The University of Jordan
Faculty Of Medicine

The Orbital Cavity Part 1

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Blow out fracture
Normal orbital walls

Bony Orbit

Read Only

Boundaries : It has apex, base, four sides : roof, floor, lateral and medial walls.

(1) The Apex :

Lies at the posteomedial end of the orbital cavity.

It is near the medial end of the superior orbital fissure.

(2) The Base : It is the orbital opening, bounded by

Superiorly : Frontal bone

Laterally : Zygomatic process of the frontal bone **(in its upper part)** and the frontal process of the zygomatic bone **(in its lower part).**

Inferiorly : Zygomatic bone **(in its lateral part)** and maxilla **(in its medial part).**

Medially : Frontal process of the maxilla **(in its lower part)** and the maxillary process of the frontal bone **(in its upper part).**

(3) The Roof:

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- Is mainly formed by the orbital plate of the frontal bone (separating the orbit from the anterior cranial fossa) completed posteriorly by the lesser wing of the sphenoid bone.
- Close to the posterior end of the roof, there is the optic canal.

(4) The Lateral Wall:

- Is mainly formed by the orbital surface of the greater wing of the sphenoid, completed anteriorly by the frontal process of the zygomatic bone.
- The posterior part of the lateral wall is separated from the roof by the superior orbital fissure.
- The posterior part of the lateral wall is separated from the floor by the inferior orbital fissure.

Read Only

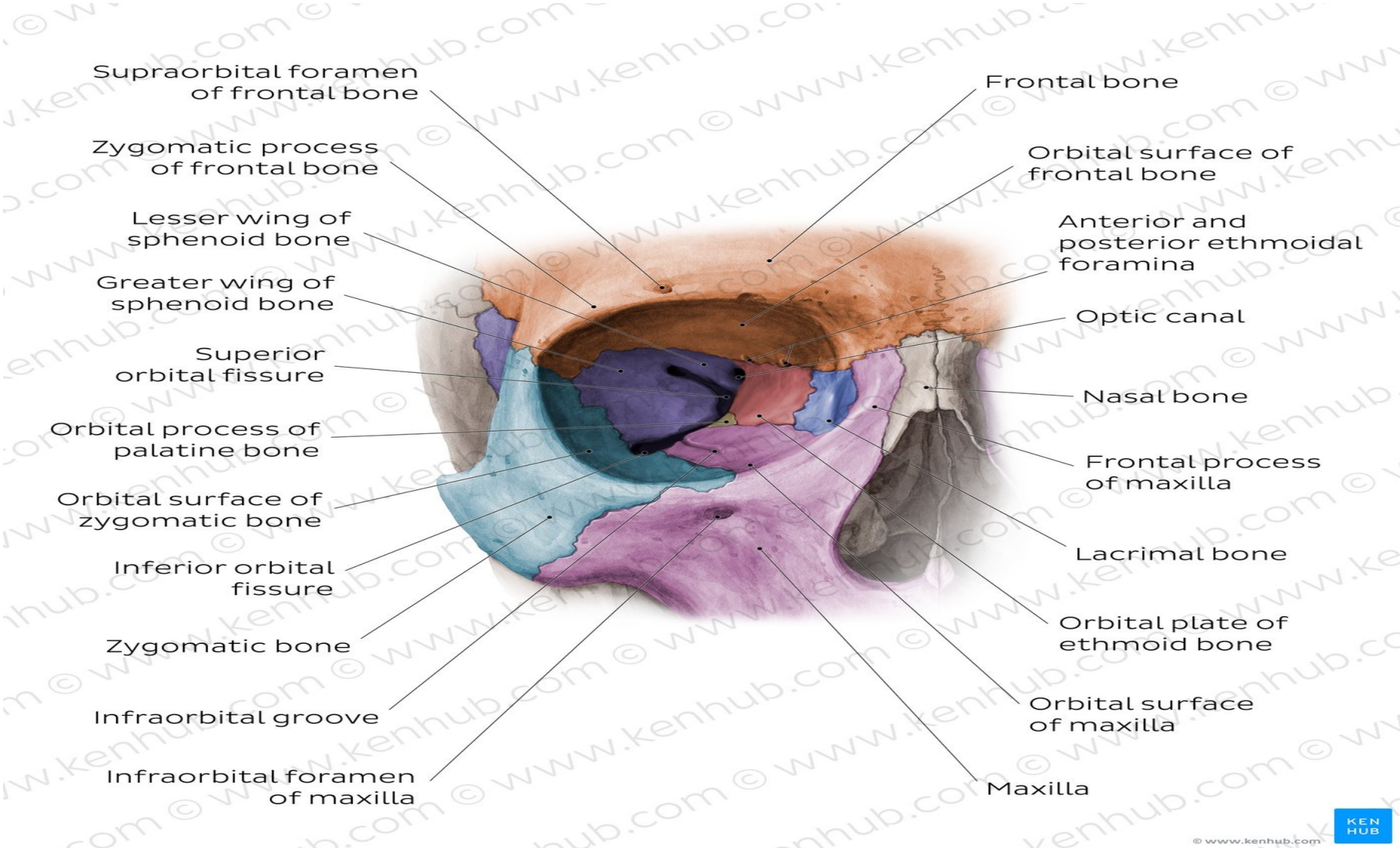
(5) The Floor:

- ✓ Is formed mainly by the orbital surface of the maxilla (separating the orbit from the maxillary sinus), completed anteriorly by the orbital surface of the zygomatic bone and posteriorly by the orbital process of the palatine bone.
- ✓ The floor is traversed by the infraorbital groove and canal which end on the surface of the skull at the infraorbital foramen.

(6) The Medial Wall: (My Little Eye Sits in the orbit)

From **before backwards**, is formed by

- ❑ Anterior lacrimal crest of the frontal process of the **M**axilla
- ❑ **L**acrimal bone
- ❑ Orbital plate of the **E**thmoid bone (separating the orbit from the ethmoidal air sinuses)
- ❑ Part of the body of the **S**phenoid. .


Supraorbital foramen of frontal bone
Zygomatic process of frontal bone
Lesser wing of sphenoid bone
Greater wing of sphenoid bone
Superior orbital fissure
Orbital process of palatine bone
Orbital surface of zygomatic bone
Inferior orbital fissure
Zygomatic bone
Infraorbital groove
Infraorbital foramen of maxilla
Frontal bone
Orbital surface of frontal bone
Anterior and posterior ethmoidal foramina
Optic canal
Nasal bone
Frontal process of maxilla
Lacrimal bone
Orbital plate of ethmoid bone
Orbital surface of maxilla
Maxilla
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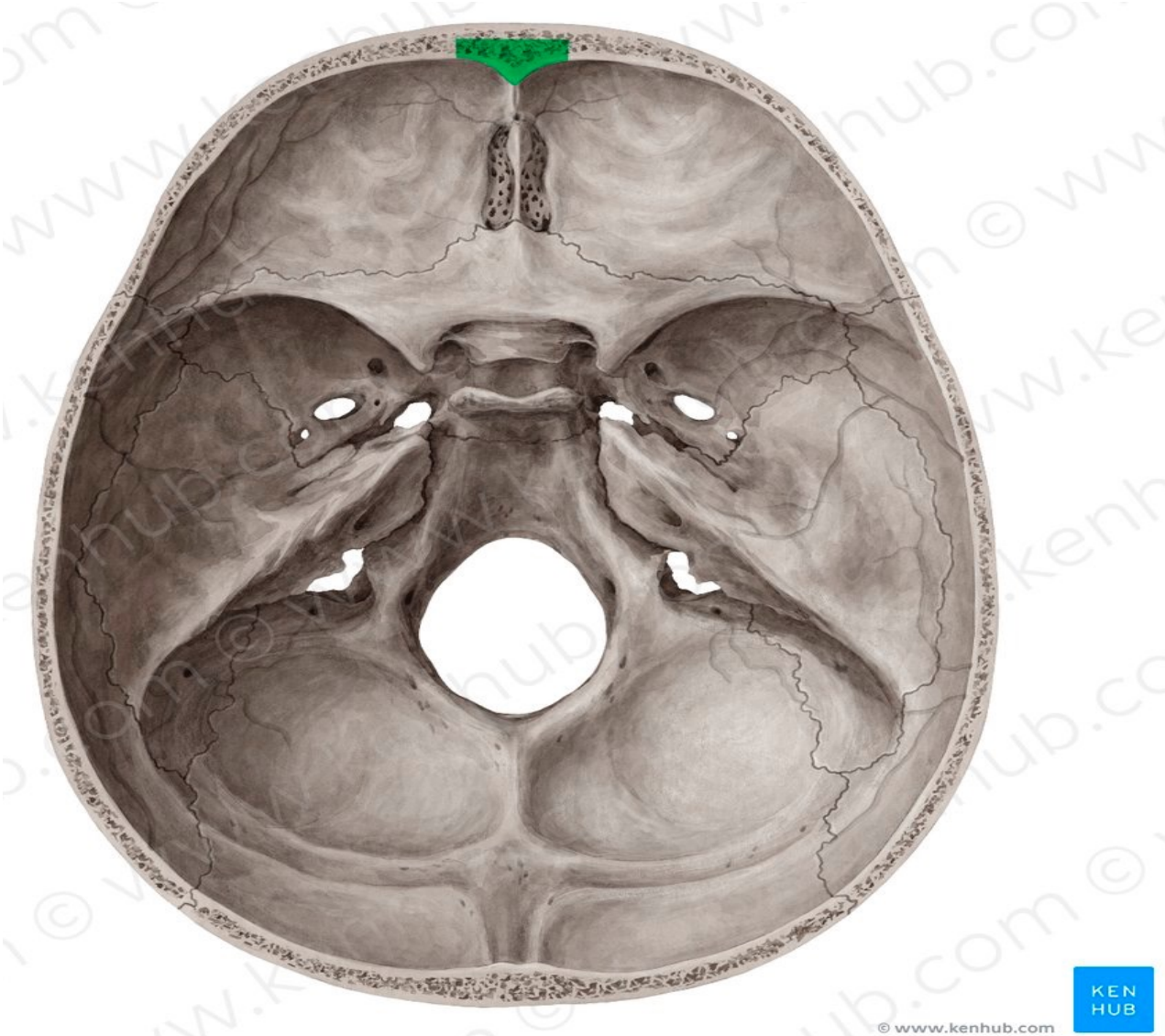
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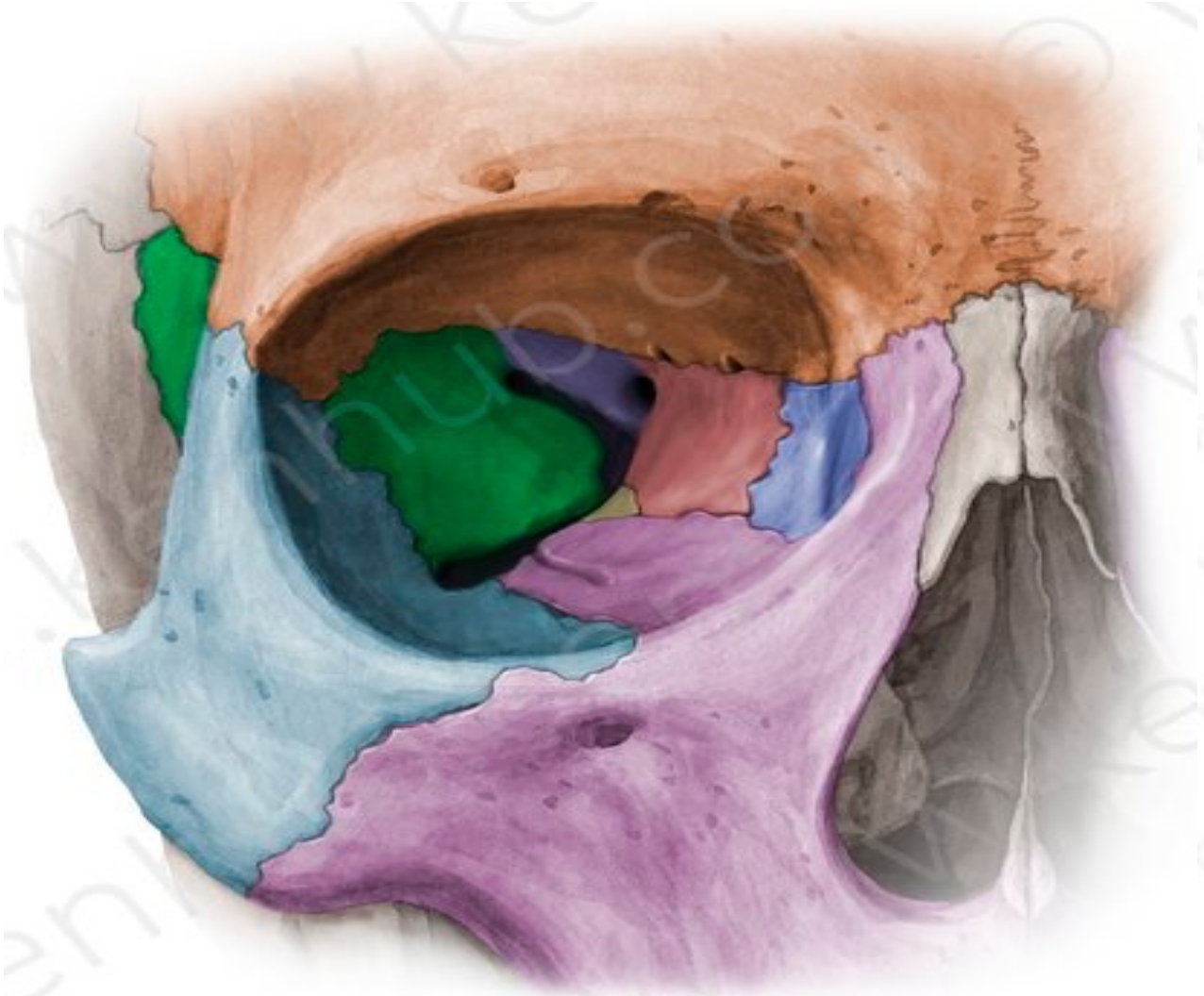


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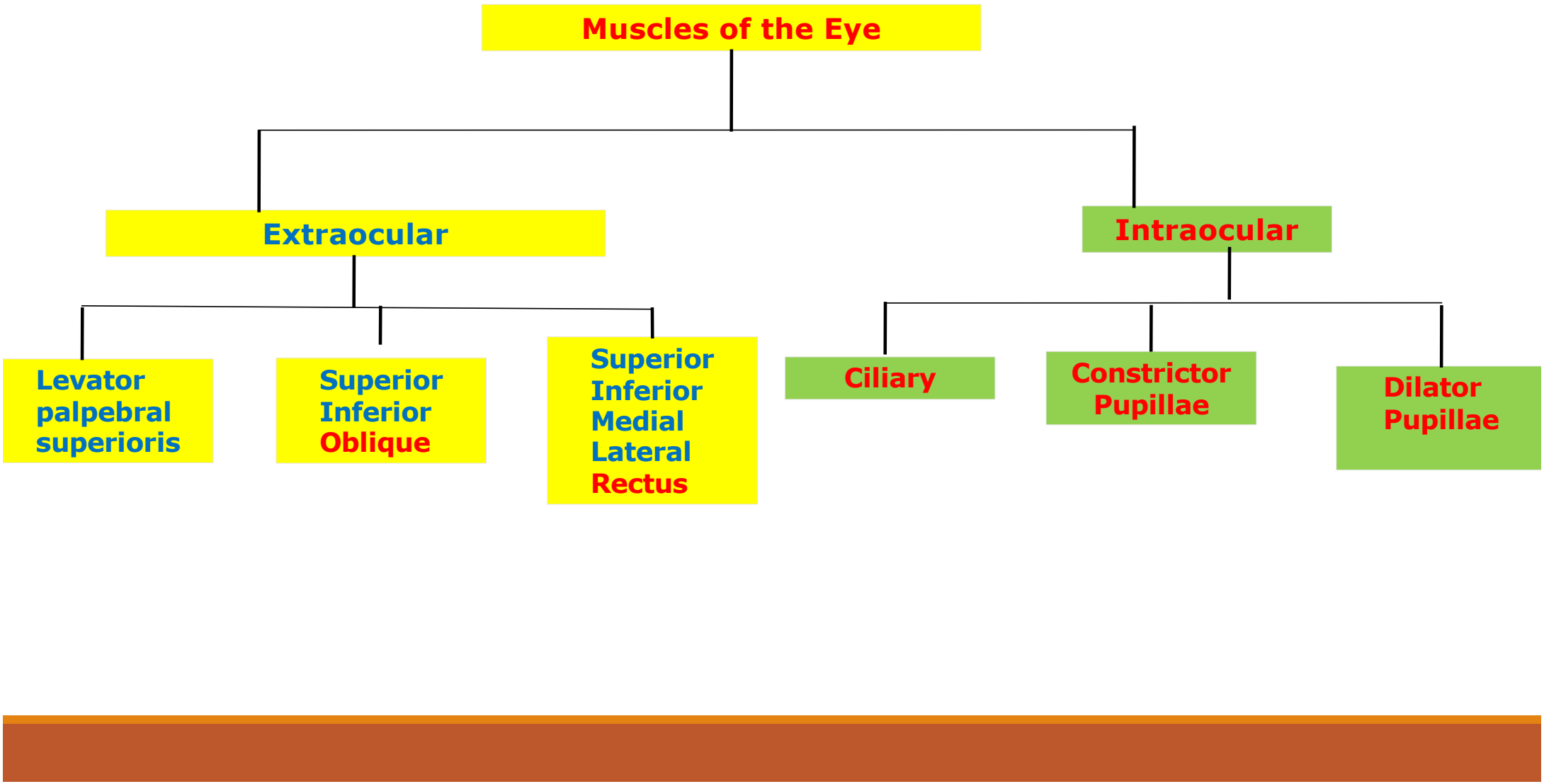
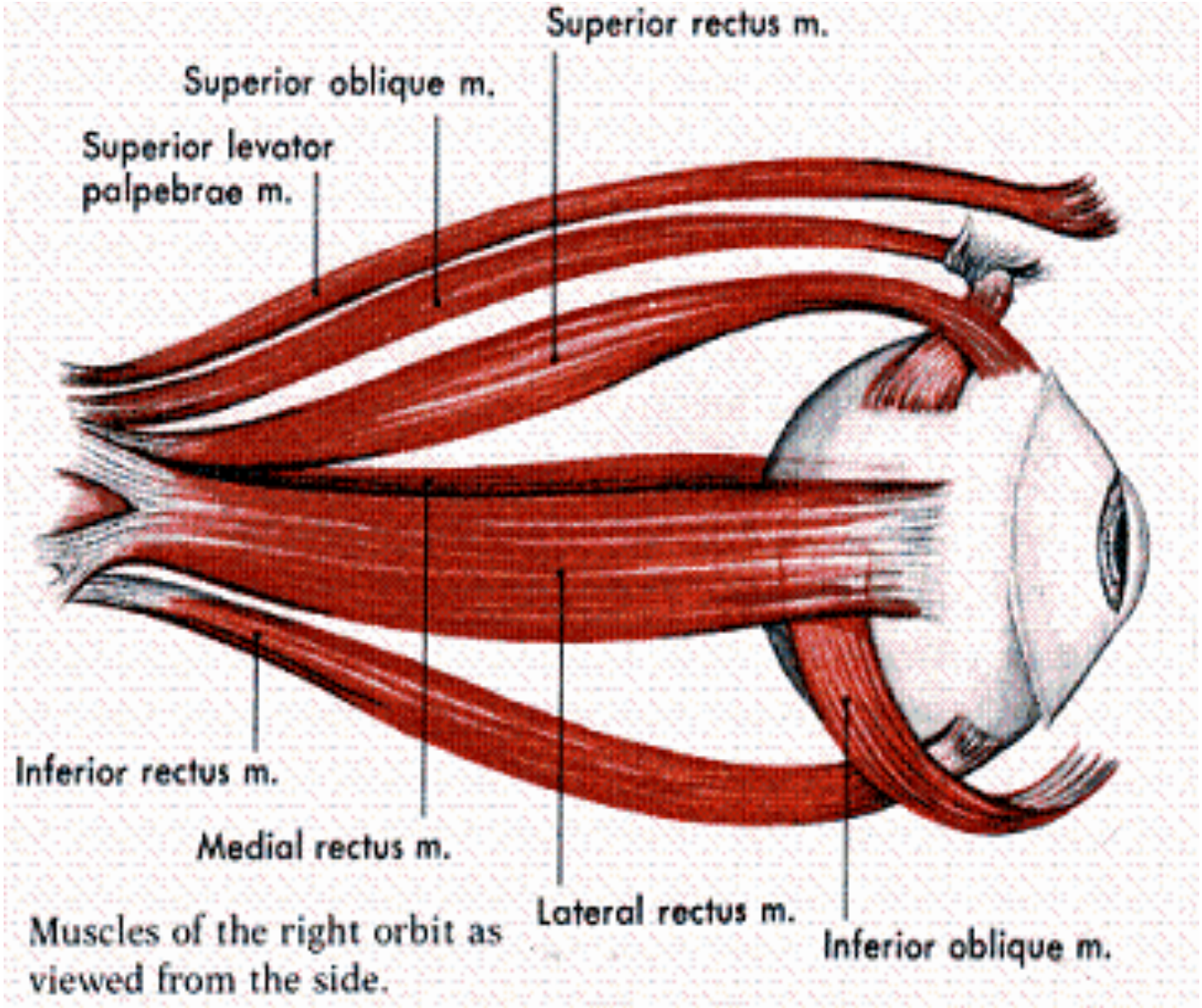
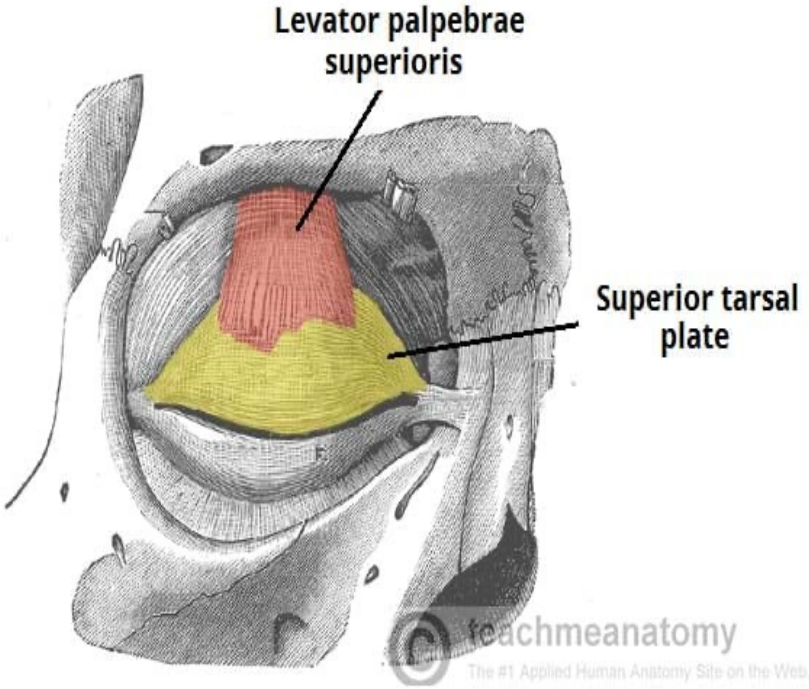
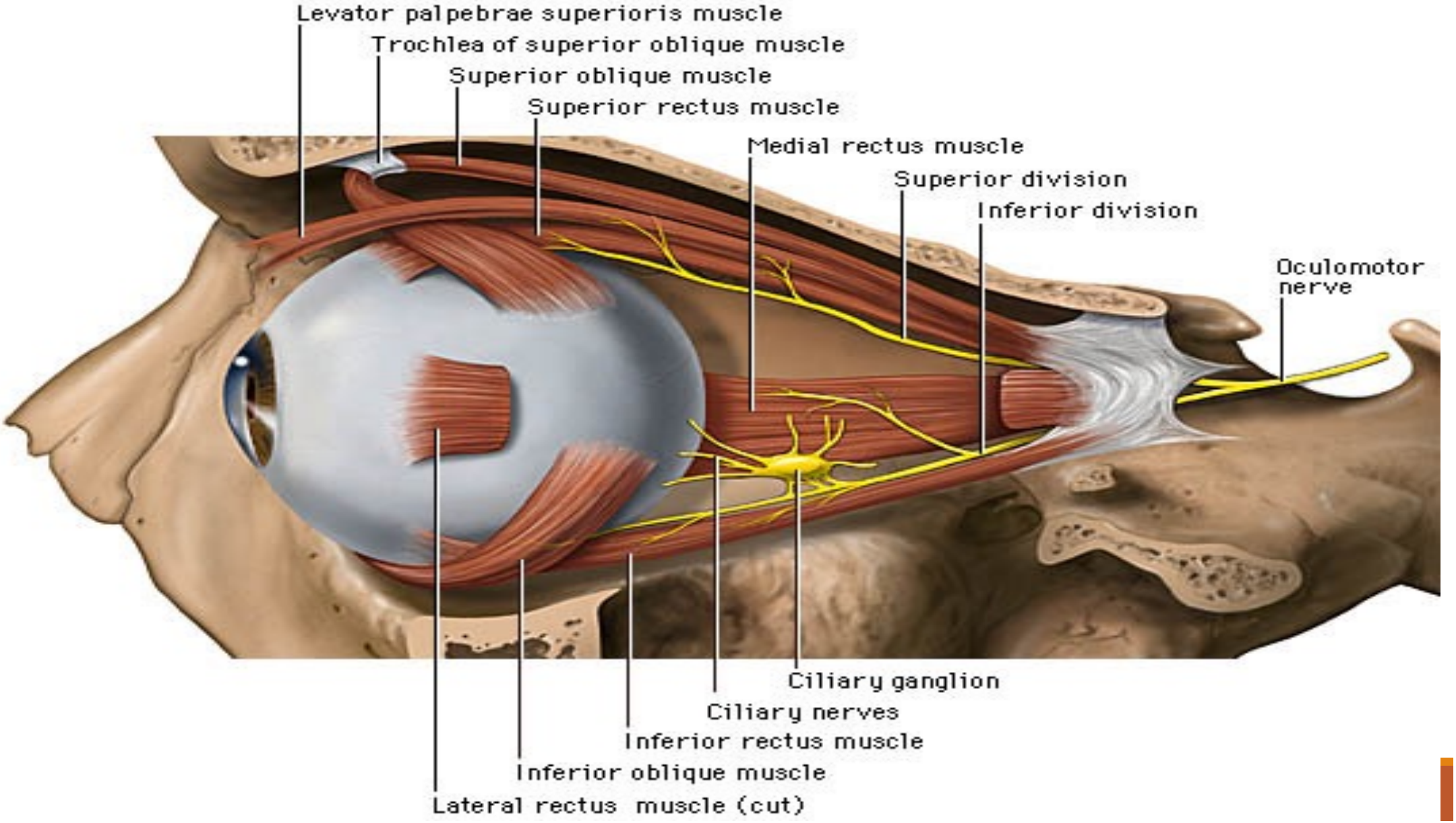
Muscles of the eye

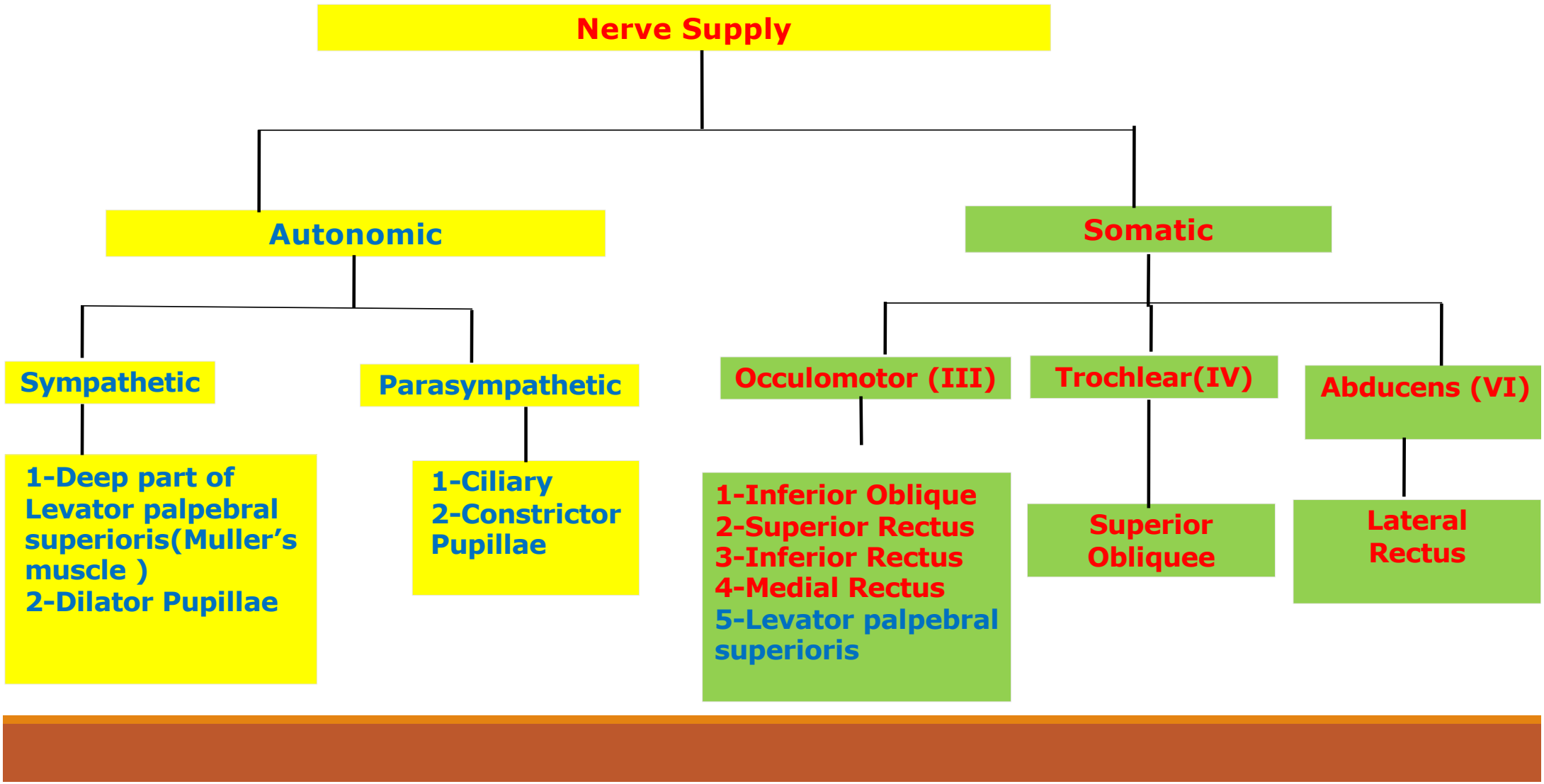

Muscles of the Eye
Extraocular
Intraocular
Levator palpebral superioris
Superior Oblique
Superior
Inferior
Medial
Lateral
Rectus
Ciliary
Constrictor Pupillae
Dilator Pupillae



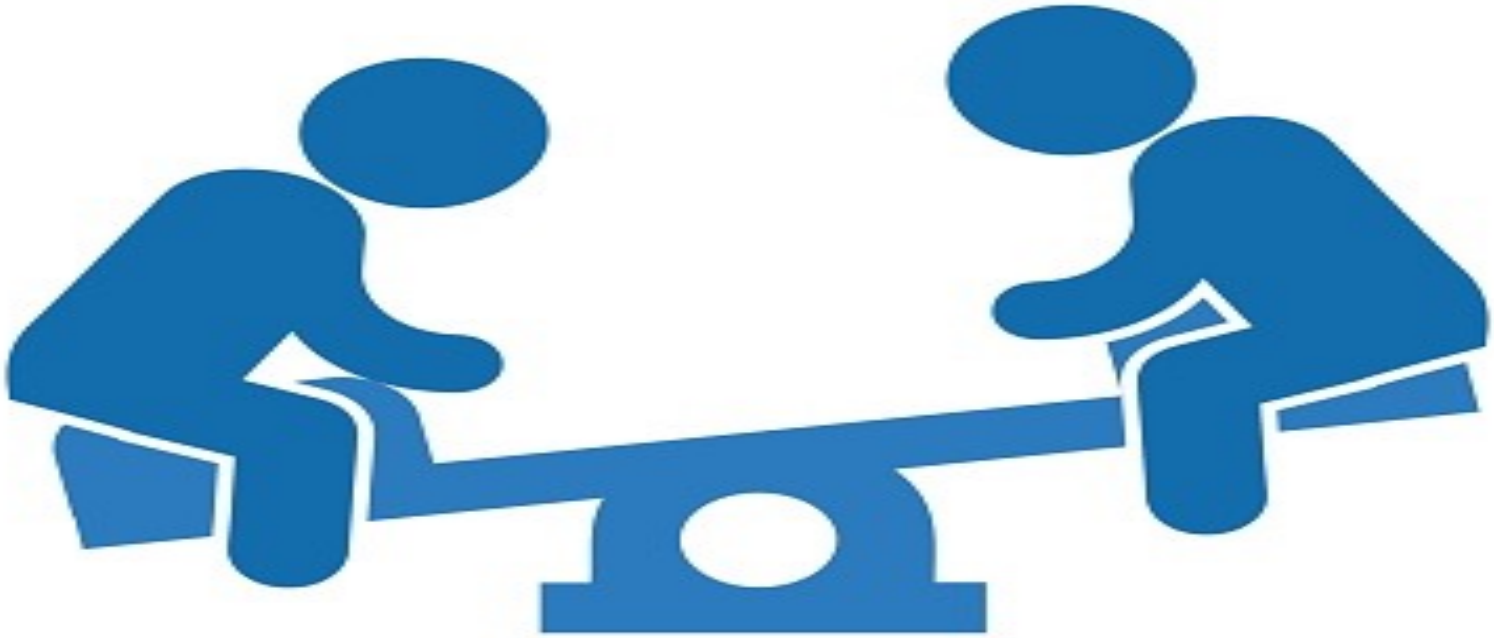
Muscles of the right orbit as viewed from the side.




Levator palpebrae superioris muscle
Trochlea of superior oblique muscle
Superior oblique muscle
Superior rectus muscle
Medial rectus muscle
Superior division
Inferior division
Oculomotor nerve
Ciliary ganglion
Ciliary nerves
Inferior rectus muscle
Inferior oblique muscle
Lateral rectus muscle (cut)


Nerve Supply
Autonomic
Somatic
Sympathetic
Parasympathetic
Occulomotor (III)
Trochlear(IV)
Abducens (VI)
1-Deep part of Levator palpebral superioris(Muller's muscle)
2-Dilator Pupillae
1-Ciliary
2-Constrictor Pupillae
1-Inferior Oblique
2-Superior Rectus
3-Inferior Rectus
4-Medial Rectus
5-Levator palpebral superioris
Superior Obliquee
Lateral Rectus

Muscle	Origin	Insertion	Action
Superior rectus	The common tendinous ring around optic foramen	Inserted by expanded tendons into the sclera ***anterior*** to the coronal equator of the eyeball. **Know the action and nerve supply only**	Elevation ,adduction ,intorsion
Inferior rectus			Depression, adduction ,extorsion
Medial rectus			Adduction
Lateral rectus			Abduction
Superior oblique	***Roof*** of the orbit	Sclera ***posterior*** to the coronal equator of the eyeball.	Depression , Abduction , intorsion
Inferior Oblique	*Floor* of the orbit		Elevation . Abduction , extorsion
Levator palpebrae superioris	the roof of the orbit	• The skin of the upper eyelid. • The superior tarsus • The superior conjunctival fornix. • deep part is formed by smooth muscle called **Muller's muscle** and supplied by sympathetic fibers.	Elevation of the eye lid



Movement of the eye

1-Movement around Vertical Axis :

Abduction : Outward Movement

Adduction : Inward Movement

2-Movement around Horizontal Axis :

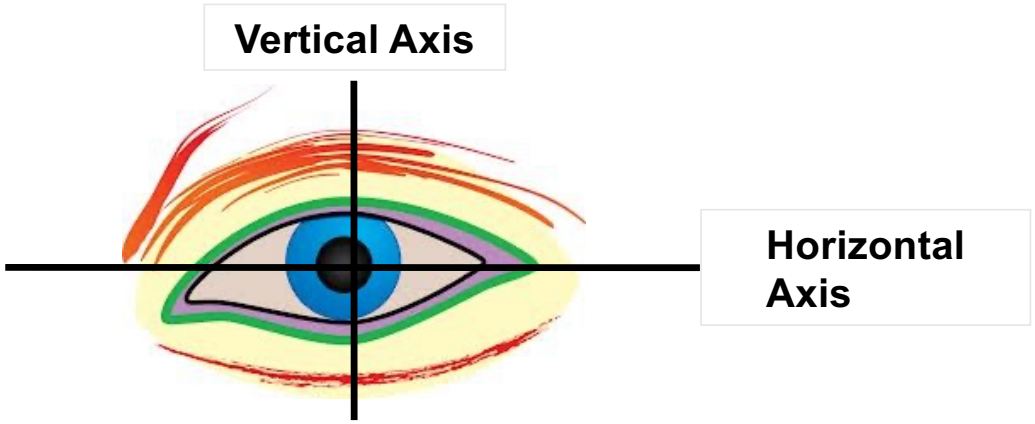
Elevation : Upward Movement

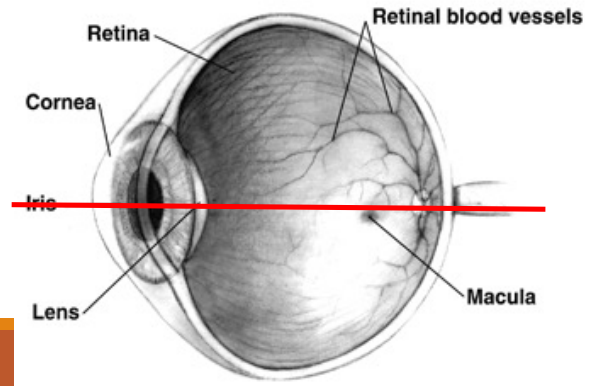
Depression : Downward Movement

3-Movement around Anterior posterior Axis :

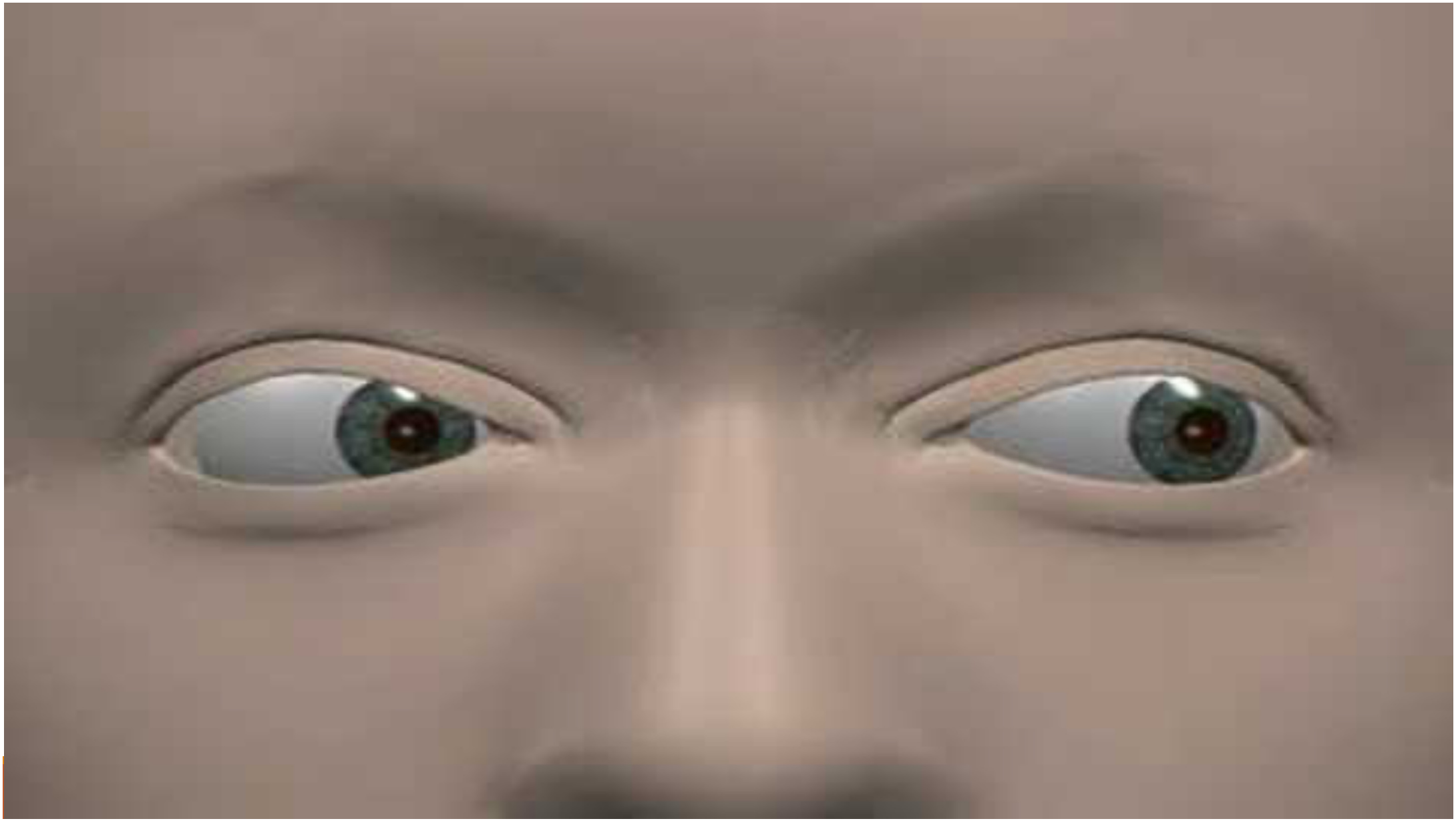
Intorsion : Inward (medial and downward)

Extorsion : outward (lateral and downward)





Anterior posterior Axis



1-Movement around Vertical Axis

Rectus muscles **ADDUCT** the Eye **Except lateral rectus**

Oblique muscles **ABDUCT** the Eye

Movement around Horizontal Axis :

Rectus muscle according to its name

Superior rectus :elevation

Inferior rectus : depression

Oblique Muscle Vice versa to its name

Superior Oblique :Depression

Inferior Oblique : Elevation

3-Movement around Anterior posterior Axis :

All **S**uperior Muscle : **I**ntorsion.

All **I**nferior Muscle : **E**xtorsion.

CNs & Muscles Controlling Movement: Arrows Indicate Best Direction to Isolate Discrete Effect of a Specific Muscle

LR- Lateral Rectus

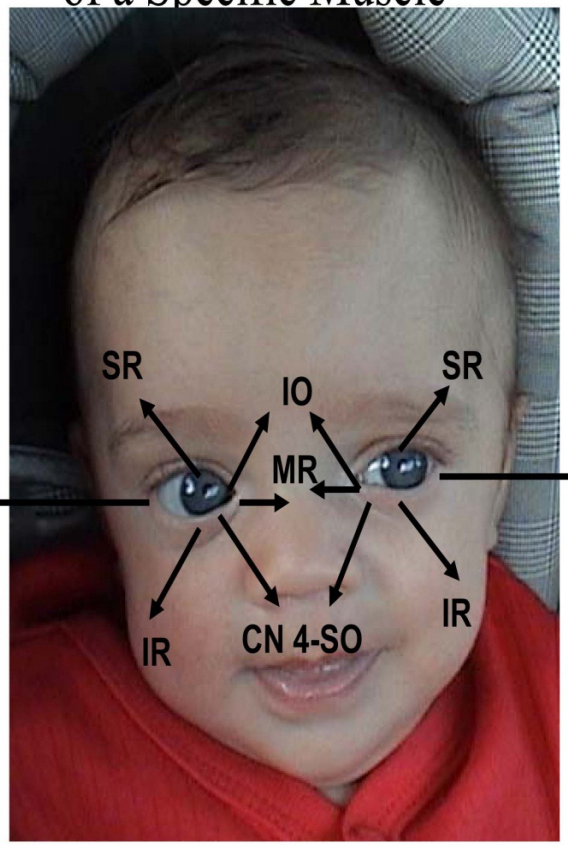
MR-Medial Rectus

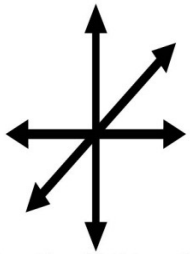
SR-Superior Rectus

IR-Inferior Rectus

SO-Superior Oblique

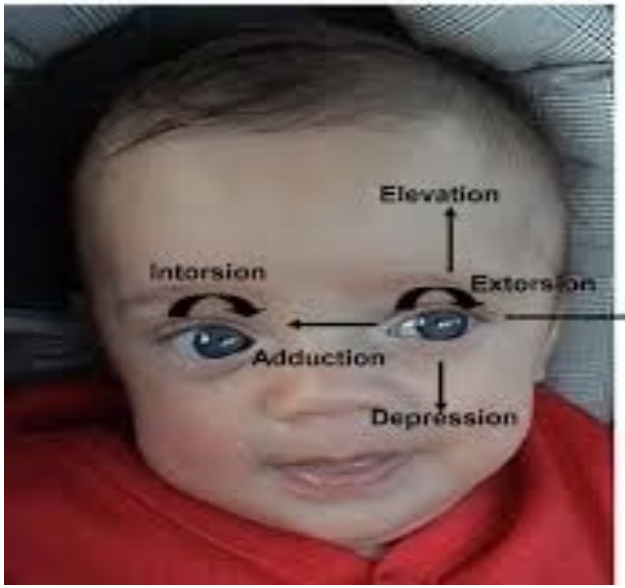
IO-Inferior Oblique





6 “Cardinal” Directions of Movement

Eye Movement Terminology



Action of Extraocular Muscles

1-Medial rectus : Adduction

2. Lateral rectus : Abduction

3. Superior rectus :

Elevation, adduction, *intorsion*

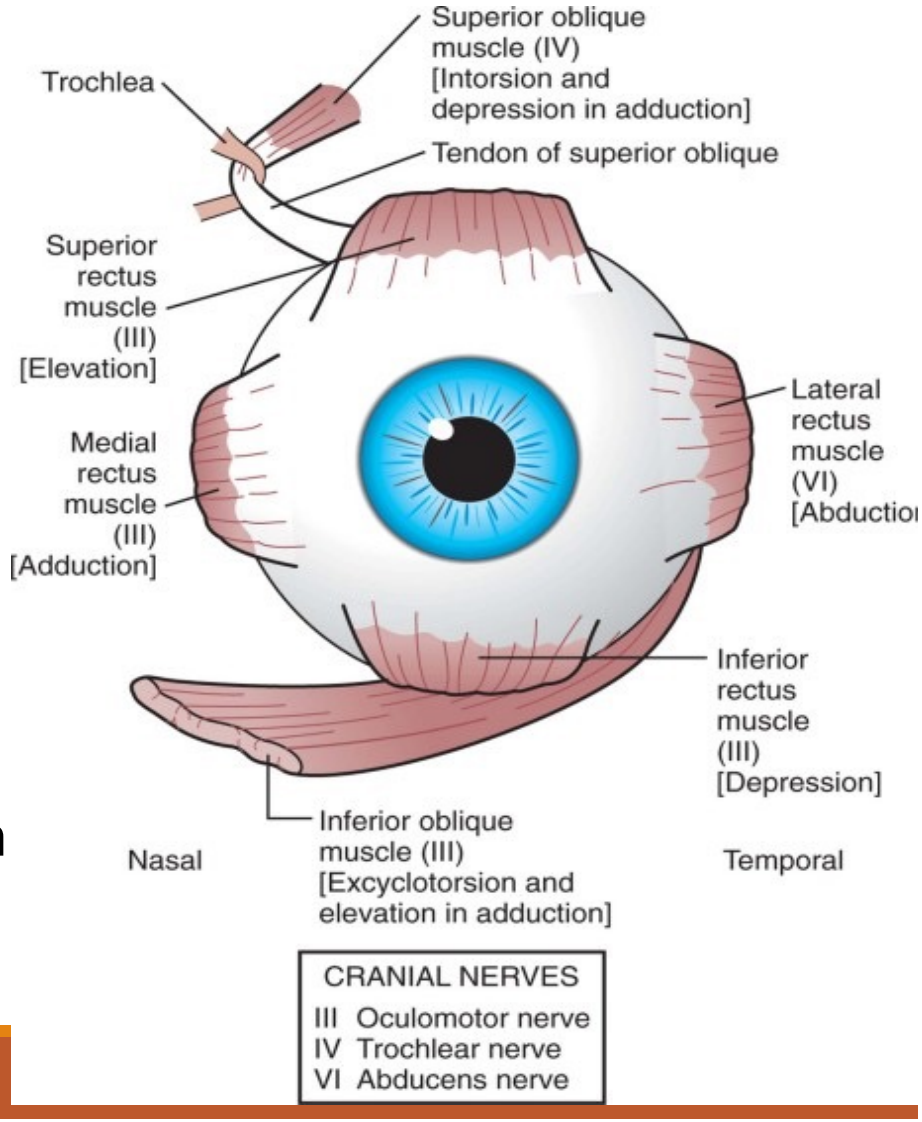
4. Inferior rectus :

Depression, adduction, Extorsion

***5.* Superior oblique :**

Depression, abduction, intorsion

6. Inferior oblique : Elevation , abduction *extorsion*



Action of Extraocular Muscles

1-Medial rectus :

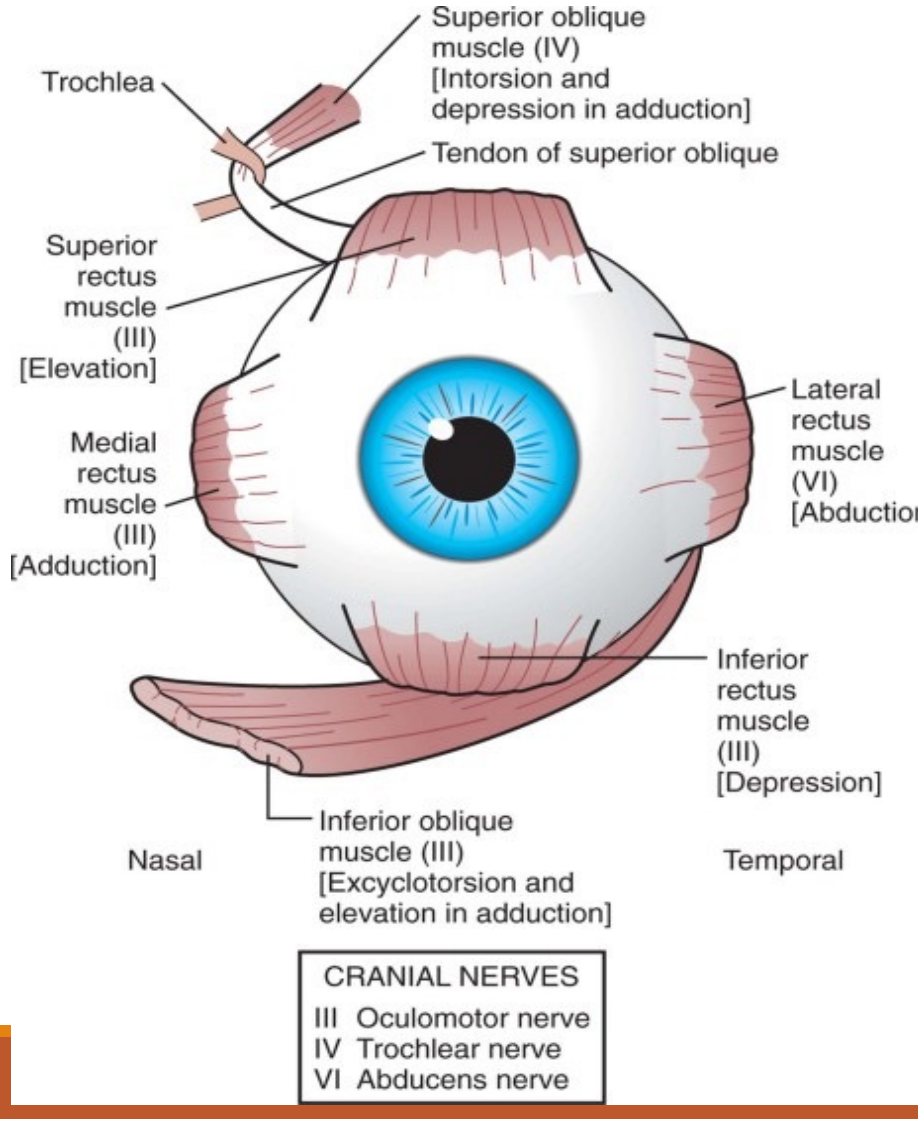
2. Lateral rectus :

3. Superior rectus :

4. Inferior rectus :

***5.* Superior oblique :**

6. Inferior oblique



1.Adduction of the eyeball :

Medial rectus, *assisted* by the superior and inferior recti.

2. Abduction :

Lateral rectus, *assisted* by the superior and inferior oblique muscles.

3. Elevation :

superior rectus + inferior oblique.

4. Depression :

Inferior rectus + superior oblique.

5. Intorsion :

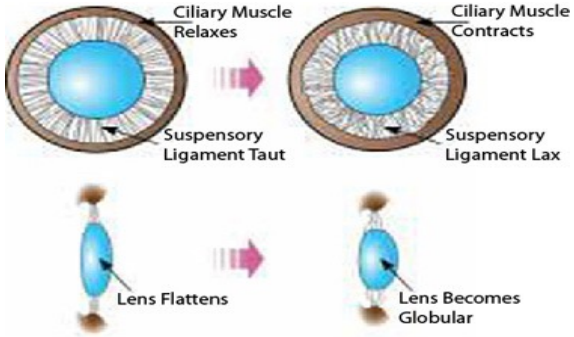
superior rectus + superior oblique.

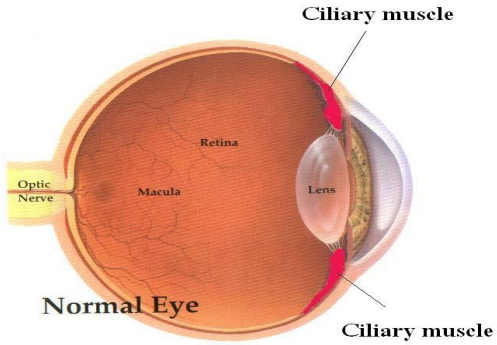
6. Extorsion :

inferior rectus + inferior oblique.

Action of Intrtraocular Muscles

1-Ciliary Muscle :Increase lens thickness as in accommodation





2-Constrictor Pupillae : Constricts the pupil as in pupillary light reflex

3-Dilator Pupillae : Dilates the pupil

Horner ‘s syndrome

Injury of cervical sympathetic nerve leads to ptosis ,miosis ,anhidrosis and enophthalmus

Thank You