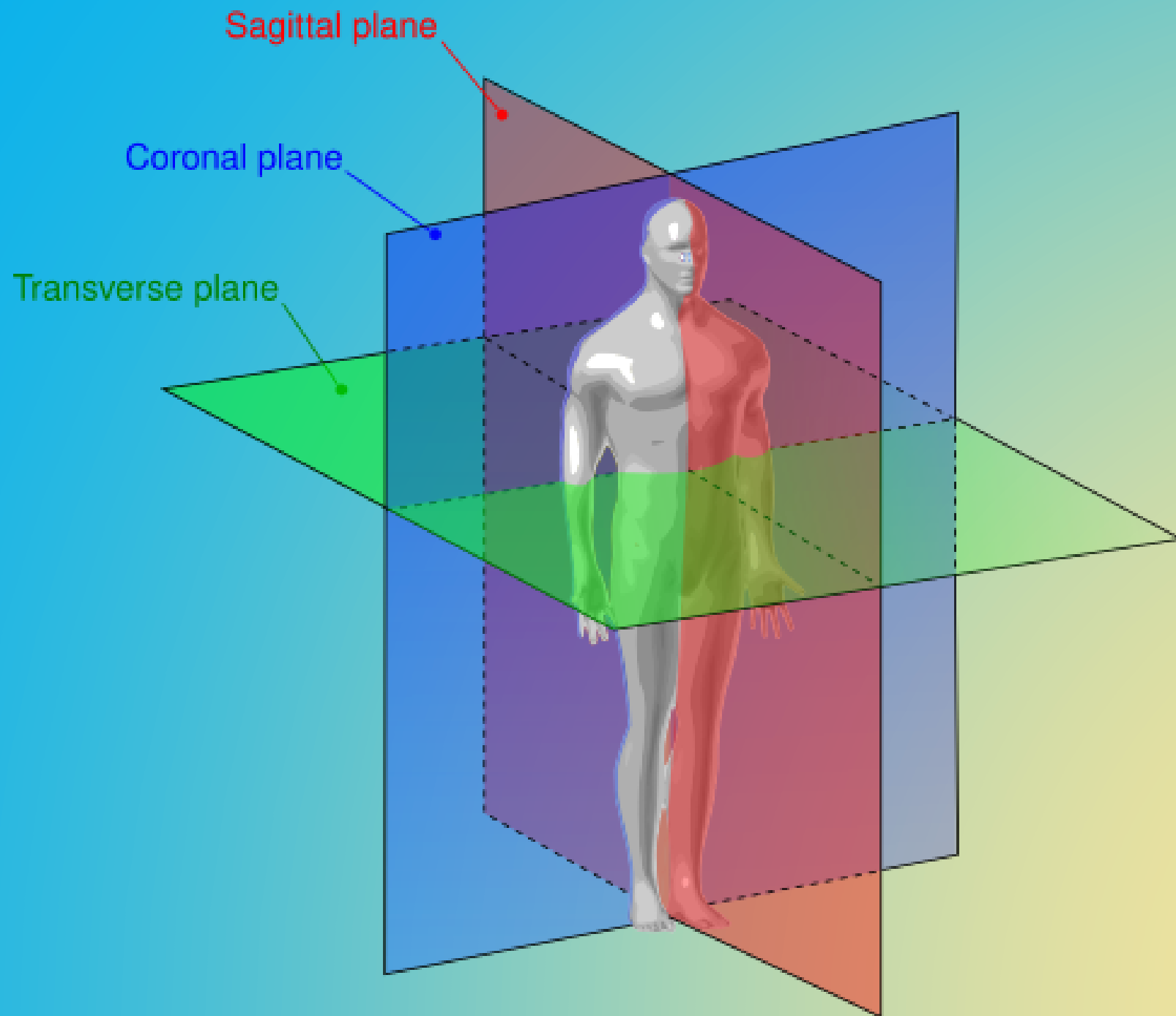
## ➤ Oblique Plane

- Cuts through the body at an angle (not parallel to the other planes).
- Used in specialized imaging and anatomical studies.



An Oblique Section would be Diagonal







# **Dermatology**

- Dermatology is the branch of medicine that focuses on the diagnosis, treatment, and prevention of diseases related to the **skin, hair, nails, and mucous membranes.**

## **Basic Skin Anatomy**

- Epidermis – The outermost layer of the skin.
- Dermis – The middle layer containing blood vessels, nerves, and connective tissue.
- Hypodermis (Subcutaneous Tissue) – The deepest layer made of fat and connective tissue.
- Melanocytes – Cells that produce melanin, which gives skin its color.
- Collagen – A protein in the dermis that provides strength and structure to the skin.
- Elastin – A protein that helps the skin return to its normal shape after stretching..

# Epidermis (Outer Layer)

- The topmost layer of the skin.
- Composed mainly of keratinocytes, which produce keratin (a protective protein).
- Contains melanocytes, which produce melanin (pigment that gives skin its color).
- Includes Langerhans cells, which help in immune response.
- Constantly sheds and renews itself.

# **Dermis (Middle Layer)**

- A thicker layer that supports the epidermis.
- Contains blood vessels, nerve endings, hair follicles, sweat glands, and oil glands.
- Made up of collagen and elastin, providing skin with strength and elasticity.

# Hypodermis (Subcutaneous Layer)

- The deepest layer of the skin.
- Composed mostly of fat (adipose tissue) that insulates the body.
- Acts as a shock absorber and provides energy storage.

# Derm term

- Derived from the Greek word derma, meaning skin.
- Used as a standalone abbreviation
  - Dermatology or dermatologist
- As a Prefix (Related to Skin)
  - Dermis – The second (middle) layer of the skin.
  - Epidermis – The outermost layer of the skin.
  - Hypodermis – The deepest layer of the skin (subcutaneous layer).
  - Dermatitis – Inflammation of the skin (e.g., eczema, contact dermatitis).
  - Dermabrasion – A procedure to remove the outer layer of skin for resurfacing.



# Derm term

- As a Suffix (-derm, -derma, -dermic)
  - Leukoderma – White patches on the skin due to loss of pigment.
  - Xeroderma – Abnormally dry skin. Pachyderma – Thickened skin, often used in medical conditions or referring to animals with thick skin (like elephants).
  - Endoderm – The innermost germ layer in embryonic development that contributes to the formation of skin and internal organs.

# Cutane term

- The term "cutane-" comes from the Latin word cutis, meaning skin.
- Cutaneous – Related to the skin.
- Subcutaneous – Beneath the skin; refers to the hypodermis, the fatty layer under the dermis.
- Cutaneous Abscess – A localized collection of pus under the skin.
- Cutaneous Lupus – A skin condition associated with lupus, causing red, scaly rashes.
- Cutaneous Melanoma: A type of skin cancer that arises from melanocytes.
- Cutaneous Biopsy – A skin sample taken for medical examination.
- Cutaneous Laser Therapy – The use of lasers for treating skin conditions like scars or pigmentation.

# **Terminology of the Muscular System**

## **➤Types of Muscle Tissue**

- Skeletal Muscle – Voluntary muscles attached to bones that allow movement.
- Cardiac Muscle – Involuntary muscle found only in the heart.
- Smooth Muscle – Involuntary muscle found in the walls of internal organs.

# Muscle Structure & Components of the Muscular

- Skeletal Muscle Fiber (Myocyte) – Individual muscle cell.
- Sarcomere – The basic functional unit of a muscle, composed of actin and myosin.
  - Actin – Thin filament involved in muscle contraction.
  - Myosin – Thick filament involved in muscle contraction.
- Tendon – Connective tissue that attaches muscle to bone.
- Epimysium – Outer connective tissue covering the entire muscle.

# Muscle Movements & Functions

- Contraction – The shortening of muscle fibers to create movement.
- Relaxation – The lengthening of muscle fibers after contraction.
- Isotonic Contraction – Muscle contraction that produces movement.
- Isometric Contraction – Muscle contraction without movement.
- Agonist (Prime Mover) – The main muscle responsible for a movement.
- Antagonist – A muscle that opposes the action of the agonist.
- Synergist – A muscle that assists the prime mover.
- Fixator – A muscle that stabilizes a joint or body part during movement.



# myo-, fascio-, tono terms

- **Myo-** is a prefix related to muscles.
  - Examples: Myopathy – A disease of the muscles
  - Myositis – Inflammation of muscle tissue
  - Myalgia – Muscle pain.
- **Fascio-** relates to fascia, which is the connective tissue surrounding muscles.
  - Examples: Fasciitis – Inflammation of fascia.
  - Fasciotomy – Surgical cutting of fascia to relieve pressure.
  - Fasciculus – A small bundle of muscle or nerve fibers.
- **Tono-** refers to muscle tone or tension.
  - Examples: Tonus – The normal state of partial muscle contraction.
  - Hypotonia – Reduced muscle tone, often seen in neurological disorders.
  - Hypertonia – Increased muscle tone or stiffness.

# Terminology of the Skeletal System

## ➤ Types of Bones

- Long Bones – Bones that are longer than they are wide
- Short Bones – Cube-shaped bones that provide support
- Flat Bones – Thin and often curved bones that protect organs
- Irregular Bones – Bones with complex shapes
- Sesamoid Bones – Small, round bones embedded in tendons

# Bone Structure & Components

- Osteon (Haversian System) – The basic structural unit of compact bone.
- Osteocyte – A mature bone cell responsible for maintaining bone tissue.
- Osteoblast – A bone-forming cell.
- Periosteum – A fibrous membrane covering the bone's outer surface.
- Endosteum – A membrane lining the medullary cavity inside bones.
- Medullary Cavity – The hollow space within long bones that contains bone marrow.
- Red Bone Marrow – The site of blood cell production (found in flat and long bones).
- Yellow Bone Marrow – Fatty tissue found in the medullary cavity of long bones.
- Cartilage – Flexible connective tissue that cushions joints.

# Bone Structure & Components

- Joint (Articulation) – A connection between two bones.
- Synovial Joint – A freely movable joint (e.g., knee, elbow).
- Cartilaginous Joint – A joint with limited movement (e.g., spine).
- Fibrous Joint – An immovable joint (e.g., skull sutures).
- Ligament – Connective tissue that connects bones to other bones.
- Tendon – Connective tissue that connects muscles to bones.
- Synovial Fluid – Lubricating fluid within synovial joints.

# Osteo-, Arthro terms

➤ Osteo- refers to bones.

➤ Examples: Osteocyte – A mature bone cell.

➤ Arthro- refers to joints (where two bones meet).

➤ Examples: Arthritis – Inflammation of a joint.

➤ Arthralgia – Joint pain.



# **Nervous System Terminology**

## **Divisions of the Nervous System**

- Central Nervous System (CNS) – Includes the brain and spinal cord.
- Peripheral Nervous System (PNS) – Consists of all nerves outside the CNS.
- Somatic Nervous System – Controls voluntary muscle movements.
- Autonomic Nervous System (ANS) – Controls involuntary functions (heart rate, digestion).
  - Sympathetic Nervous System – Activates "fight or flight" response.
  - Parasympathetic Nervous System – Controls "rest and digest" functions.

# Nervous System Cells & Structures

- Neuron – The basic functional unit of the nervous system.
- Dendrites – Extensions of a neuron that receive signals.
- Axon – A long fiber that transmits nerve impulses away from the neuron.
- Synapse – The junction between two neurons where signals are transmitted.
- Neurotransmitter – A chemical messenger that transmits signals across a synapse (e.g., dopamine, serotonin).
- Glial Cells (Neuroglia) – Support cells that protect and nourish neurons.

# Brain & Spinal Cord Structures

- Cerebrum – The largest part of the brain, responsible for thinking, memory, and voluntary movement.
- Cerebellum – Controls coordination and balance.
- Brainstem – Regulates basic life functions like breathing and heart rate.
- Hypothalamus – Regulates hormones, temperature, and hunger.
- Medulla Oblongata – Controls vital functions like breathing and heartbeat.
- Spinal Cord – Transmits signals between the brain and the body.

# Nerve Function & Disorders

- Reflex – An automatic response to a stimulus.
- Action Potential – The electrical signal that travels along a neuron.
- Neuralgia – Nerve pain.
- Neuropathy – Damage or dysfunction of nerves.
- Multiple Sclerosis (MS) – A disease where the immune system attacks the myelin sheath.
- Parkinson's Disease – A disorder that affects movement due to low dopamine levels.
- Alzheimer's Disease – A degenerative brain disease that affects memory and cognition.

# Neuro Terms

- Neuro- (Greek: "neuron" = nerve) → Related to nerves (e.g., neurology = study of nerves).
- Cerebro- (Latin: "cerebrum" = brain) → Related to the brain (e.g., cerebrospinal fluid).
- The prefix encephalo- refers to the brain.
  - Examples: Encephalitis – Inflammation of the brain.
- Myelo- (Greek: "myelos" = marrow/spinal cord) → Related to the spinal cord (e.g., myelopathy = spinal cord disease).



# **Dermatology and Cosmetic Terminology**

- Botox – A neurotoxin injection that reduces wrinkles by temporarily relaxing muscles.
- Fillers (Dermal Fillers) – Injectable substances (e.g., hyaluronic acid) used to add volume to the skin.
- Chemical Peel – A skin-resurfacing procedure that uses acids to remove dead skin cells.
- Microdermabrasion – A minimally invasive procedure that exfoliates the skin.
- Microneedling – A treatment that uses tiny needles to stimulate collagen production.
- Laser Resurfacing – A treatment that uses laser energy to improve skin texture and pigmentation.
- PRP (Platelet-Rich Plasma) – A treatment using a patient's own plasma to promote healing and collagen production.
- Mesotherapy – A technique involving microinjections of vitamins, enzymes, and other ingredients into the skin.

# Skin Care Ingredients & Treatments

- Retinoids (Retinol, Tretinoin) – Vitamin A derivatives that help with anti-aging and acne.
- Hyaluronic Acid – A hydrating ingredient that retains moisture in the skin.
- Niacinamide – A form of vitamin B3 known for its anti-inflammatory and brightening effects.
- Alpha Hydroxy Acids (AHAs) – Exfoliants that improve skin texture (e.g., glycolic acid, lactic acid).
- Beta Hydroxy Acids (BHAs) – Exfoliants that penetrate pores, often used for acne-prone skin (e.g., salicylic acid).
- Collagen – A protein responsible for skin firmness and elasticity.
- SPF (Sun Protection Factor) – A measure of how well a sunscreen protects against UV rays.
- Antioxidants (e.g., Vitamin C, E, Ferulic Acid) – Protect skin from oxidative damage.

# Application Techniques

- Layering – Applying skincare products in a specific order (typically from thinnest to thickest consistency).
- Patting – Gently pressing products into the skin instead of rubbing.
- Buffing – Using a brush or sponge in circular motions to blend makeup.
- Blending – Mixing and diffusing makeup products for a seamless finish.
- Baking – Applying a thick layer of powder over foundation and letting it sit before brushing off for a matte, long-lasting finish.
- Stippling – Dabbing foundation with a stippling brush for an airbrushed effect.
- Dabbing – Using a sponge, brush, or fingertips to apply small amounts of product, often for concealer or lip products.
- Feathering – Lightly applying or blending product for a natural, soft effect.
- Tapping – Gently pressing makeup or skincare onto the skin, often done with fingers or sponges.

# Skincare Application Terms

- Double Cleansing – Using an oil-based cleanser followed by a water-based cleanser for thorough cleaning.
- Toning – Applying a toner to balance the skin's pH and prepare for other skincare steps.
- Spot Treatment – Applying a concentrated product directly to problem areas (e.g., acne, dark spots).
- Emulsifying – Mixing oil-based and water-based products by rubbing them together.
- Occlusive Layering – Using thick, barrier-forming products (like petroleum jelly) to lock in moisture.
- Slugging – Applying a thick layer of an occlusive (usually petroleum jelly) overnight for hydration.
- Press & Roll – A gentle application method for serums or oils to enhance absorption.



# Makeup Application Terms

- Priming – Applying a base product before makeup for better adherence and longevity.
- Contouring – Using darker shades to create shadows and enhance facial structure.
- Highlighting – Using lighter shades or shimmery products to emphasize certain areas.
- Color Correcting – Using specific colors to neutralize skin discolorations (e.g., green for redness, peach for dark circles).
- Setting – Applying powder or spray to lock makeup in place.
- Blotting – Absorbing excess oil with a blotting paper or sponge.
- Overlining – Drawing slightly outside the natural lip line to create the illusion of fuller lips.



# Common Product Application Tools

- Beauty Blender – A sponge used for blending foundation, concealer, and other cream products.
- Kabuki Brush – A dense brush for applying powder, bronzer, or foundation.
- Fan Brush – A light, fanned-out brush for applying highlighter or removing excess product.
- Spoolie – A brush used to groom eyebrows or separate eyelashes.
- Silicone Applicator – A non-absorbent tool used to apply foundation or skincare for minimal product waste.