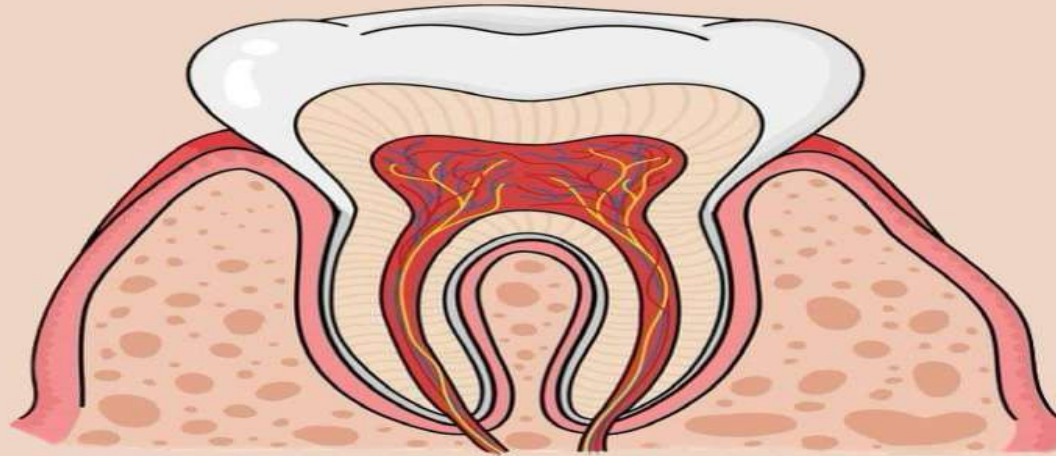




# ANATOMY



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وَقُلْ رَبِّ زِدْنِي عِلْمًا



علم التشريح

علم الأجنحة

# Anatomy & Embryology

## Lecture 1: Introduction to Human Anatomy

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# Human Anatomy & Embryology



المادة تدرس وجاهيا في قاعة صيدلة 101 و يوجد مجموعة للطلبة منصة مايكروسوفت تيمز  
(Microsoft Teams)

**Dr. Jihad Alzyoud**

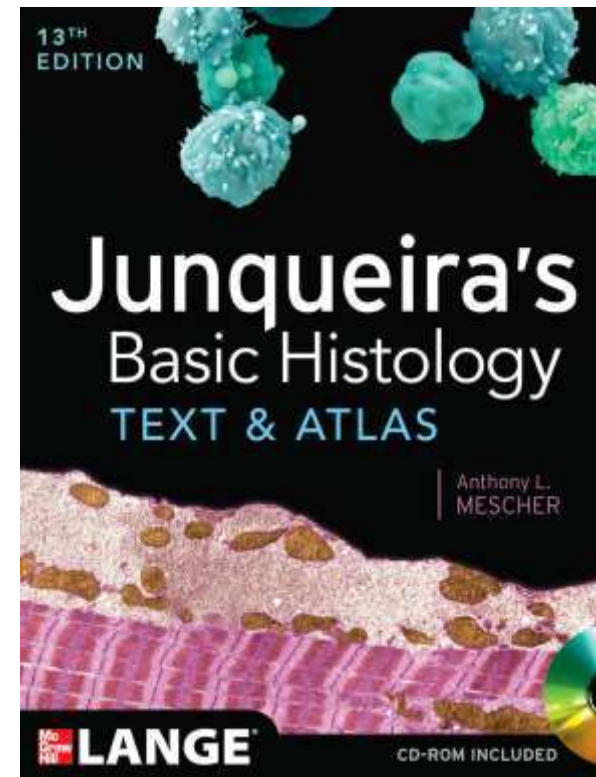
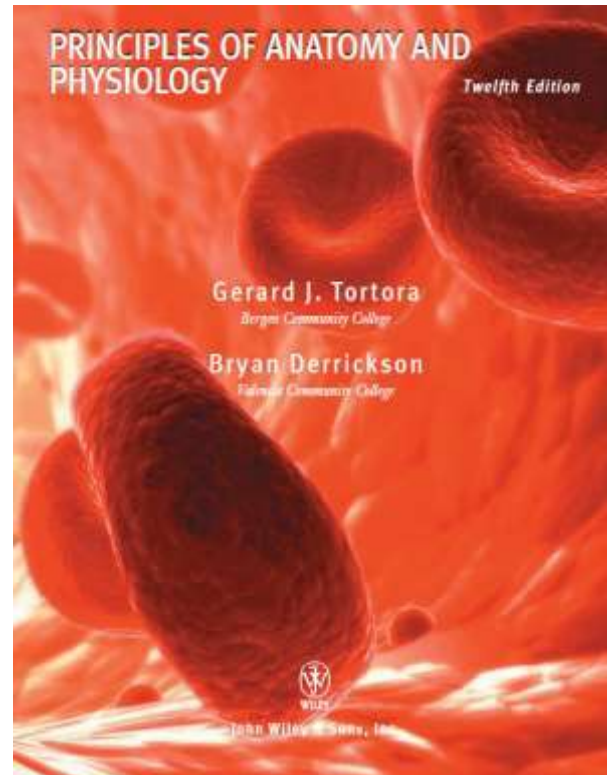
**Dr. Heba Ali**

**Faculty of Dentistry**

**Department of Basic Dental Science**

# Recommended Books and Atlases:

- 1) Principles of Anatomy and Physiology. Tortora and Derrickson. 12<sup>th</sup> Edition
- 2) Basic Histology Text and Atlas, Junqueira and Carneiro, 12<sup>th</sup> Edition
- 3) **Snell's Clinical Anatomy**
- 4) **Colour Textbook of Histology, Gartner and Hiatt**





## Andreas Vesalius 1514-64

أندرياس فيزاليوس هو أدل من ألف كتاب في التشريح.

“On the Fabric of the  
Human Body”

- لا تتركه يكون عندك معرفة في العلاقات + names حابين Structures
- يعتقد الطب يقبل أساسه على النظر والبحث.

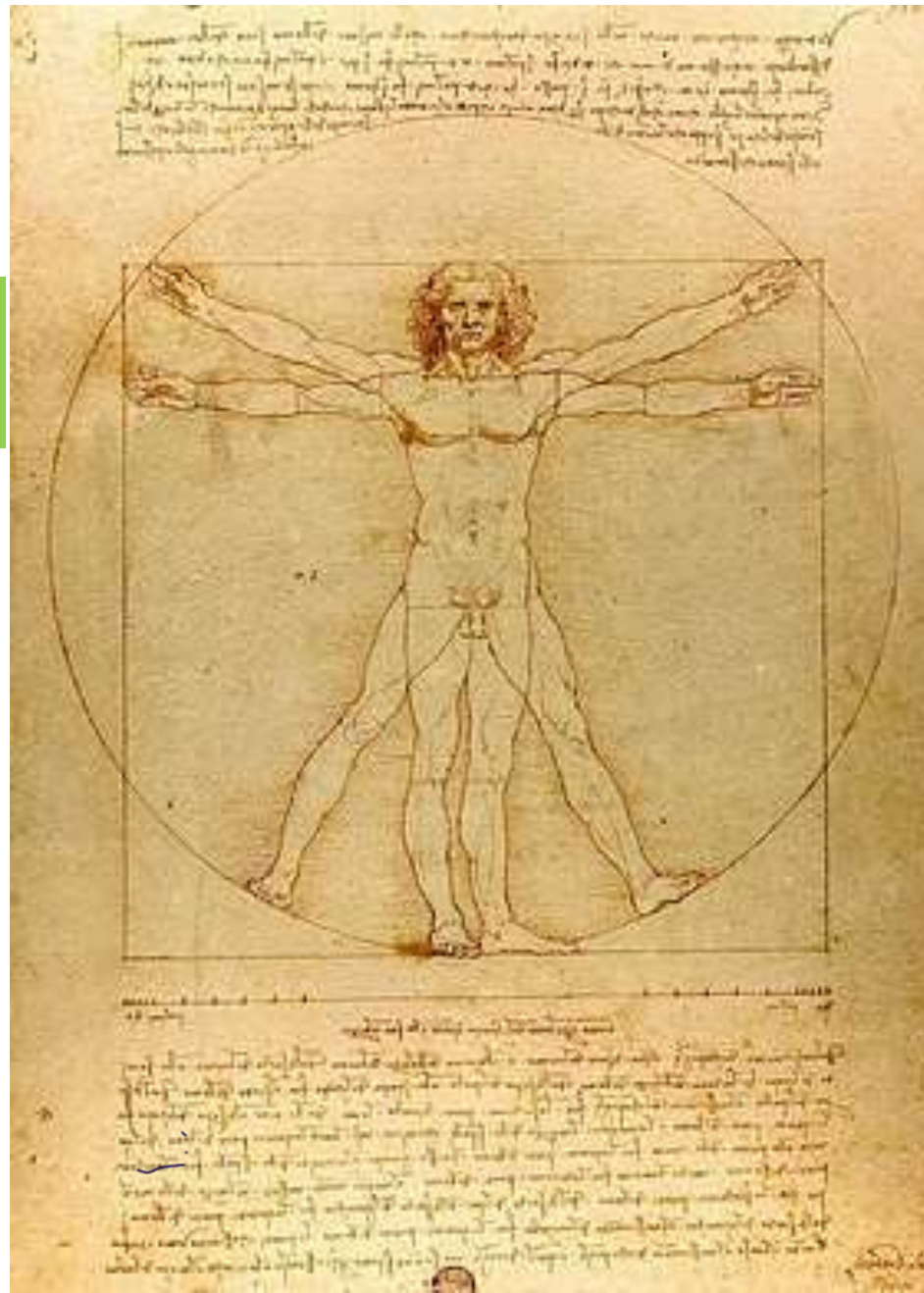


Leonardo da Vinci 1519 – 1452

## Vitruvian Man

### الرجل الفيتروفي

أوجد إنّه في  
relationship between structures وفي ratio  
أوجدها والتي هي (Golden ratio)  
وكان توقعه إنّه في أيجاد معتبة تقوى normal ratio  
وعبرها الكثير من العلاقات ، التي يسمّى إنّه هو يخلطها  
ratio في موضع normal ، إذا اختلفت الأبعاد من حيث  
عندى upnormal ratio ، واختلاف ليس عن الحالة الطبيعية



# Anatomy

يقدر الأحظه إقاً بالعين

أو microscope →

قطع الأشياء بشكل عام

\* **Definition:** anatome = up (ana) + cutting (tome).

لو أخفناها لكي شيء ح يكون  
محتاجها قطع (cutting)

\* **Descriptive anatomy:** Regional or Systemic.

\* **Regional Anatomy:** parts of body e.g. head, neck, thorax, abdomen, upper limb & lower limb.

→ Traditional method.

\* **Systemic Anatomy:** e.g. cardiovascular system, respiratory system, urinary system, etc.

عدد الأجهزة في الجسم هو 11 ، مهم يتكون عازلة  
شوهتها عموماً .

\* **Developmental Anatomy (Embryology).**

study of the development of human body from zygote . (3 months + 5 months)  
بح ناخذة آخر 3 ما خيرات .

\* **Applied Anatomy (clinical).**

\* **Radiological Anatomy.**

أكثر شيء يستخدمه  
طبيب الأسنان .

\* **Surface Anatomy.**

\* systems of the human body :-

Circulatory system/cardiovascular system

Digestive system/excretory system

Integumentary system

Immune system/lymphatic system

Muscular system

Nervous system

Reproductive system

Respiratory system

Skeletal system

Urinary system/renal system

Endocrine system



# Body Regions

الرأس

الحنق

1. Head and Neck.

البطن

منطقة الكوض

2. Abdomen & Pelvis.

3. Lower limb.

الأطراف السفلية

4. Upper limb.

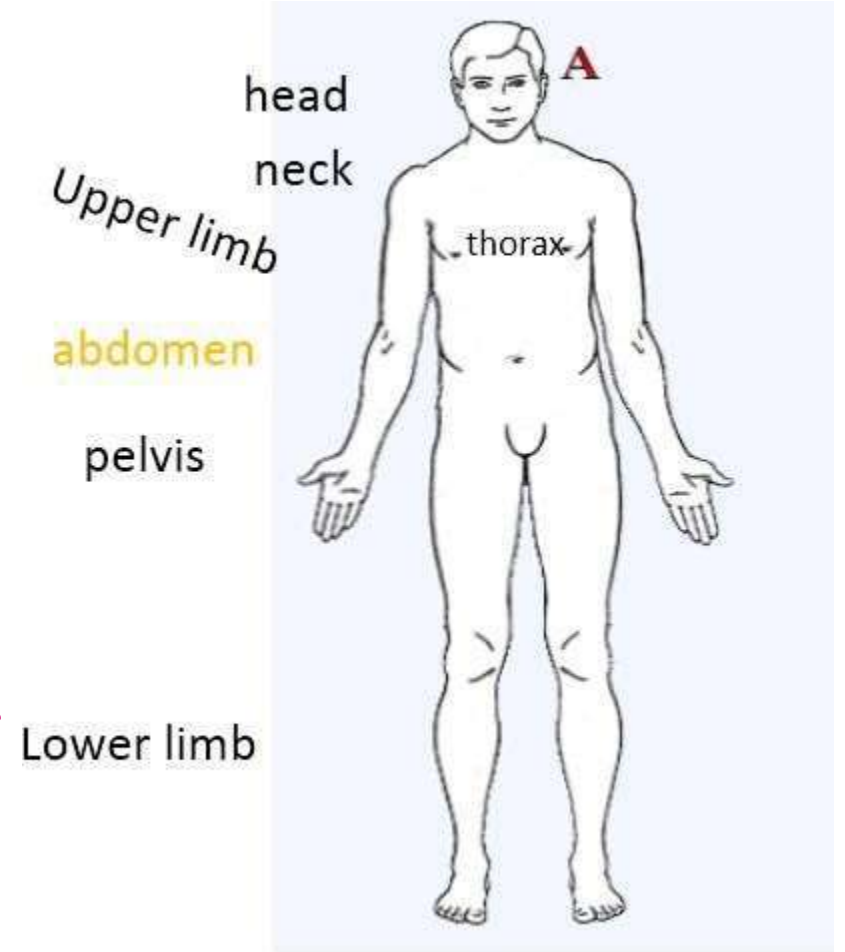
الأطراف العلوية

5. Thorax.

الصدر

6. Brain & spinal cord  
(Neuroanatomy).

→ central nervous system.

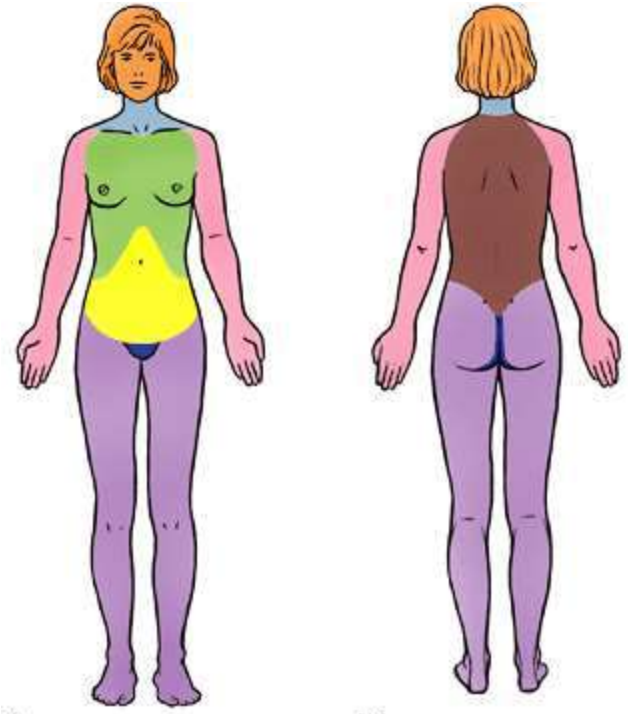


what you can see by your eyes.

# التشريح للجسم Gross anatomy

Fig.3: Major regions of the body.

دراستنا تقدر على  
Regions  
➤ **Regional Anatomy:**  
Study of all the structures present in a specific region of the body.



Key	
	Head
	Neck
	Upper limb
	Thorax
	Back
	Abdomen
	Pelvis/perineum
	Lower limb

## Major regions of the body:

- 1) Head and neck
  - 2) Thorax = Chest
  - 3) Abdomen
  - 4) Pelvis/Perineum
  - 5) Back
- Trunk (الجذع)  
area below the pelvis (منطقة أسفل الحوض)
- 6) Upper limb = shoulder + Arm (الذراع) + Forearm (الساعد) + wrist (المعصم) + Hand (اليد)
  - 7) Lower limb = buttock (hip) (الورك) + Thigh (الفخذ) + Leg (ساق) + ankle (مابين الركبة والاحمل) + Foot (قدم)

# Anatomical Position

ببطل مستقيم

- **Body erect (person standing).**
- **Face directed forward.**
- **Limbs at sides of body.**
- **Legs & feet close together.**
- **Palms directed forward.**

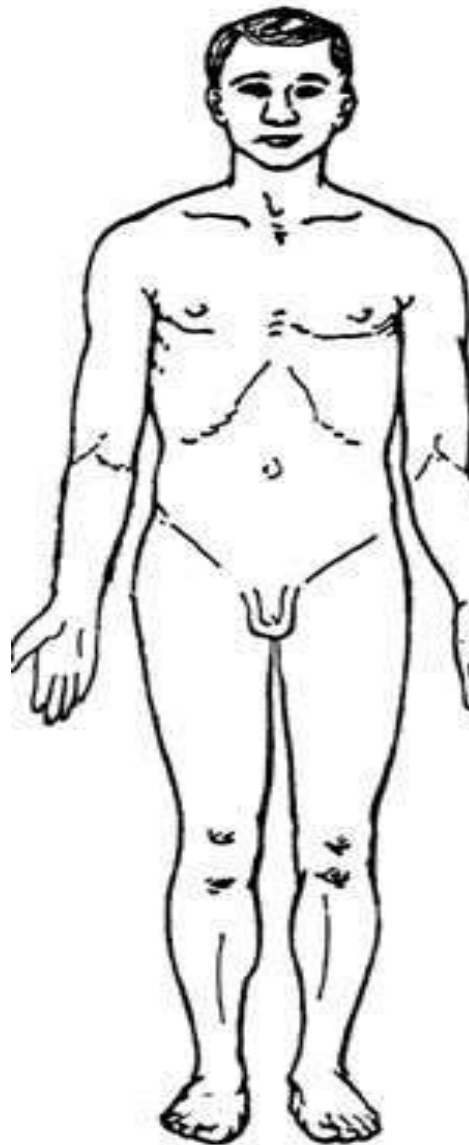
→ eyes looking forward.

راحة اليد

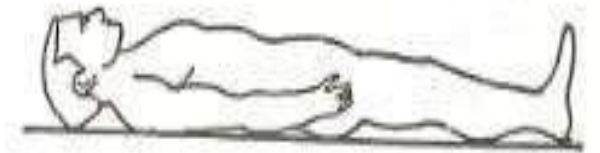
foot → forward.

, dorsal → backward.

❖ في بعض other positions حسب وكالة للمرجحين



other positions:-



supine → lying down on his back  
as movement → supination

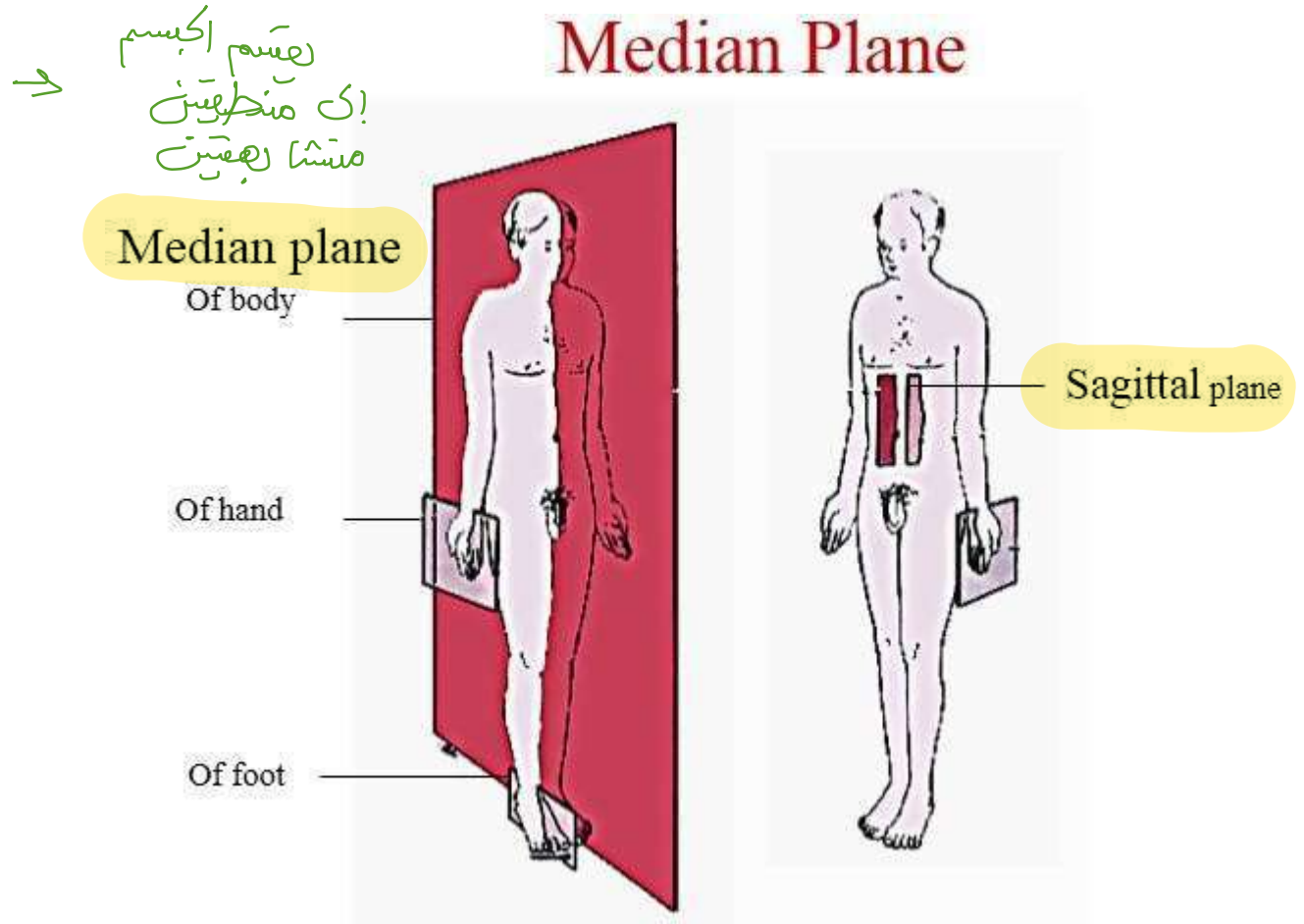


prone → lying down on his face.  
pronation

# Anatomical Planes <sup>سطح قرار</sup>

**\* Median (midsagittal) plane = vertical in midline, divides body into right & left equal parts.**

**\*\* Parasagittal = vertical, parallel to median.** <sup>میں منظر میں  
مساویات</sup>





# Anatomical Planes

→ something imaginary

لأنه يشبه مثل الكورنا -

\* **Coronal plane** = vertical, perpendicular to median, divides body into anterior & posterior parts.

خلف

أمام  
تقسم الجسم إلى قسمين، أمامي وخلفي

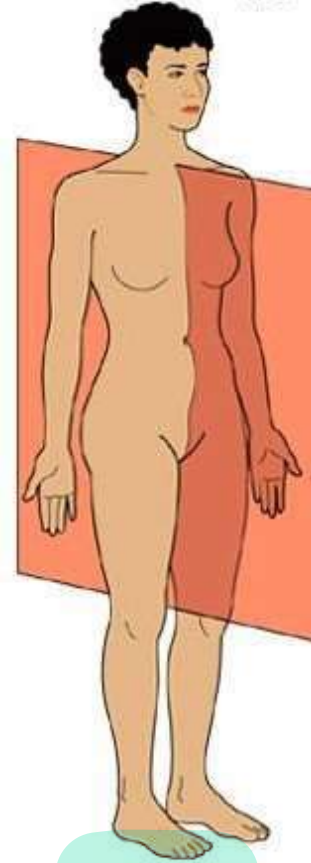
\* **Horizontal (transverse)** = perpendicular to median & coronal planes divides body into upper & lower parts.

تقسم الجسم كالتالي، علوي و سفلي

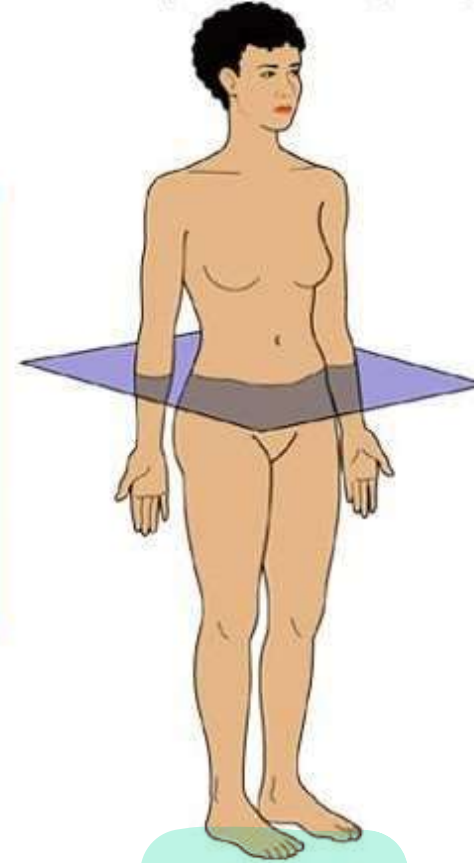
\* إذا كان في عمق plane تقسم الجسم إلى علوي و سفلي بست مو زاوية 90°

يتكون بينهم ← oblique plane (مائل)

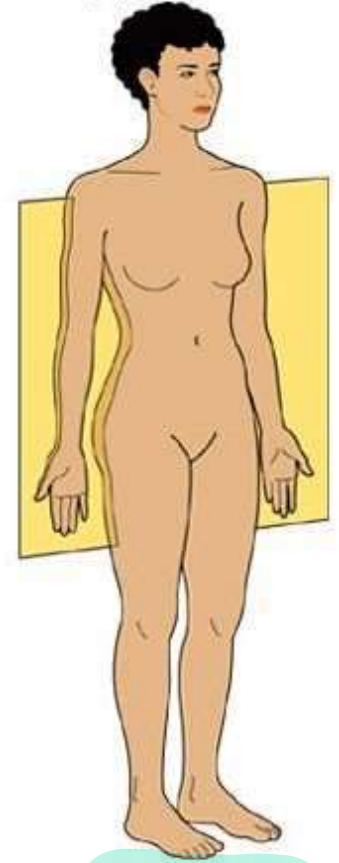
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Sagittal plane (median plane)



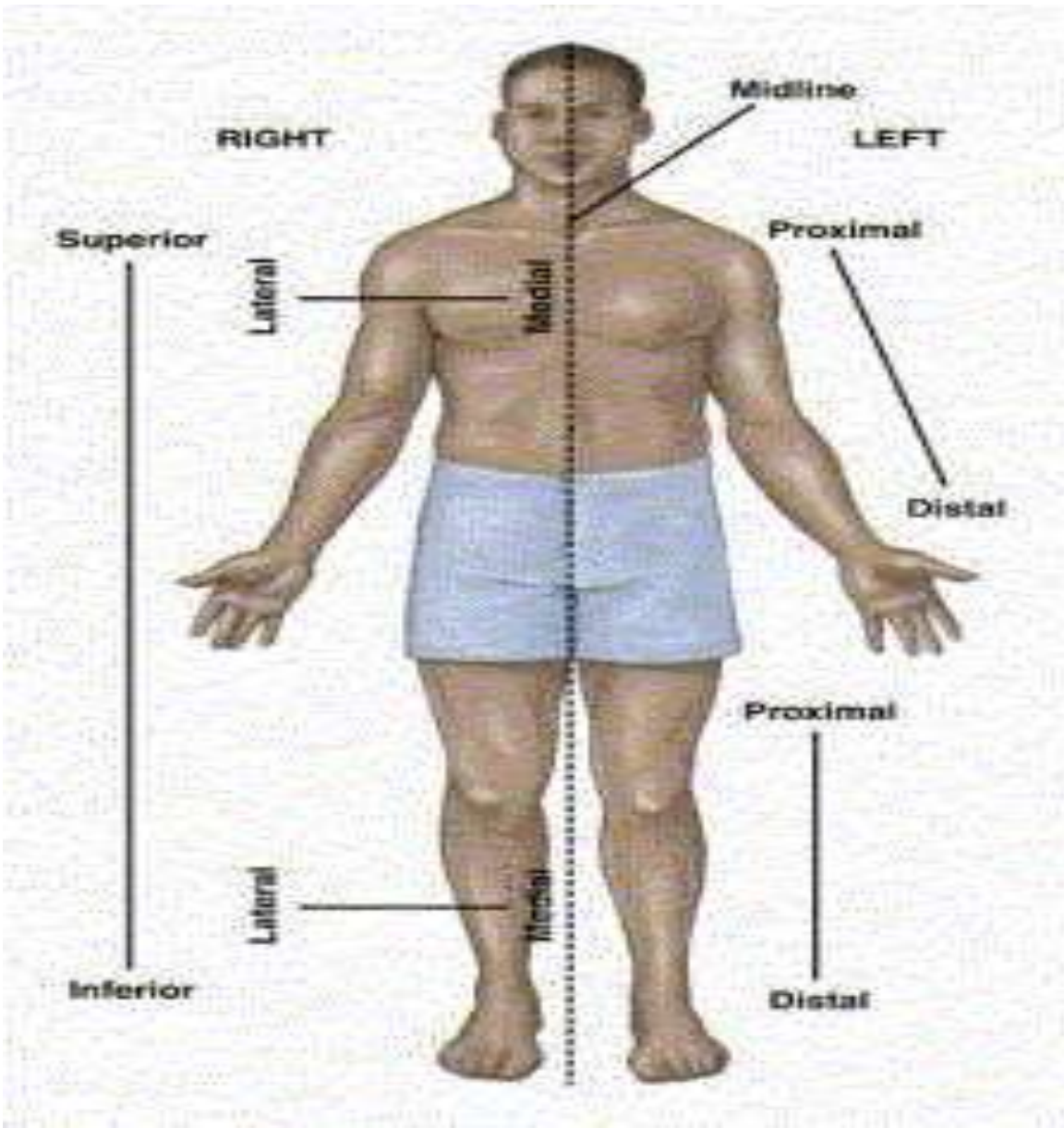
Transverse plane (horizontal plane)



Coronal plane (frontal plane)

reference → standard anatomical position.

# Anatomical Terms



## 1. Medial & Lateral: *medline* → خط الوسط

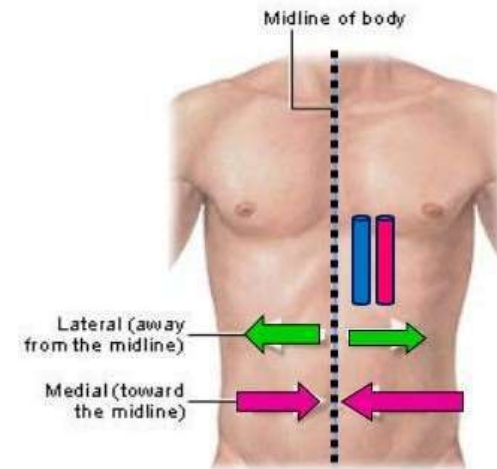
\* **Medial** = closer to median plane. قريب من خط الوسط

\* **Lateral** = away from median plane. بعيد عن خط الوسط

eye → medial  
ear → lateral

2 structures  
من صريكين  
عني

is medial (blue box)  
is lateral (pink box)



Ventral + dorsal  
الجنين ← الجنين  
adult .

الأمامي

الخلفي

## 2. Anterior & posterior:

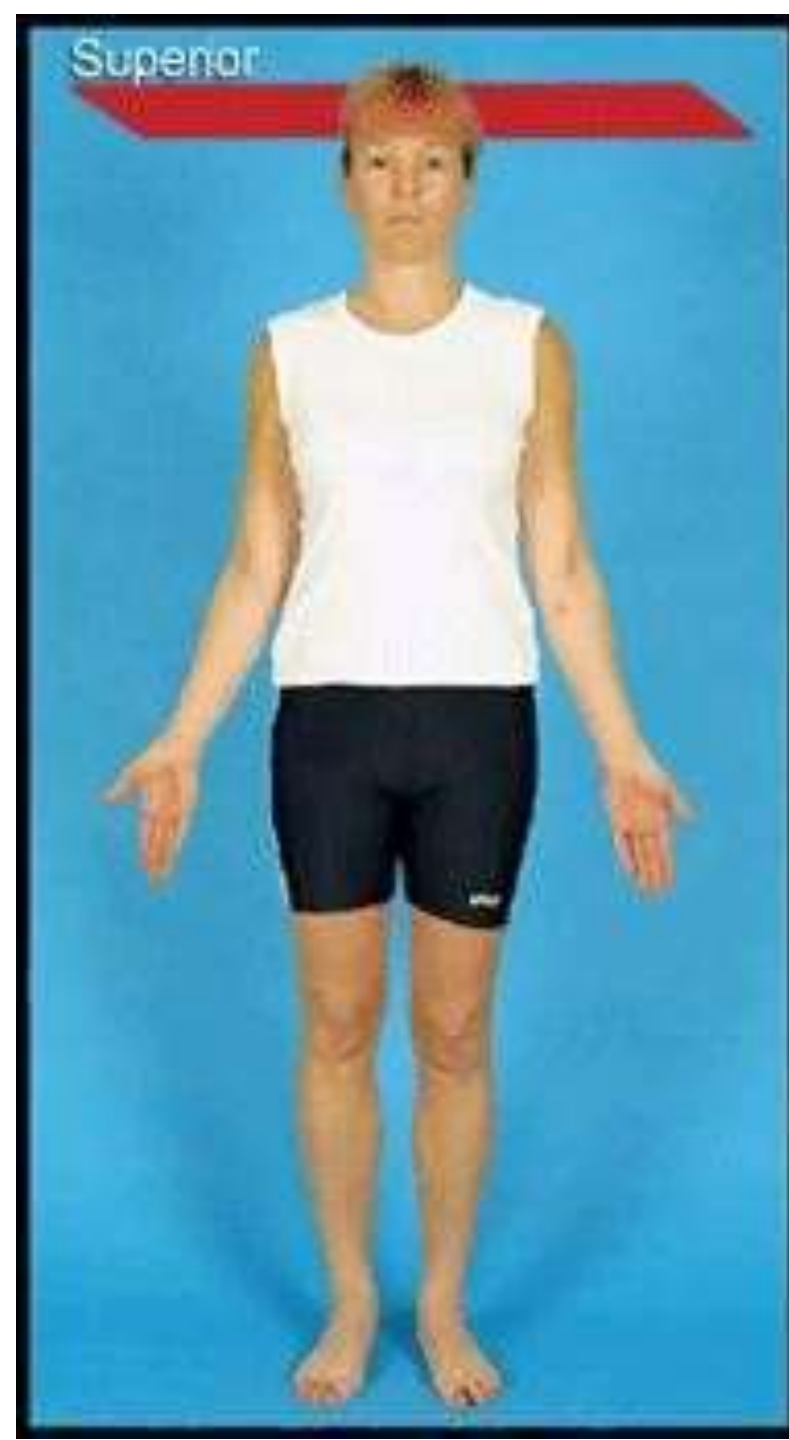
- **Anterior or Ventral** → towards the front of the body
- **Posterior or dorsal** → towards the back of the body
- **Anterior surface of hand** → palmar surface
- **Posterior surface of hand** → dorsal surface
- **Upper surface of foot** → dorsal surface
- **Lower surface of foot** → plantar surface



### 3. Superior & inferior:

•\* **Superior** زیرِ تا نه غلوے  
(**cephalic or cranial**) =  
**towards head.**

\* **Inferior** (tail **caudal**) زیرِ تا نه سغلی  
= **towards feet.**





# 4. Proximal &

# Distal:

→ from distance

\* Proximal → closer to trunk.

قريب

\* Distal → away from trunk.

بعيد

- upper limb + trunk → shoulder  
- lower limb + trunk → hips

upper +  
lower  
limbs

\* بستخدام أكثر الشئ في



# 5. Superficial &

## Deep:

\* **Superficial** → **towards surface of body.**

\* **Deep** → **away from surface of body.**



# ماتریوں Anatomical Terms

- \* **Medial** = closer to median plane.
- \* **Lateral** = away from median plane.
- \* **Anterior (ventral)** = towards front of body.
- \* **Posterior (dorsal)** = towards back of body.
- \* **Superior (cephalic or cranial)** = towards head
- \* **Inferior (caudal)** = towards feet.
- \* **Superficial** = towards surface of body.
- \* **Deep** = towards center of body.
- \* **Proximal** = nearer origin.
- \* **Distal** = further from origin.

<sup>خارجی</sup>  
\* **External (outer):** means towards the surface and applies to the hollow-out structure.

<sup>داخلی</sup>  
\* **Internal (inner):** means towards the cavity of a hollow-out structure.

<sup>مرکزی</sup>  
\* **Central:** means towards the center of the body.

<sup>طرفی</sup>  
\* **Peripheral:** means away from the center of the body.

\* **Ipsilateral:** means of the same side of the body.

\* **Contralateral:** means of the opposite side of the body.

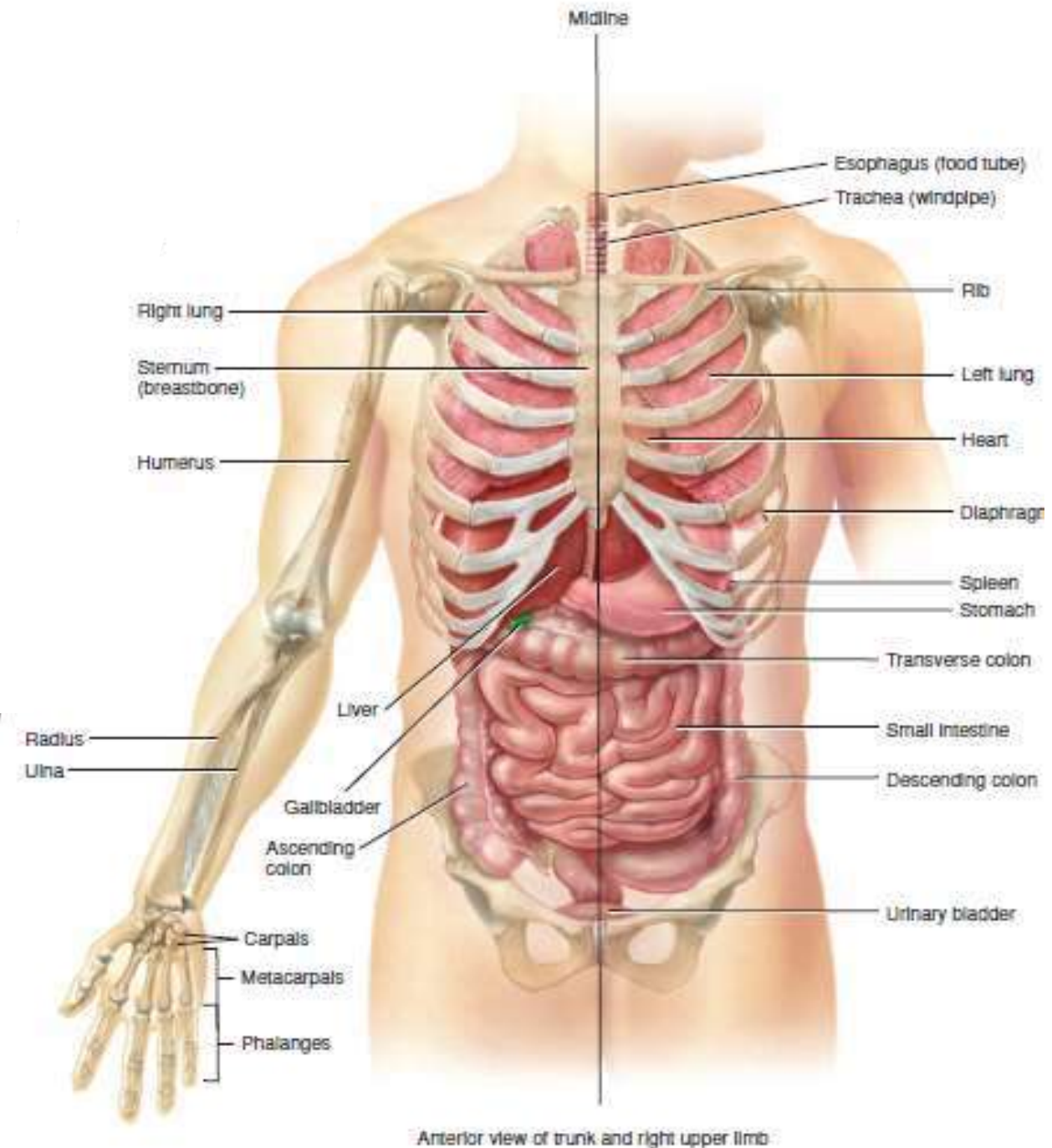


# Specific terms for the limbs :

- **In the forearm :** <sup>الساعو</sup> radial = lateral & <sup>الزند</sup> ulnar = medial.
- **In the hand :** palmar = anterior & dorsal = posterior.
- **In the leg:** fibular = lateral & tibial = medial.
- **In the foot:** plantar = inferior & dorsal = superior.

## Quiz #1

1. Is the radius proximal to the Humerus?
2. Is the Esophagus anterior to the trachea?
3. Are the ribs superficial to the lungs?
4. Is the urinary bladder medial to the ascending colon?
5. Is the sternum lateral to the descending colon?



## Answers for quiz # 1

1. No, the radius is distal to the humerus.
2. No, the esophagus is posterior to the trachea.
3. Yes, the ribs are superficial to the lungs.
4. Yes, the urinary bladder is medial to the ascending colon.
5. No, the sternum is medial to the descending colon.

# Anatomical Terms of Movements

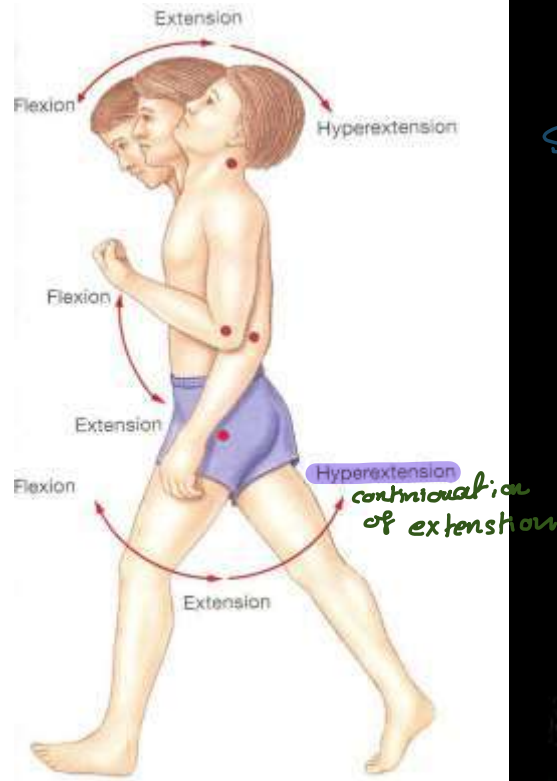
↳ simple, angular, rotation, compound.  
↓  
The most common.

decrease in angle

- **Flexion** → to bend = angle = approximation of 2 ventral surfaces

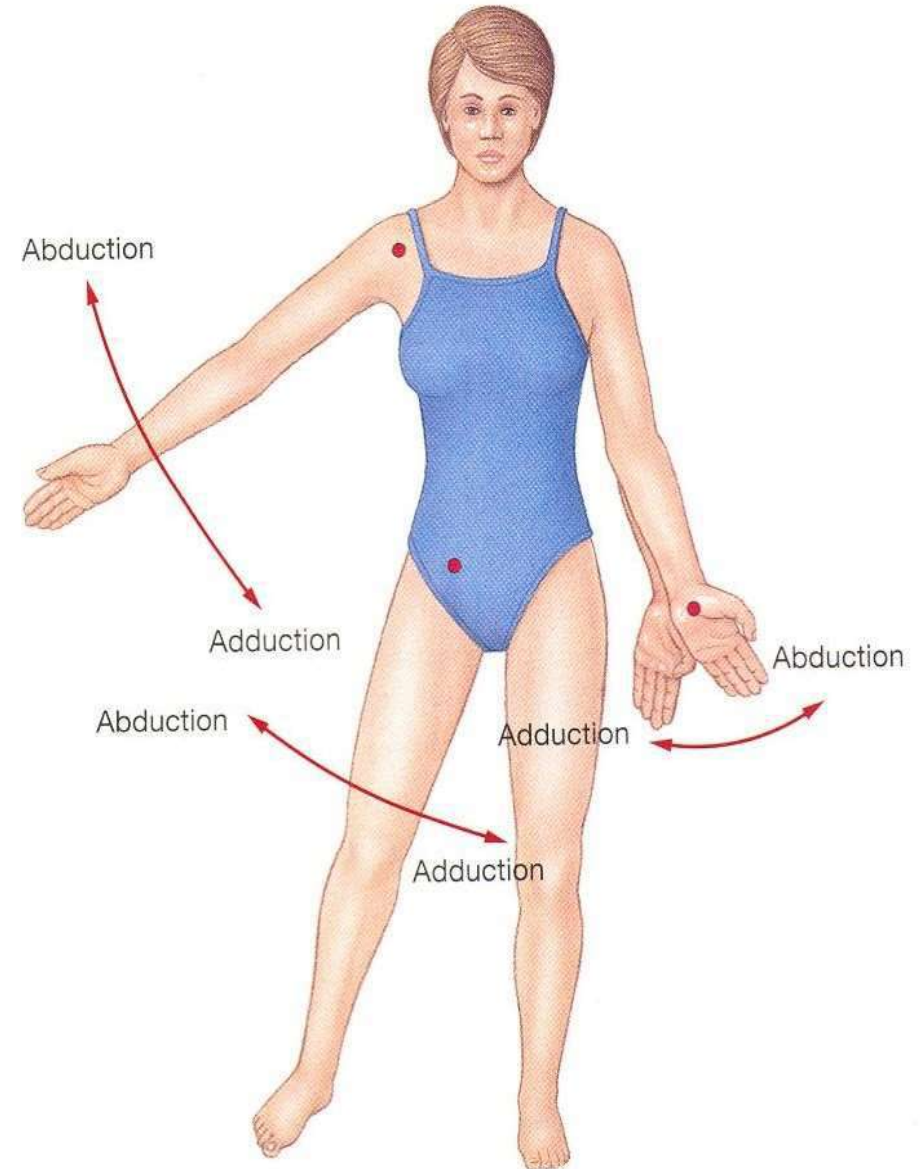
- **Extension** → to stretch = straighten = approximation of 2 dorsal surfaces.

→ increase in angle.



• **Abduction** →  
moving a part  
away from  
midline.

• **Adduction** →  
moving a part  
towards the  
midline.

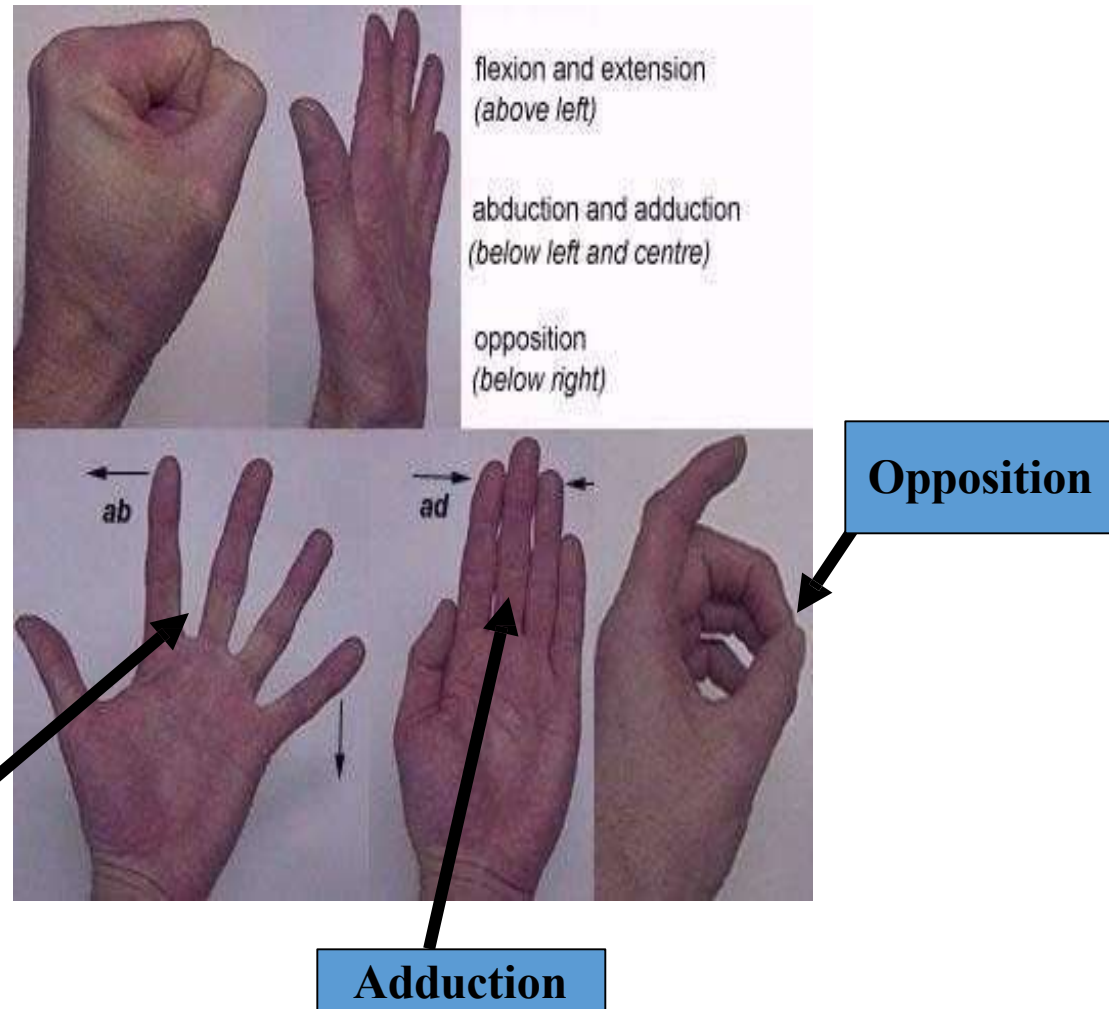




• **Abduction of fingers & toes** → **spreading of fingers or toes apart.**

أحياح الأ رجل

• **Adduction of fingers & toes** → **drawing or approximating fingers or toes together.**



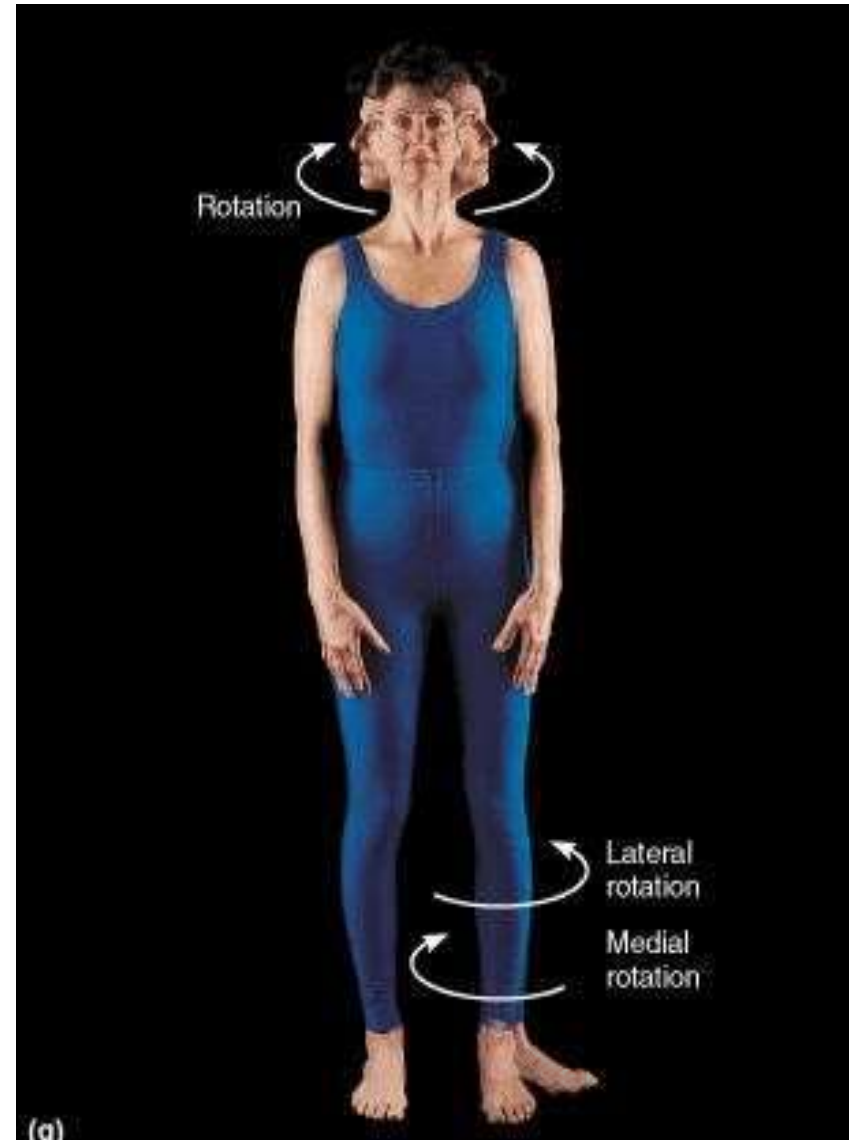
- **Opposition:**
- **Circumduction** →  
the combination  
in sequence of  
movements of  
flexion, abduction,  
extension &  
adduction.



→ only on shoulders + hips joints.

- **Medial rotation** →  
brings anterior surface  
to face medially (medial line)

- **Lateral rotation** →  
brings anterior surface  
to face laterally



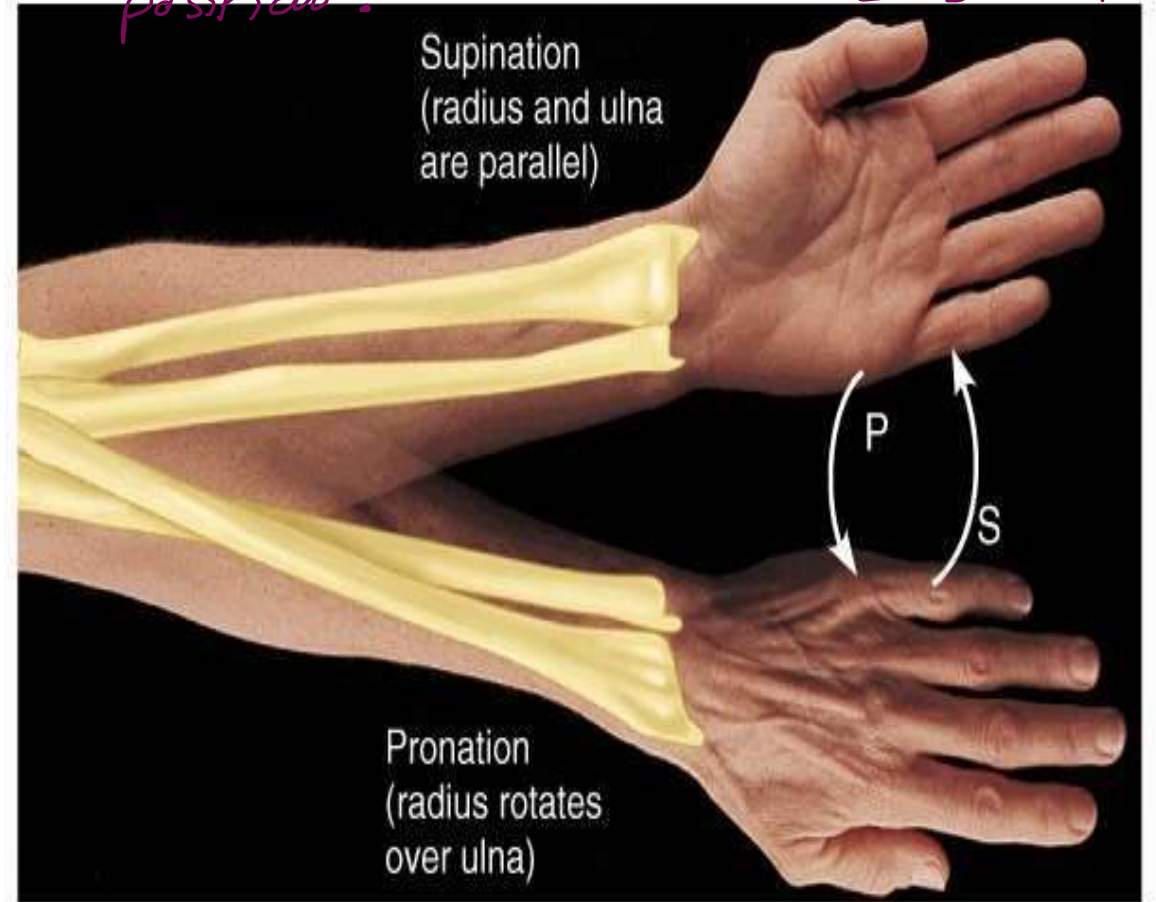
• **Pronation** → medial rotation of forearm which brings palm of hand to face posteriorly

الباطن

• **Supination** → lateral rotation of forearm which brings palm of hand to face anteriorly

standard anatomical position

الخط يلى فيها ! نه منى



(a) Supination (S) and pronation (P)

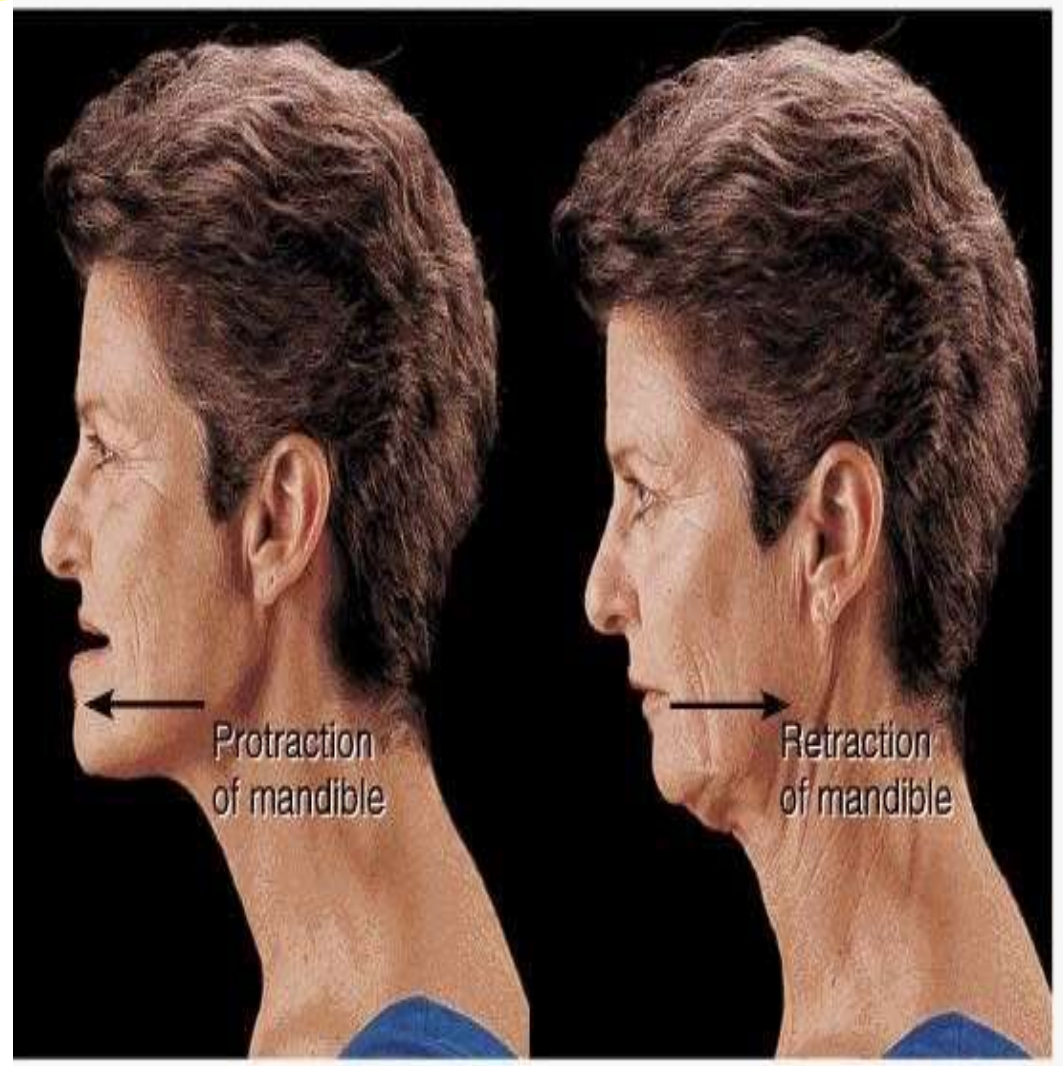


TMJ

• **Protraction** → moving the **jaw** → العالج forwards.

• **Retraction** → moving the jaw backwards.

• **Protraction & retraction can also occur at the (shoulders.)** as region.



(c) Protraction and retraction

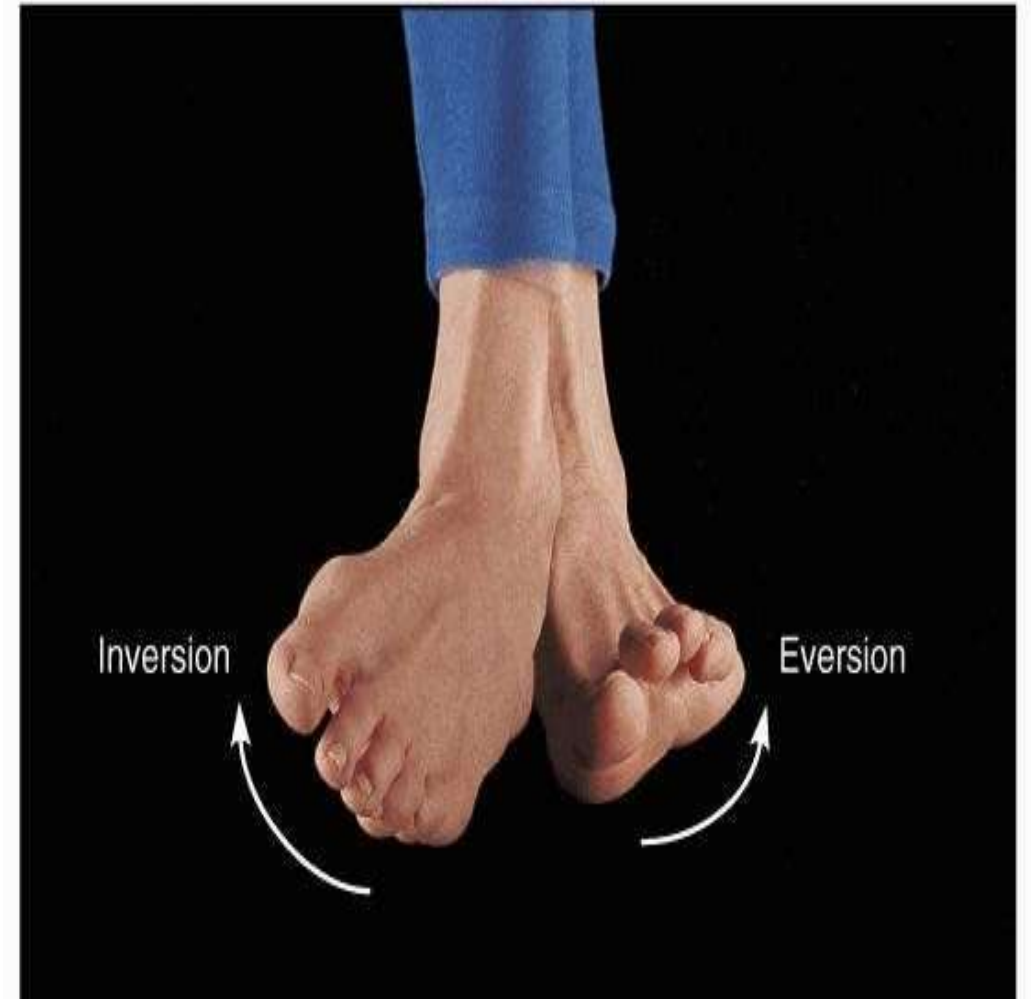


*Internal.*

- **Inversion** → moving foot so that sole faces medially.

*external.*

- **Eversion** → moving foot so that sole faces laterally.



(b) Inversion and eversion

• **Dorsiflexion** →

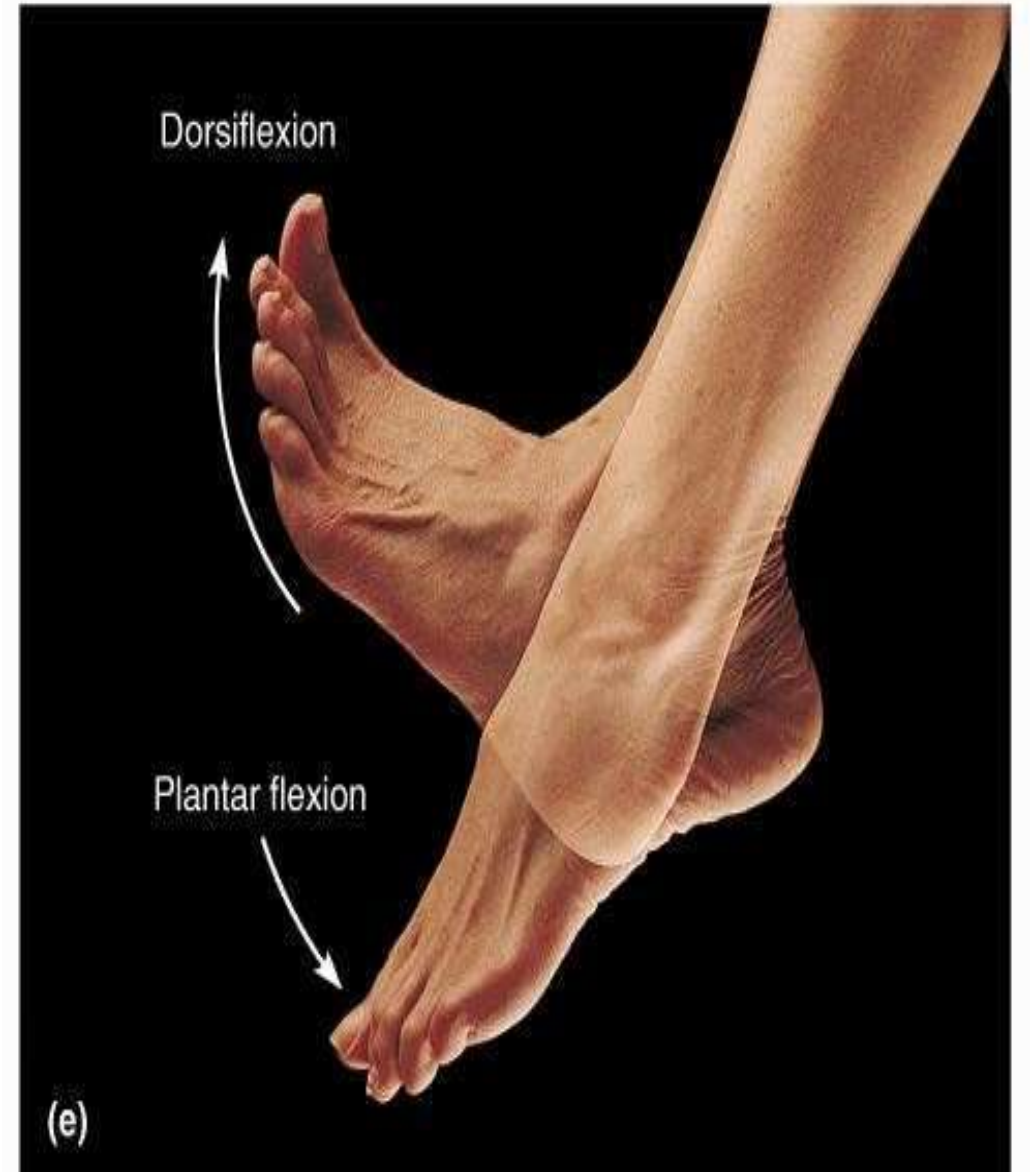
زیادہ کھینچنے اور  
پیشانی کی طرف

bending foot or  
ankle upwards.

• **Plantar flexion** →

پیشانی کی طرف  
کھینچنے اور

bending foot or  
ankle downwards.



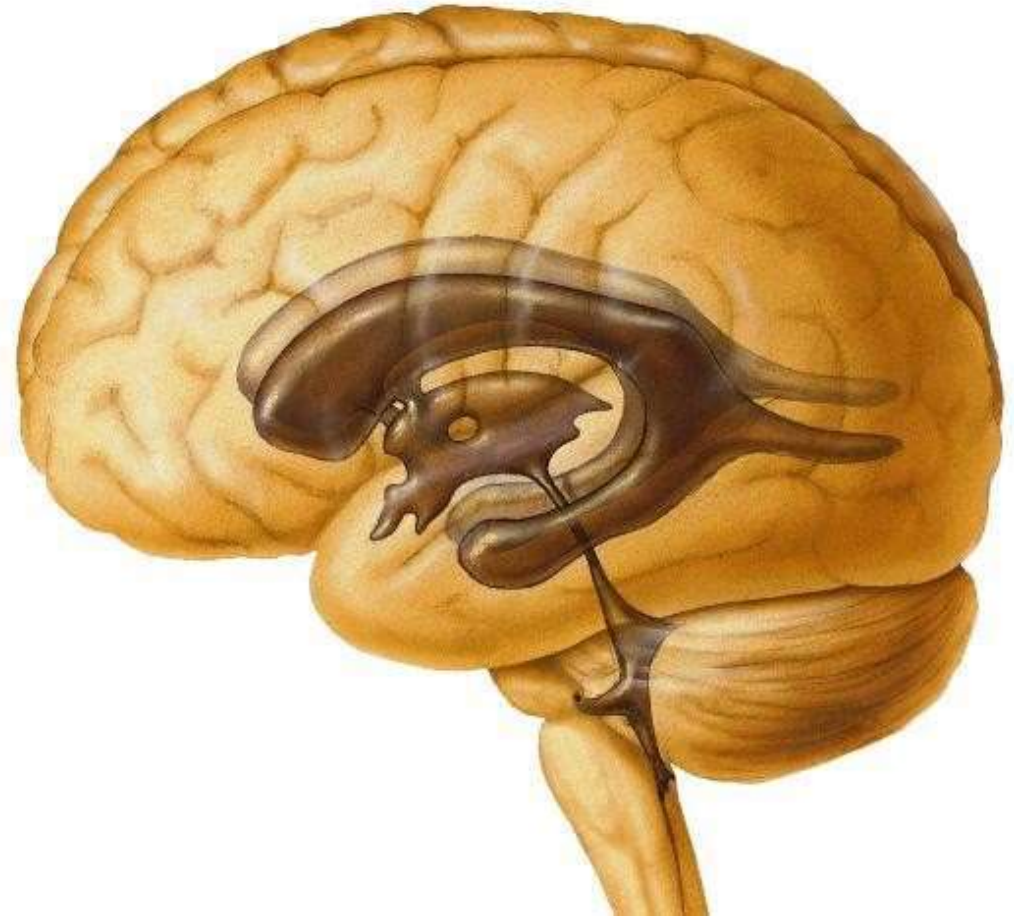
# Body Cavities

## 1. Cranial Cavity

**\*The cavity  
inside the skull.**

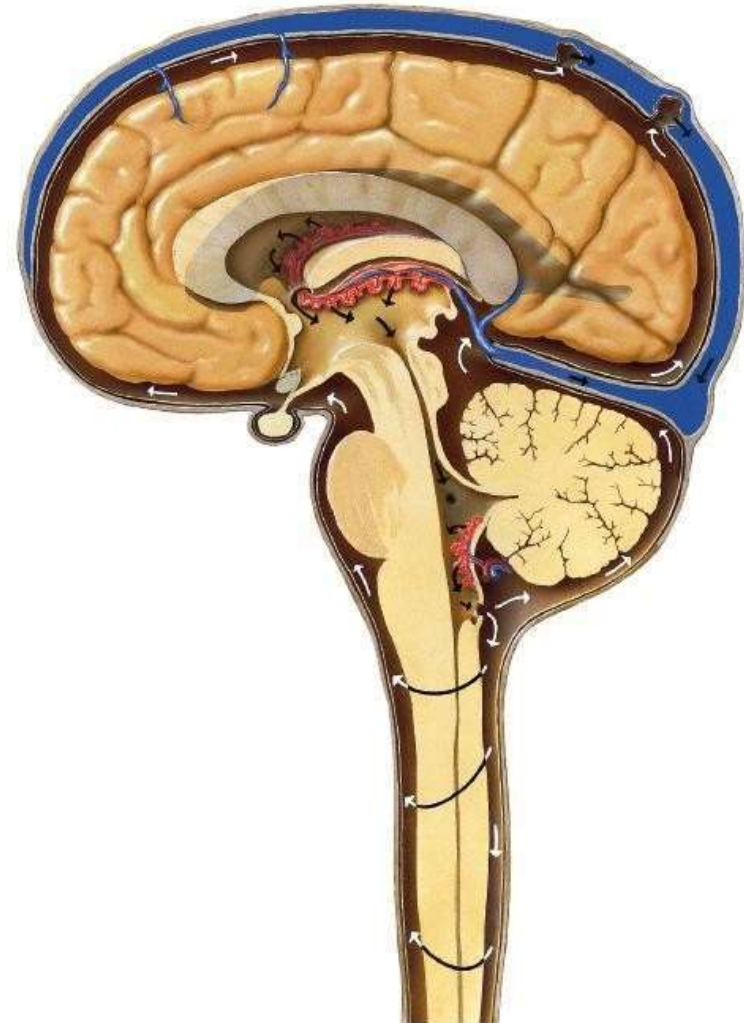
**\*Contains the  
brain.**

**\*Meninges**



## 2. Vertebral Cavity

- \*The cavity of the vertebral column.**
- \*Contains the spinal cord.**
- \*Meninges**





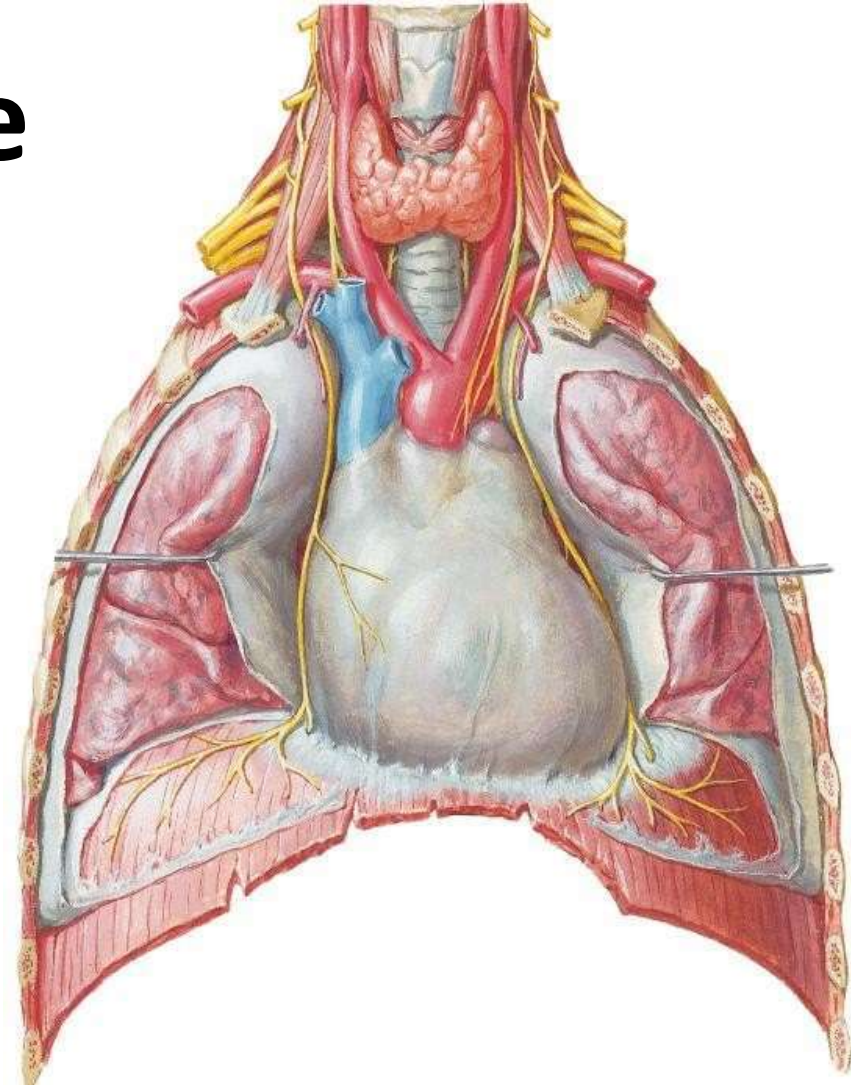
# 3. Thoracic Cavity

\* Contains the heart inside the pericardial cavity.

\* Pericardium

\* Contains the lungs inside the pleural cavities.

\* Pleura

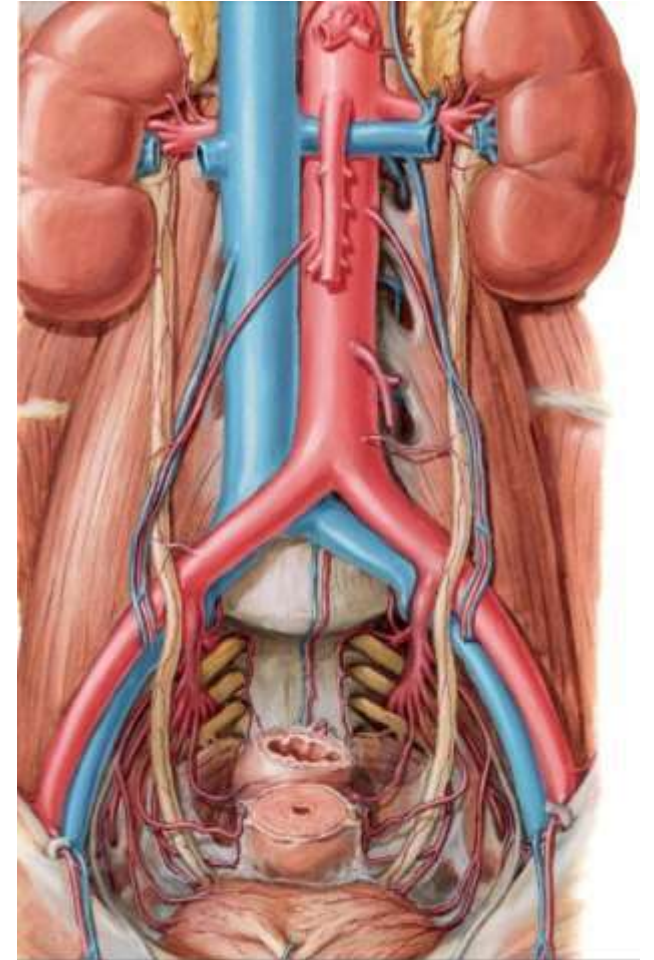
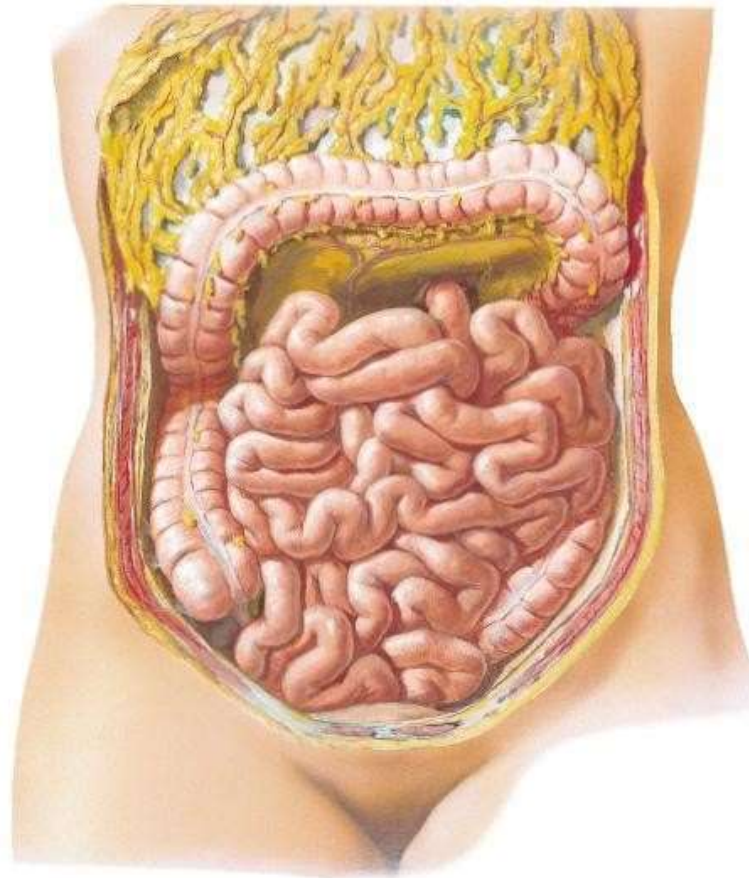




# 4. Abdominal Cavity

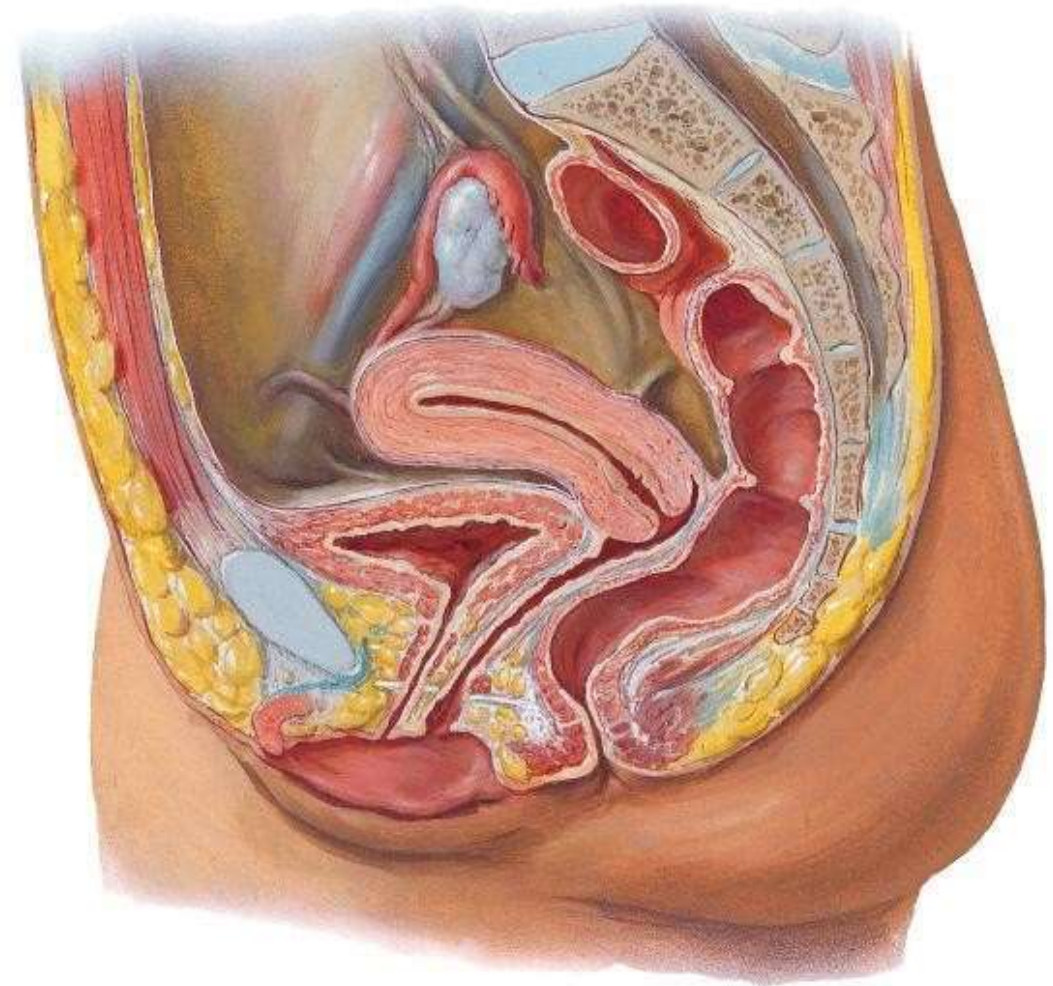
\* Contains abdominal organs such as organs of gastro-intestinal tract & kidneys.

\* Peritoneum



# 5. Pelvic Cavity

**\* Contains pelvic organs such as urinary bladder, rectum & uterus & ovaries (in females).**





# Anatomy & Embryology

## Lecture 2: Skeletal System

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# **THE SKELETON**

- \* It comprises cartilages, bones, ligaments & joints.**
- \* The bones are rigid and heavier than cartilages.**
- \* Cartilages are more flexible and lighter.**
- \* The younger the age, the greater is the contribution of cartilage to the skeleton.**

**\* Divisions of the skeleton:**

- 1. Exoskeleton: rudimentary in man.  
It is represented by: nails &  
enamel of teeth .**
- 2. Endoskeleton: about 206 bones &  
is formed of:**
  - a. The axial skeleton.**
  - b. The appendicular skeleton.**



# Regional classification of bones

\* The human skeleton is divided into:

1. **Axial skeleton**: which includes skull, vertebral column, ribs & sternum.

2. **Appendicular skeleton**: which includes the bones of the appendages (upper & lower limbs) & their girdles (shoulder & pelvic).



Thank You  
Thank You  
Thank You!!!!