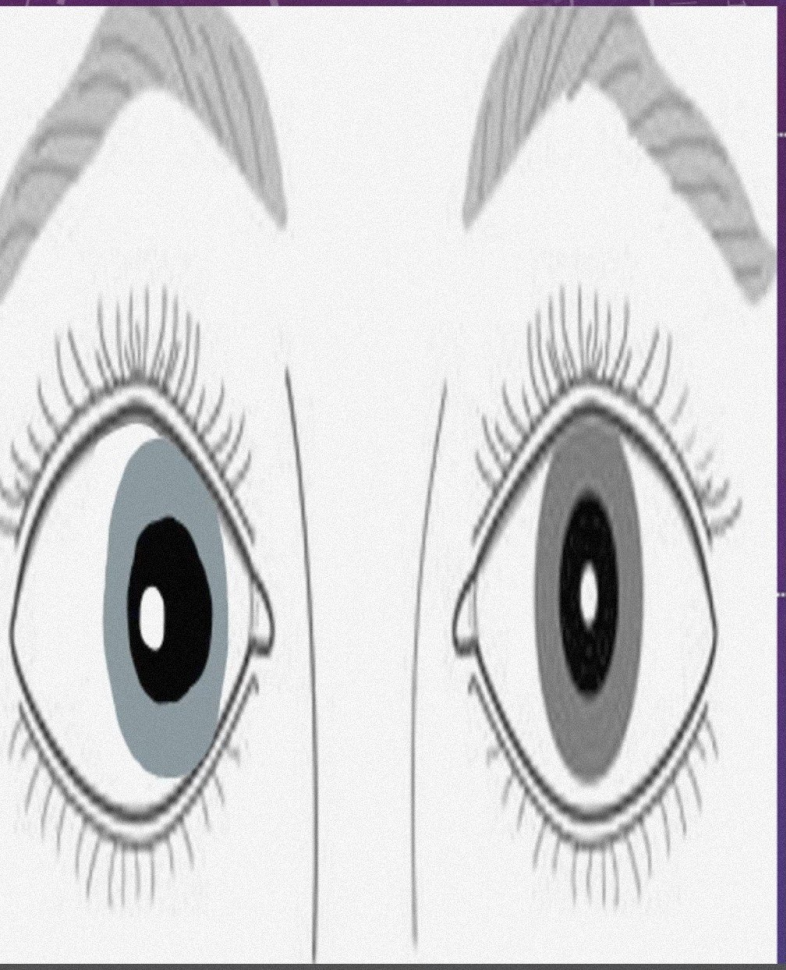
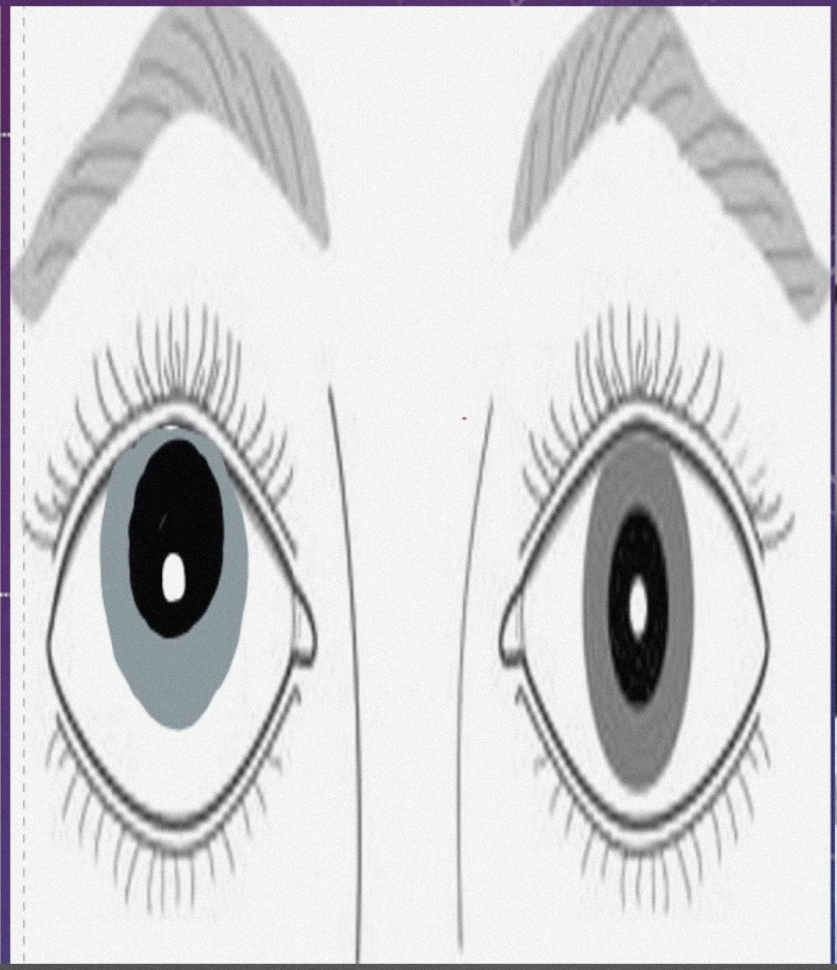
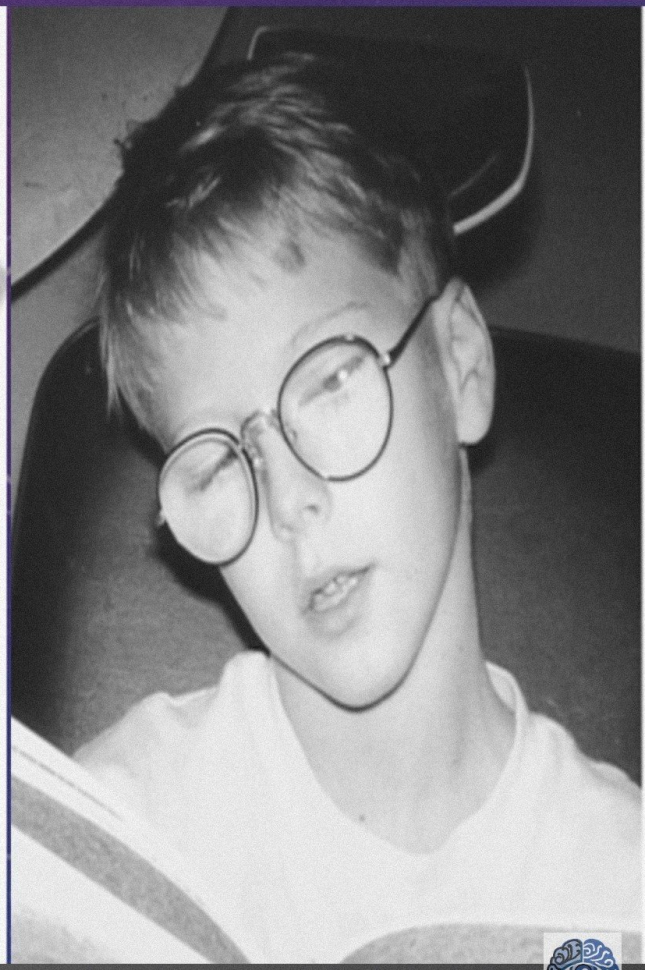
#1 HIRSCHBERG CORNEAL REFLEX

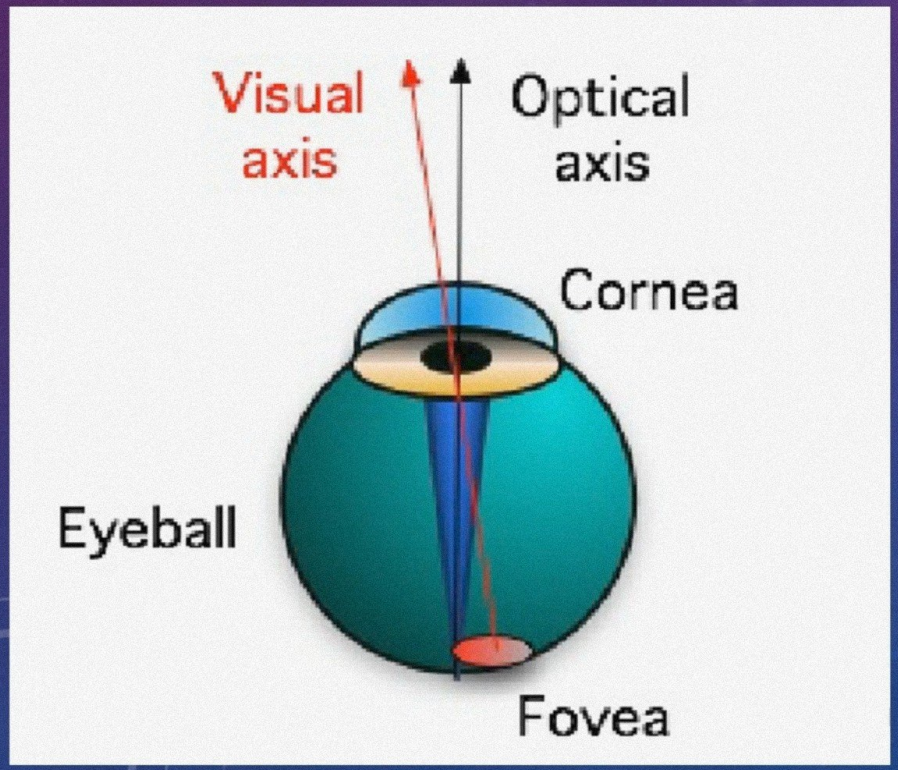
SQUINT SERIES





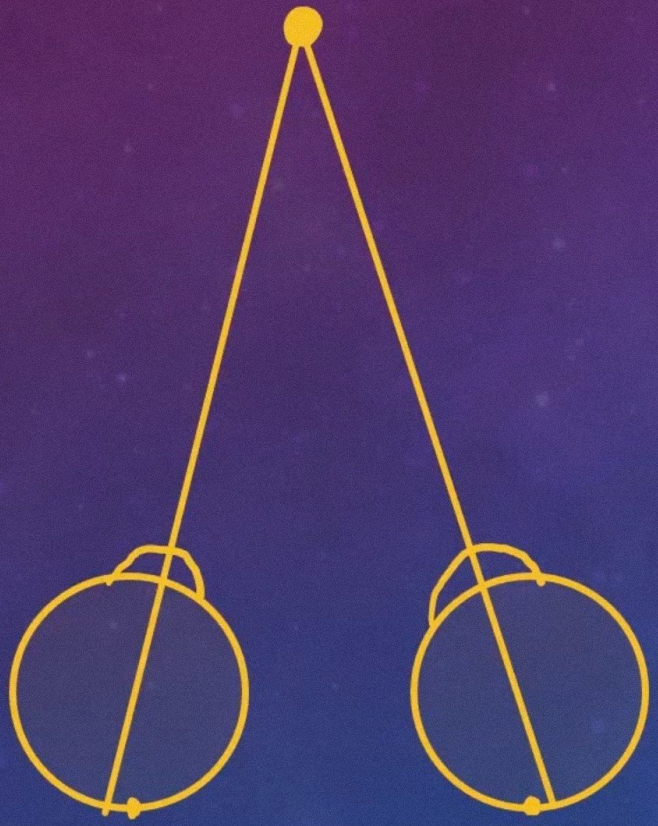


Strabismus is a condition in which the visual axes of the eyes are not parallel.

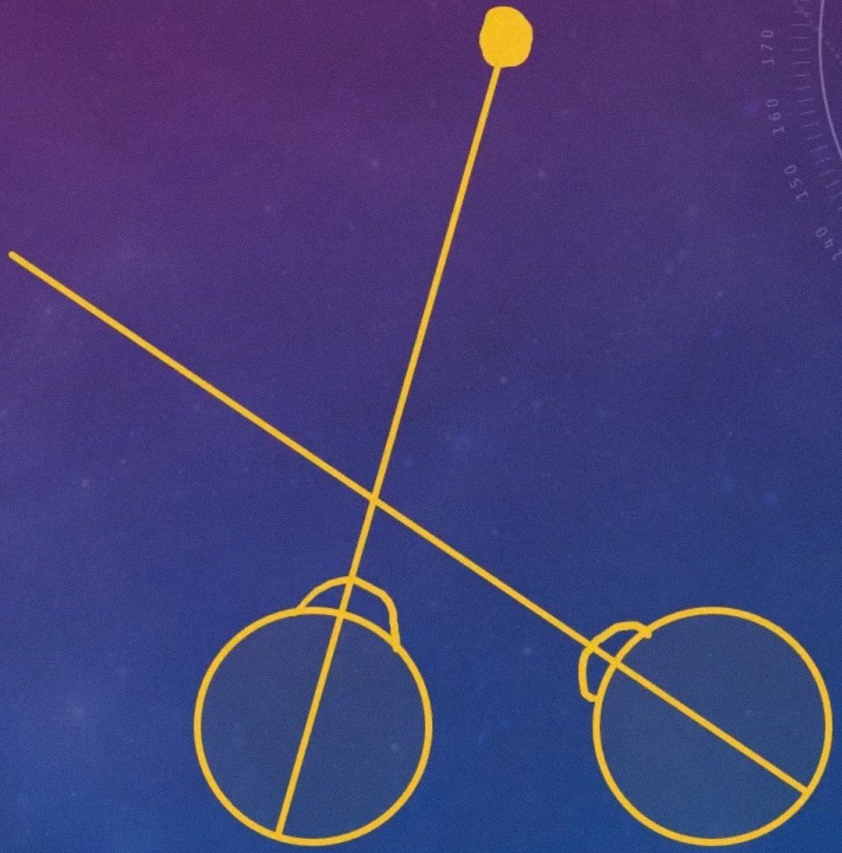


ORTHOTROPIA

ORTHO- TROPIA



HETERO-TROPIA



- EXO-DEVIATION
- ESO-DEVIATION
- HYPER-DEVIATION
- HYPO-DEVIATION

HETEROPHORIA V/S HETEROTROPIA

- The deviation is normally controlled by fusion and only becomes apparent when the eyes are dissociated → hetero**PHORIA**

- The strabismus can be manifest (heterotropia), in which one visual axis deviates either constantly or intermittently. → Hetero**TROPIA**

Binocular

FIGURE 8–1. Manifestation of esotropia after disruption of fusion with a translucent occluder.

LETS DISCUSS HOW TO ?

- **DETECT** Strabismus
- **ESTIMATE** strabismus
- **MEASURE** strabismus

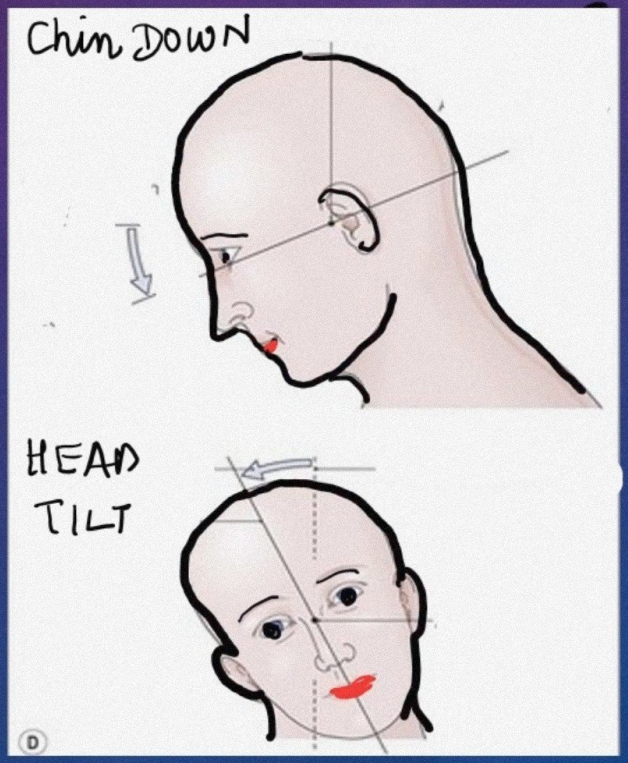
DETECTION OF STRABISMUS

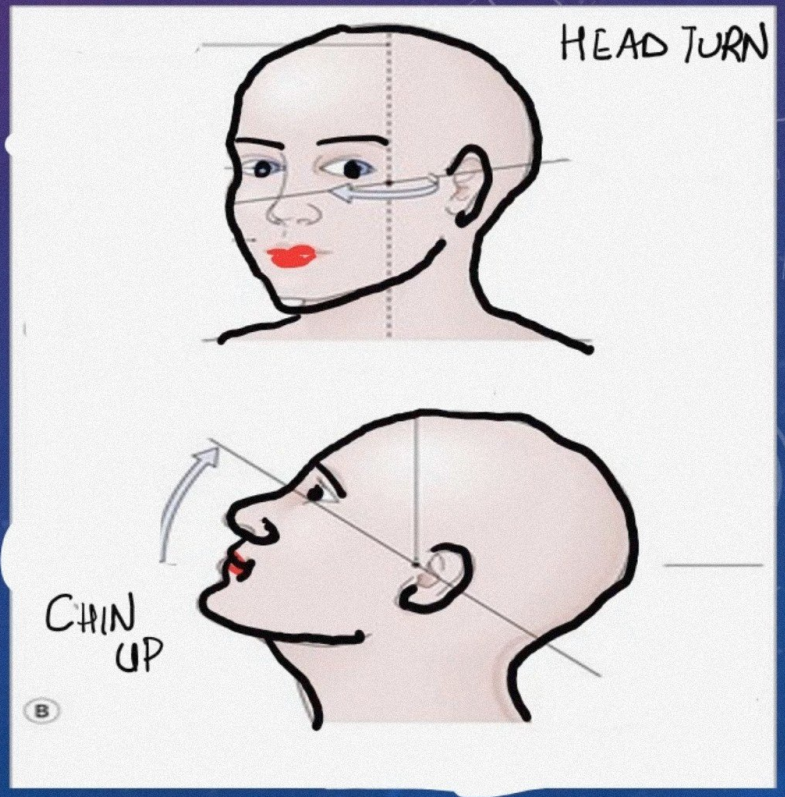
The main methods of detection are:-

- Observation of the patient's appearance
- Observation of the position of the corneal reflections
- The cover test

OBSERVATION OF THE PATIENT'S APPEARANCE

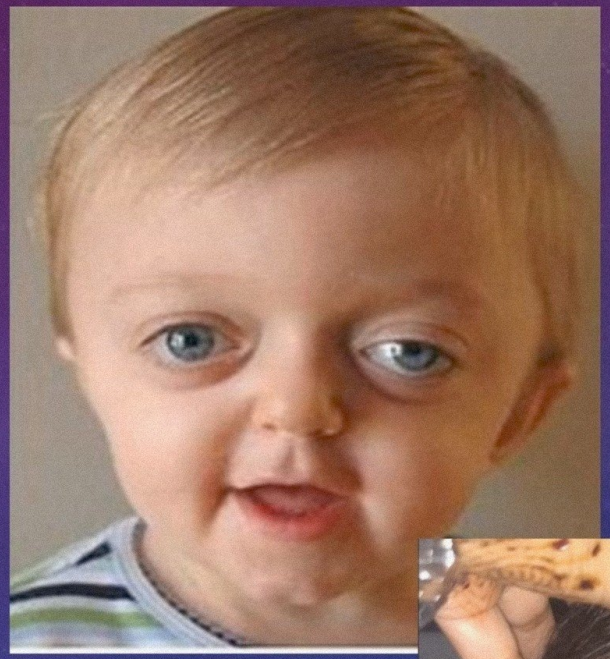
- **HEAD POSITION** :-
  Asymmetry of the face can occur when there is a congenital head tilt, which can be associated with a vertical muscle palsy.





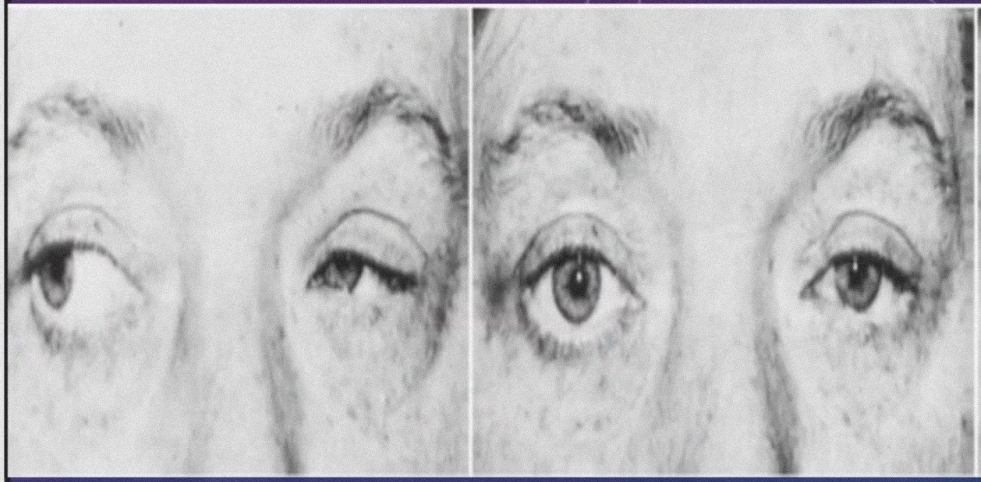
- **CHIN UP** and **CHIN DOWN** position → problems with the vertical movement
- **FACE TURNS** → problem with horizontal movement
- **HEAD TILT** → problems with Cyclotorsions

- **CRANIOFACIAL ABNORMALITY**.
- These patients often have associated ocular motility defects



- **ABNORMAL EYELID SHAPE AND POSITION**

- **ASYMMETRY OR OTHER ABNORMALITY OF THE PALPEBRAL FISSURES** can be a characteristic of certain ocular motility disorders,



- The narrowing of the fissure seen on adduction in **Duane's retraction syndrome**.

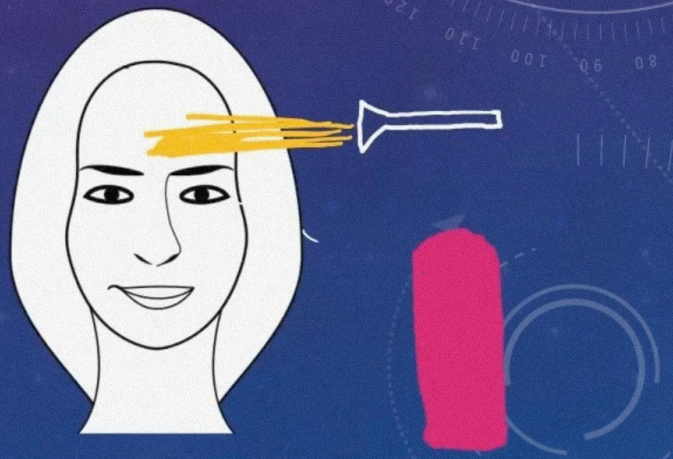
- Prominent eyes are a feature of Graves' orbitopathy, which is more likely to be associated with **hypotropia and esotropia**.

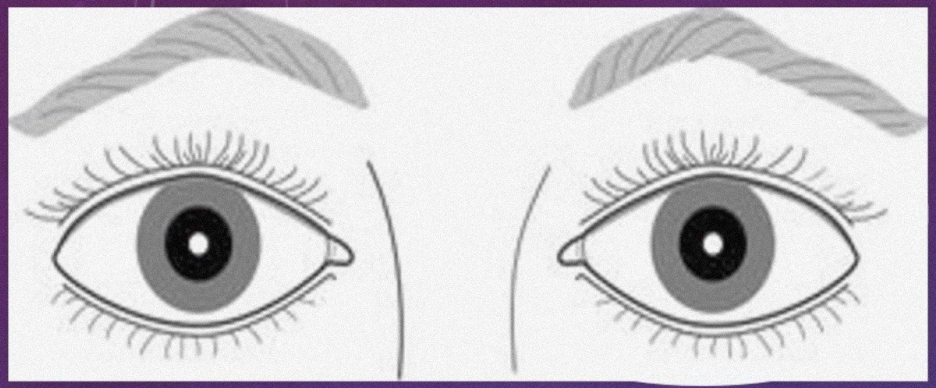
- Unilateral ptosis and unilateral upper eyelid retraction

HIRSCHBERG REFLEX TEST

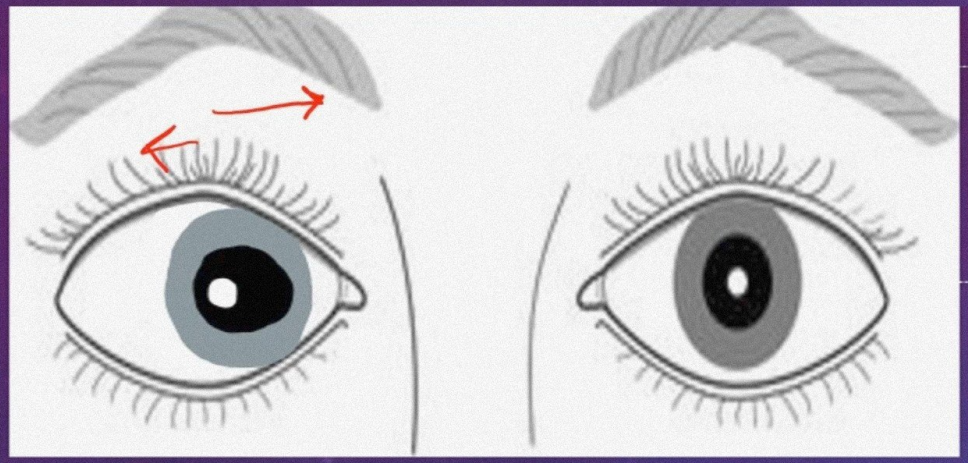
OBSERVATION OF THE CORNEAL REFLEX

- The corneal reflections should be observed with both eyes open
- With each eye separately whilst the patient fixates a spotlight at near (33 cm) distance.
- Torch light shone on the patients glabella

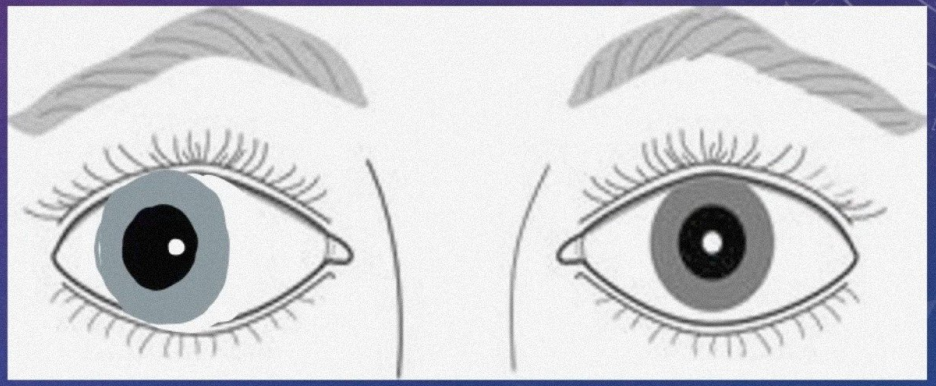




orthotropic / phorie



→ ESO-DEVIATION



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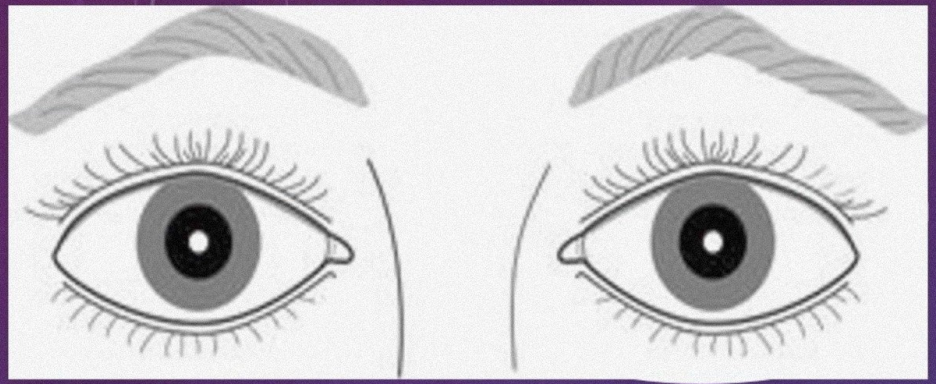

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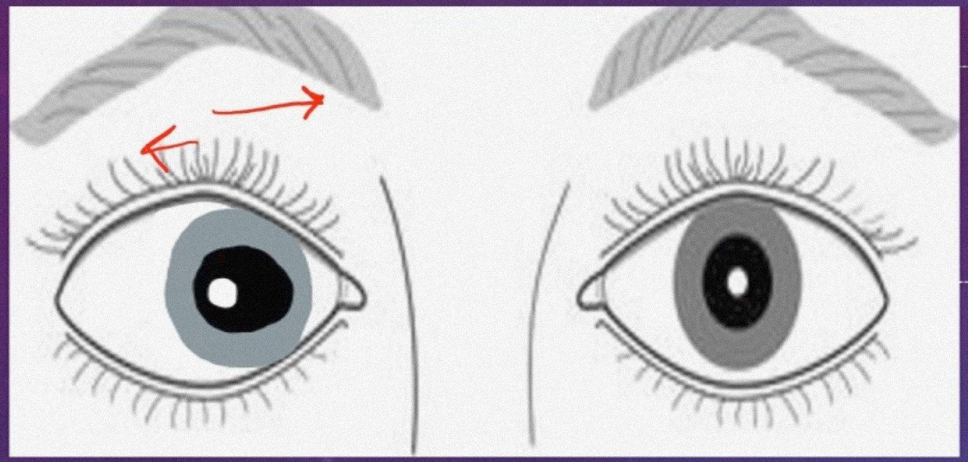

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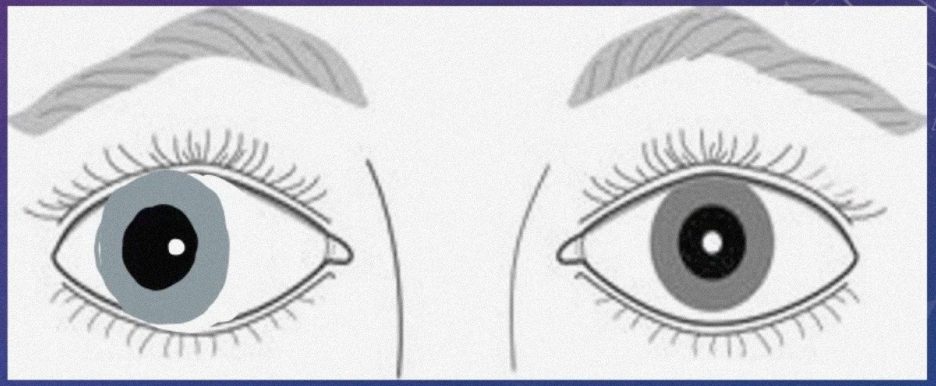

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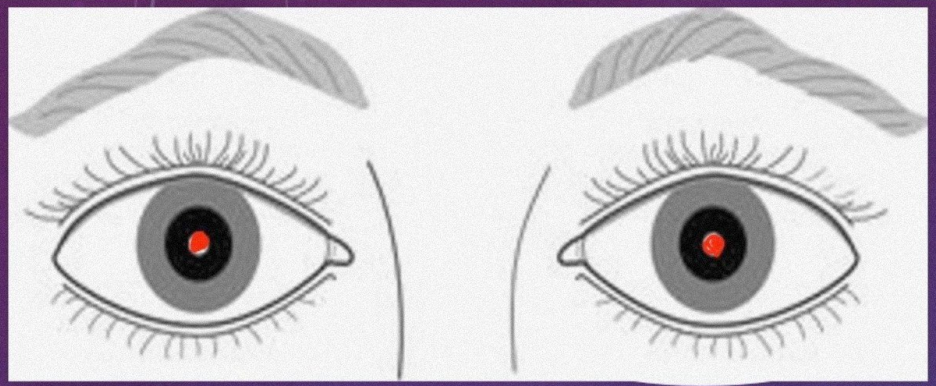

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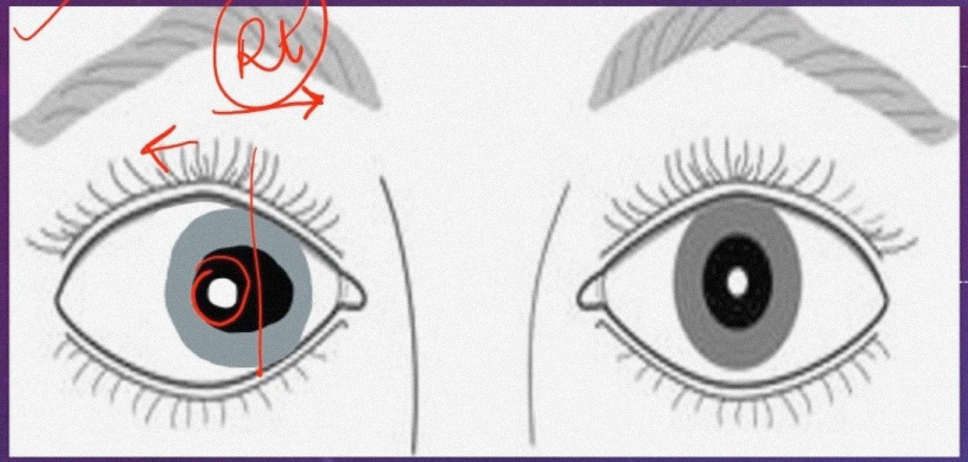

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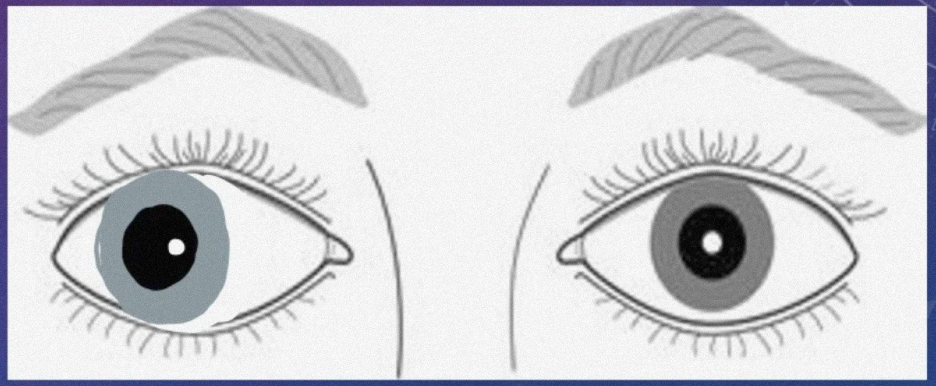
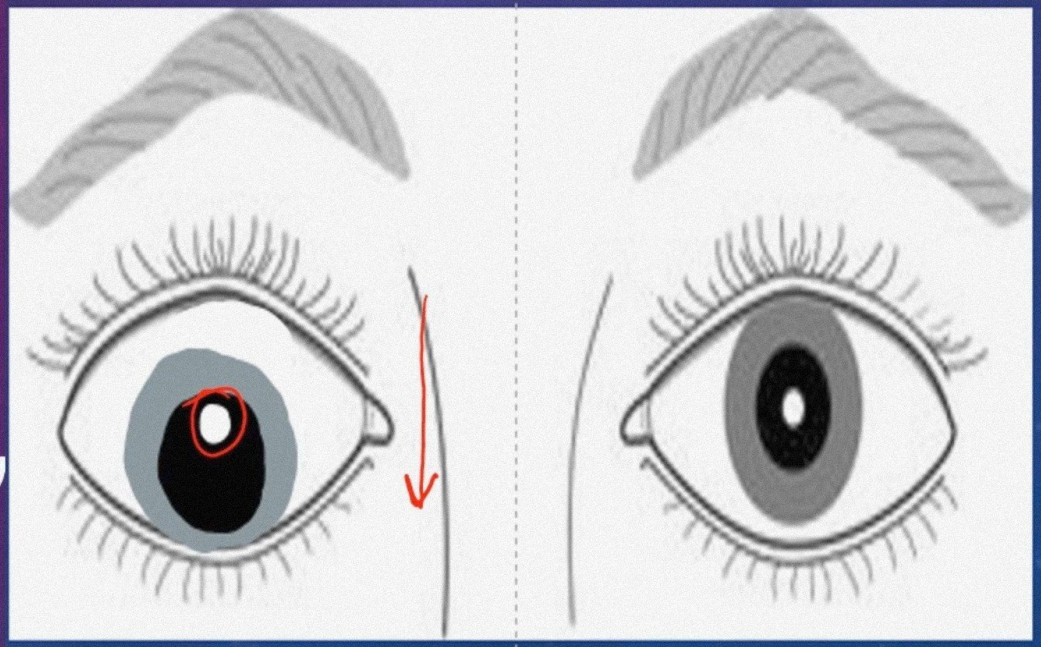


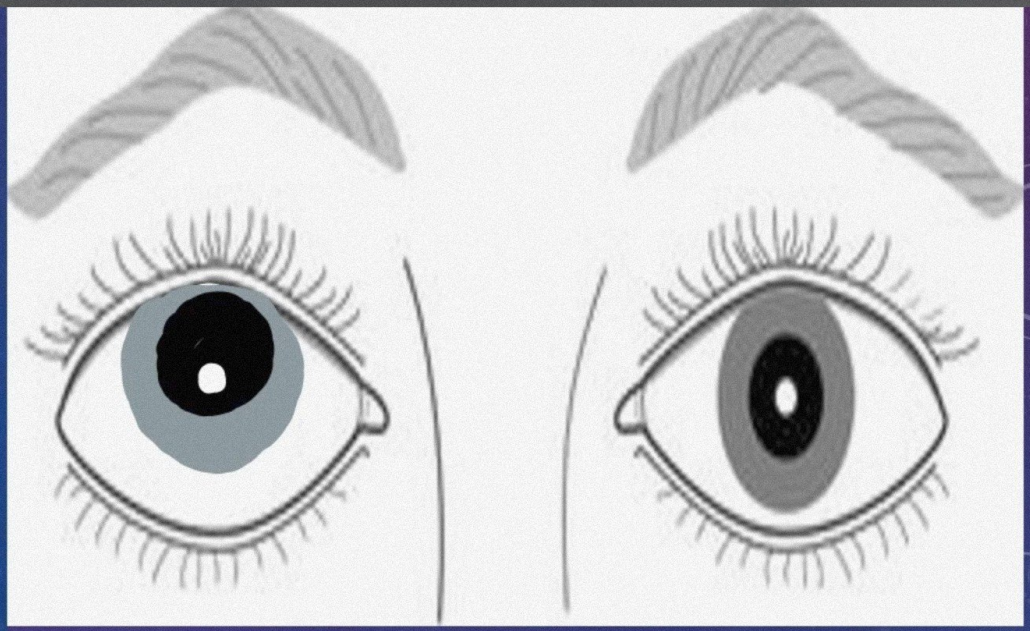
← EXODEVIATION

REFLEX is shifted TEMPORALLY

REFLEX is shifted NASALLY



HYPO-DEVIATION

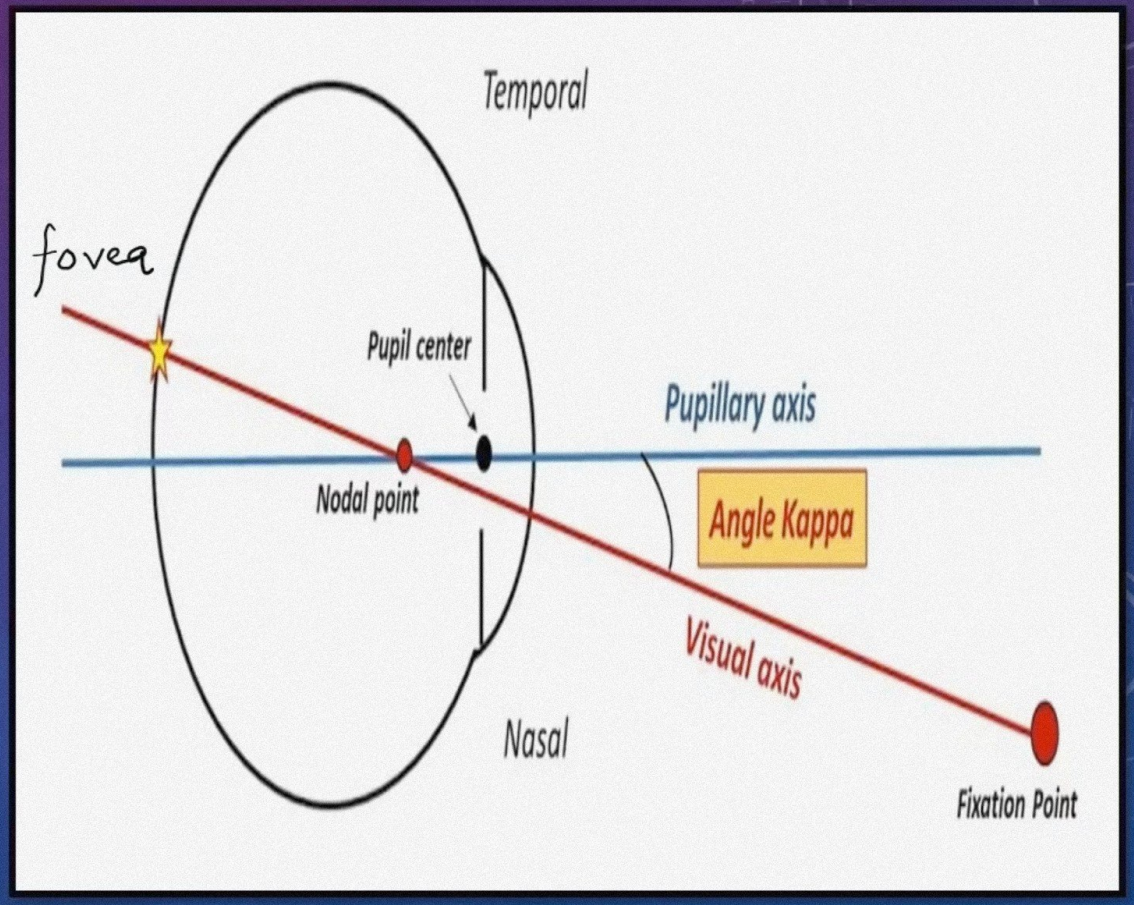


HYPER-DEVIATION

REFLEX is shifted UPWARDS in PUPIL

REFLEX is shifted DOWNWARDS in pupil

- The position of the corneal reflection is measured by the **ANGLE KAPPA** (the angle between the visual axis and the central pupillary line).



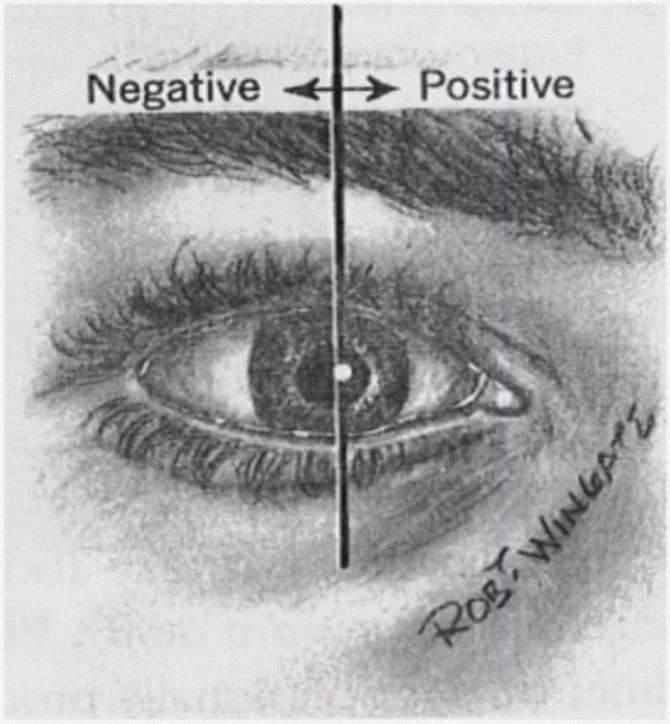
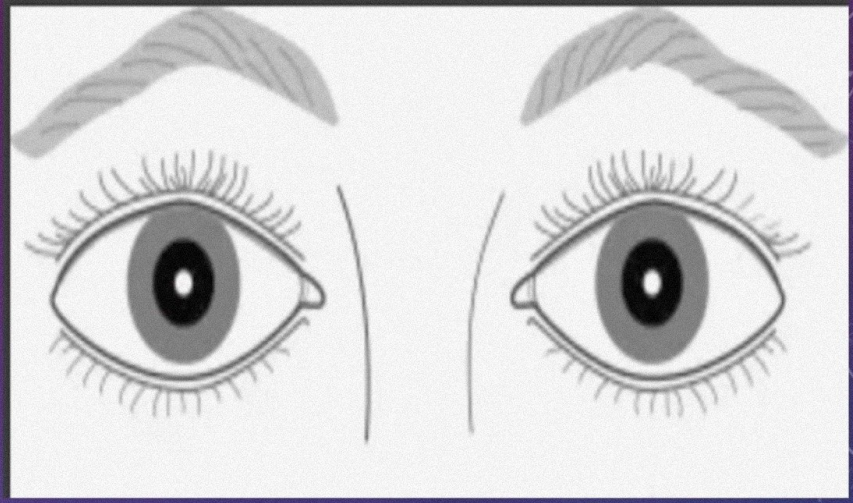
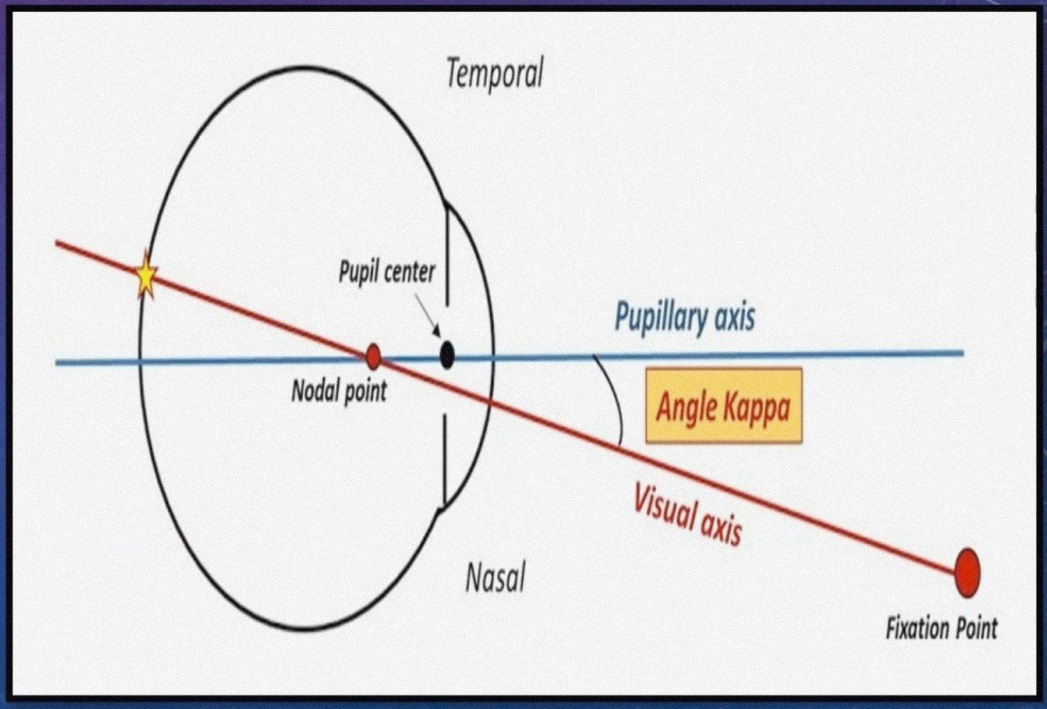


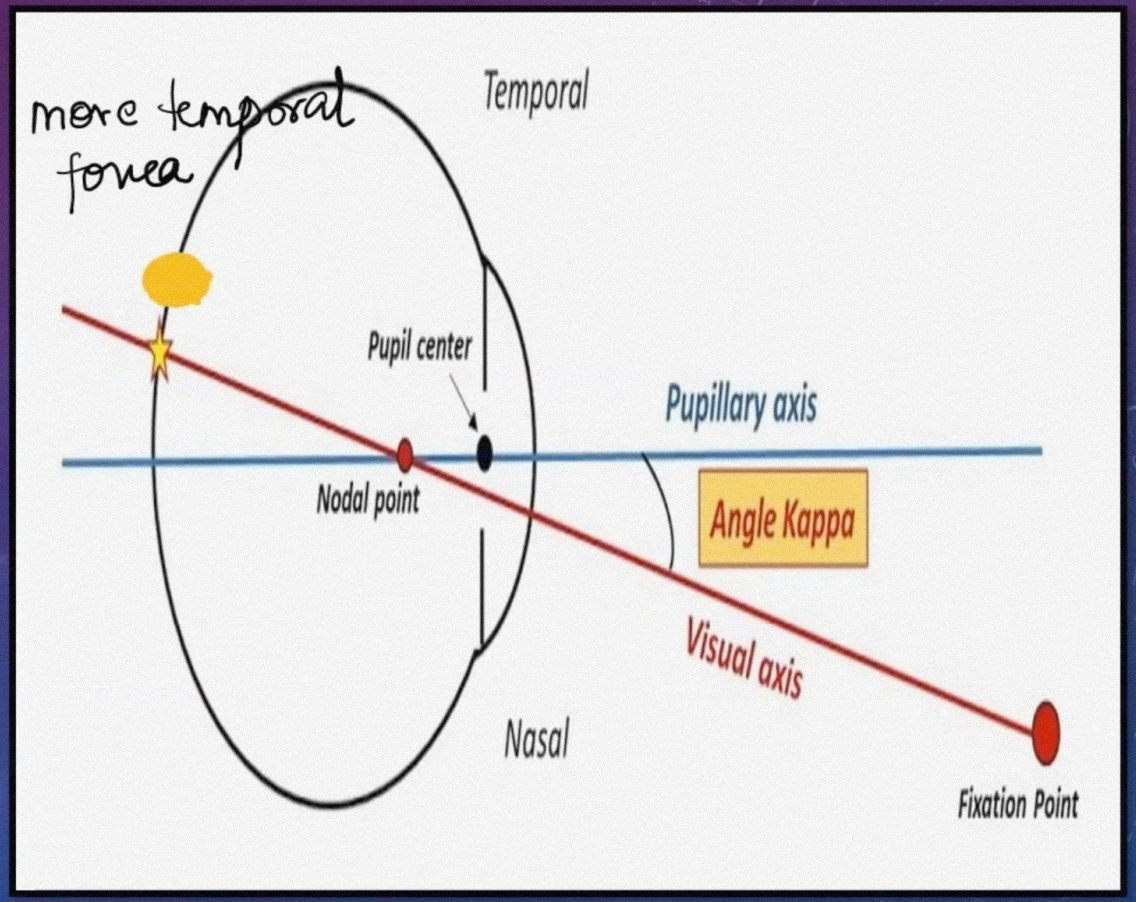
FIGURE 12–5. The angle kappa. The angle is called positive when the light reflex is displaced nasalward and negative when it is displaced templeward. (From Noorden GK von: Atlas of Strabismus, ed 4. St Louis, Mosby–Year Book, 1983, p 33.)

- If the fovea coincides with the posterior pole of the eye, the angle kappa is zero and the corneal reflection is central
- HOWEVER , the fovea lies slightly temporal to the posterior pole and the reflection is nasal, giving a **positive angle kappa of around 3° in an emmetropic eye**





- A larger positive angle kappa results in a **PSEUDO EXOTROPIA**.
- Seen in hypermetropia



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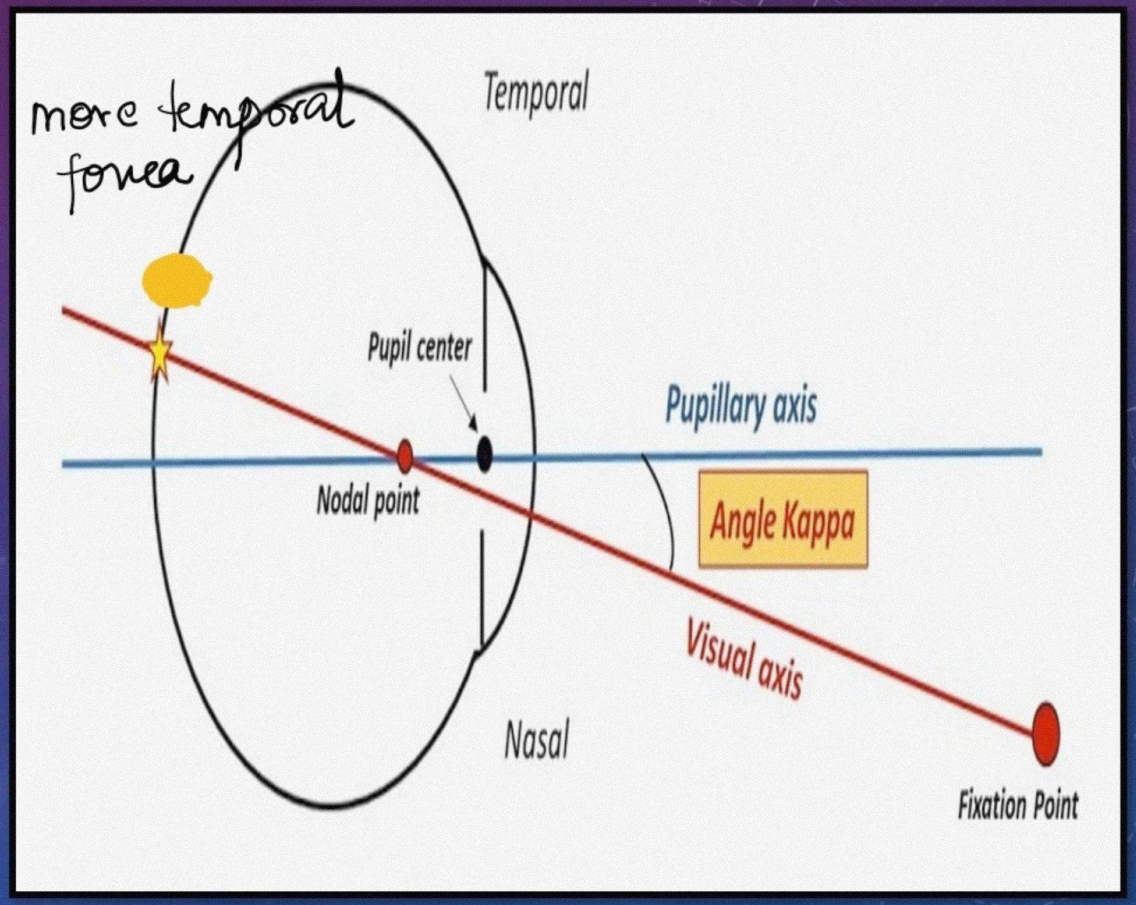


Traction of the retina in cases of **retinopathy of prematurity**, a true pathologic ectopia of the macula is accompanied by a positive angle kappa.

The macula is pulled in the temporal direction, causing PSEUDOEXOTROPIA

- **Toxocara canis retinitis**
- **Congenital retinal folds**.

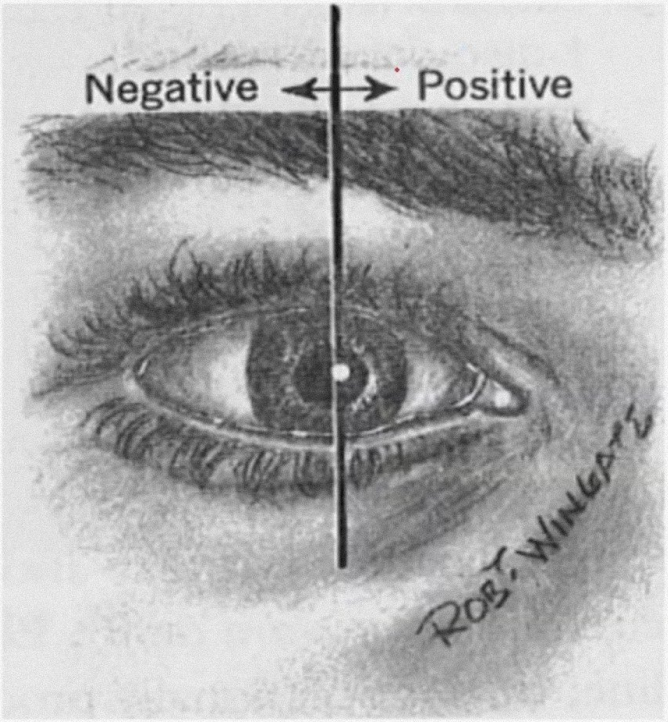
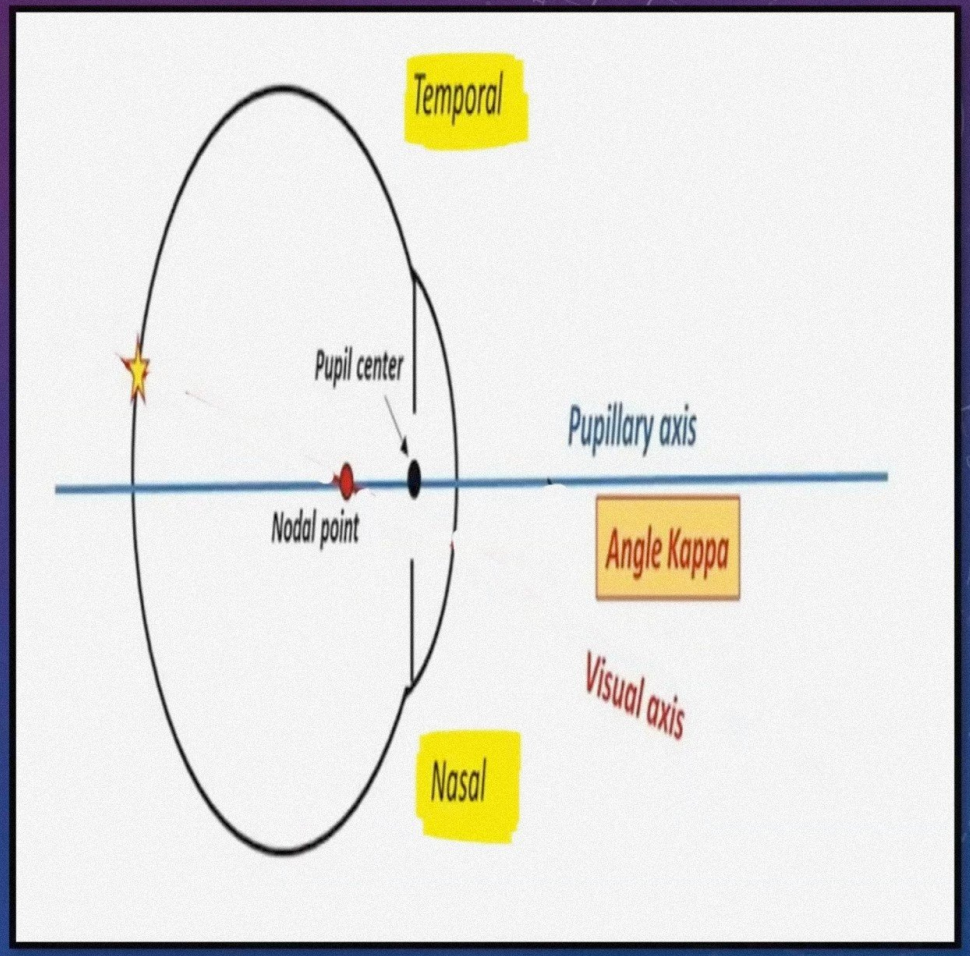
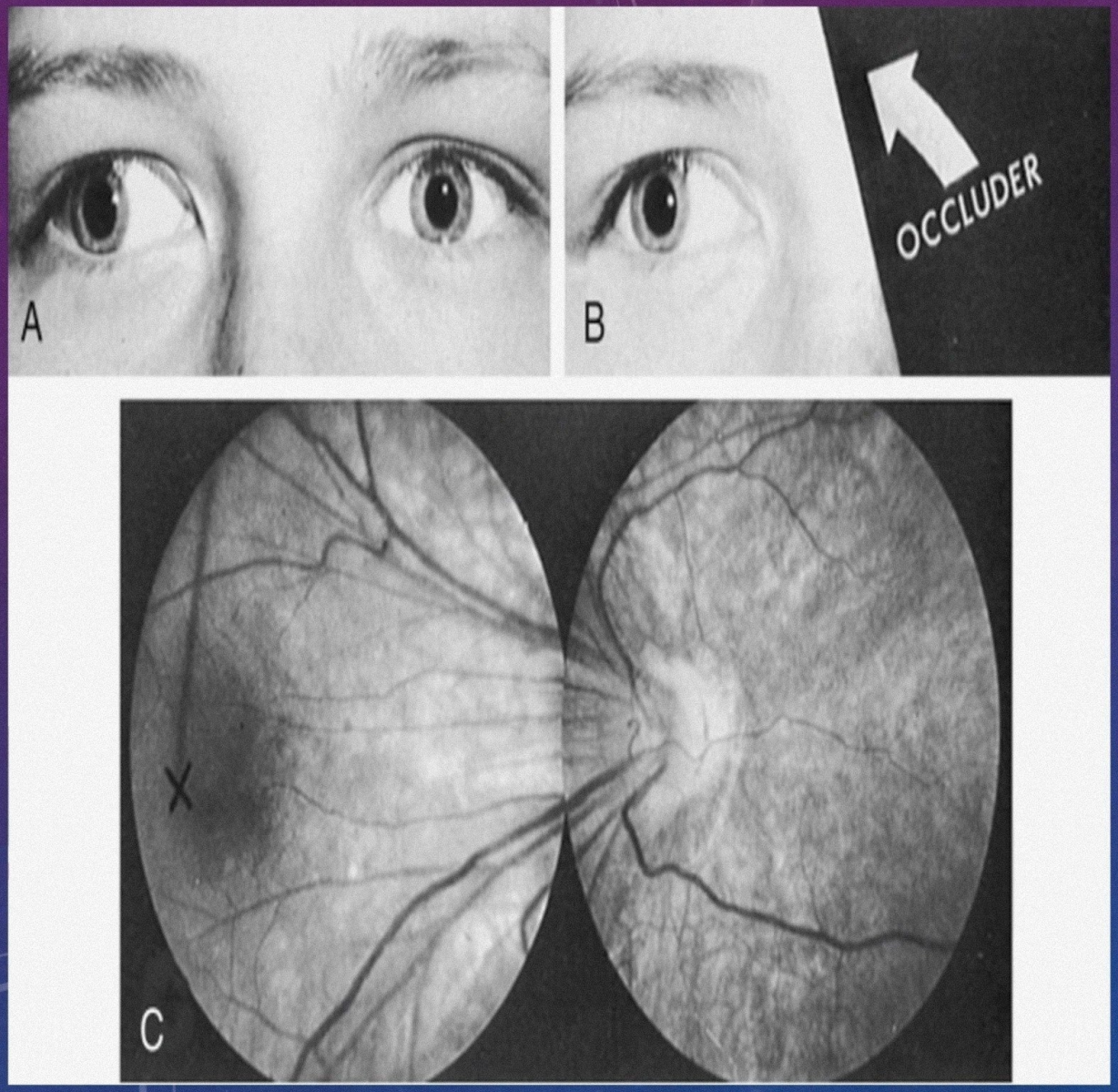


FIGURE 12–5. The angle kappa. The angle is called positive when the light reflex is displaced nasalward and negative when it is displaced templeward. (From Noorden GK von: Atlas of Strabismus, ed 4. St Louis, Mosby–Year Book, 1983, p 33.)

- More rarely the fovea lies nasal to the posterior pole, resulting in a temporal corneal reflection and a ***negative angle kappa***, simulating an **PSEUDO ESOTROPIA**.
- The angle kappa is smaller in myopia, when it may even be negative





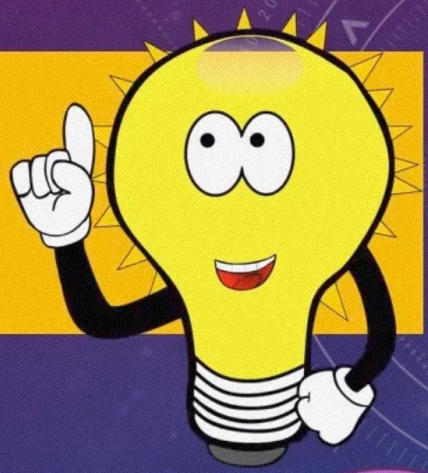
Pseudo-Exotropia

Traction of the retina in cases of **retinopathy of prematurity**, a true pathologic ectopia of the macula is accompanied by a positive angle kappa.

The macula is pulled in the temporal direction, causing PSEUDOEXOTROPIA

- **Toxocara canis retinitis**
- **Congenital retinal folds**.

CLINICAL NUGGET



- When the fixing eye is covered the reflection assumes a normal position, provided that **central or near-central** fixation is present in the deviating eye.

- If there is **eccentric fixation** outside the macular area the reflection will remain displaced when the fixing eye is covered; this is much more common in esotropia.

Get an IDEA about FIXATION

The corneal reflection will be so little displaced in a small angle strabismus (< than 10 prism diopter (Δ)) that it will appear normal.

MICROTROPIA

Every **1 mm** displacement of the light reflex from proper position is estimated to represent **7° degrees** on a round globe and equal to **15 prism diopters** of deviation.

1mm = 7° Degrees = 15 PDiopters

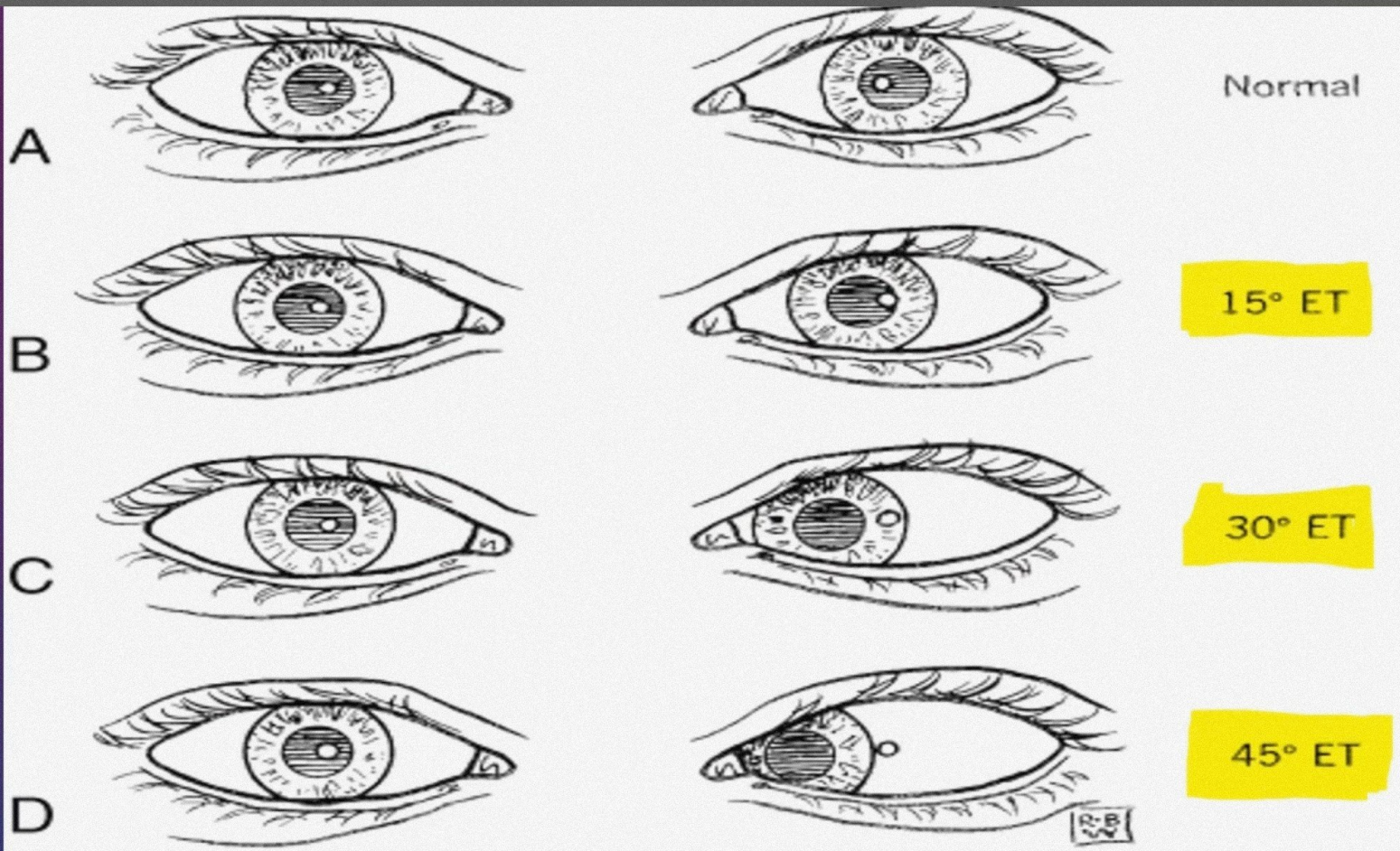


FIGURE 12–20. The Hirschberg test. For explanation, see text. ET, esotropia. (From Noorden GK von: Atlas of Strabismus, ed 4. St Louis, Mosby–Year Book, 1983, p 45.)