

Ophthalmology SAQ

By: 430 Ophthalmology team

Refractive Errors

Done by: Hadeel AlSajjan

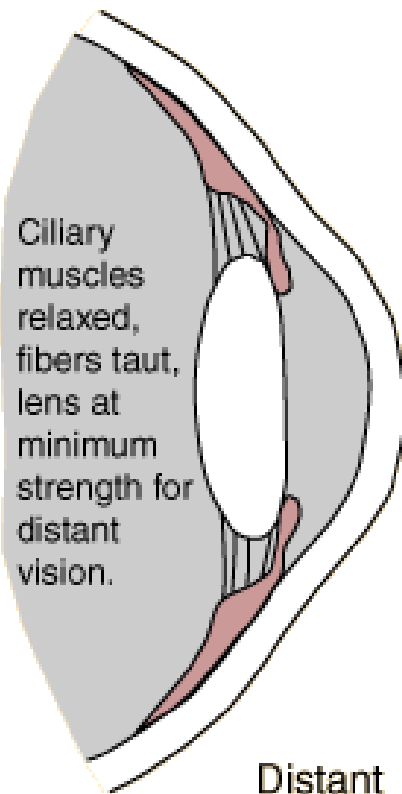
Revised by: Sara AlShehri

❖ **Note: please refer to the original lecture given by the doctor**

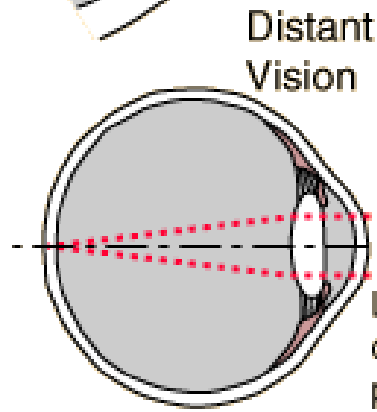
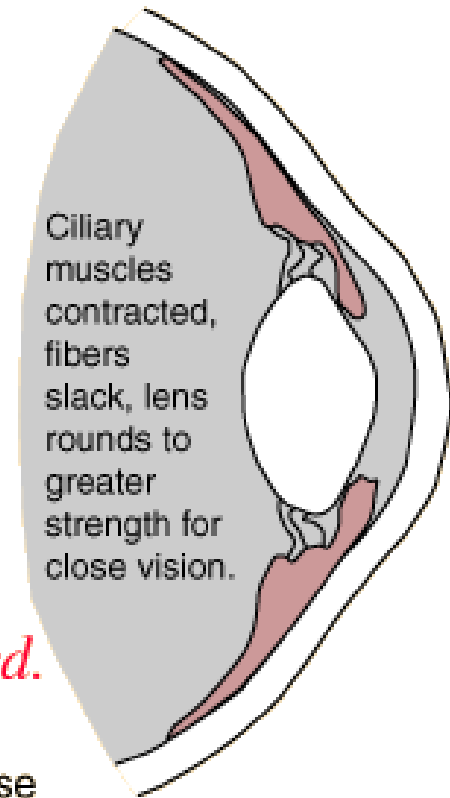


The pictures were sorted by:

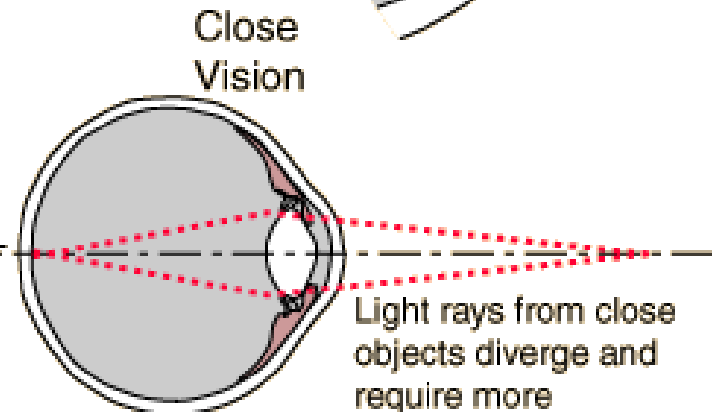
- Sara Mohammad Al-Shehri
- Marwah Salem Bafadel
- Ahlam Abdullah Al-Sulaiman
- Lamis Atyah Al-Malki



The eye accommodates for close vision by tightening the ciliary muscles, allowing the pliable crystalline lens to become more rounded.



Light rays from distant objects are nearly parallel and don't need as much refraction to bring them to a focus.



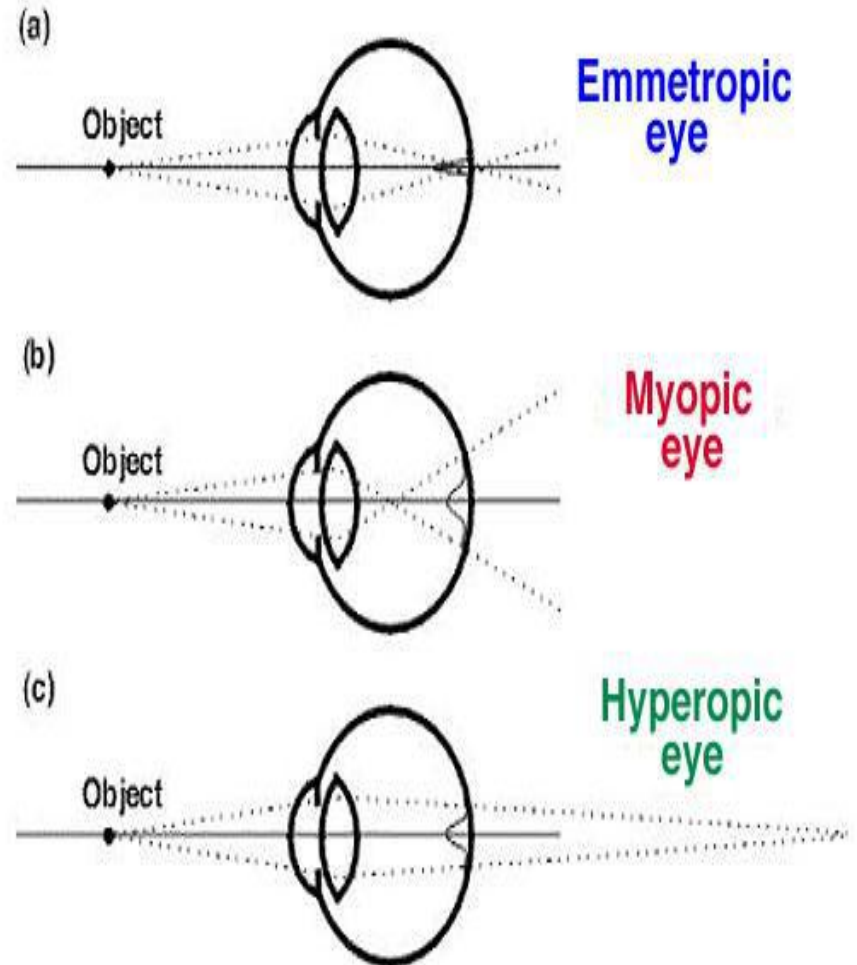
Light rays from close objects diverge and require more refraction for focusing.

What are Refractive Errors?

A mismatch between the refractive power and the focusing distance of the eye

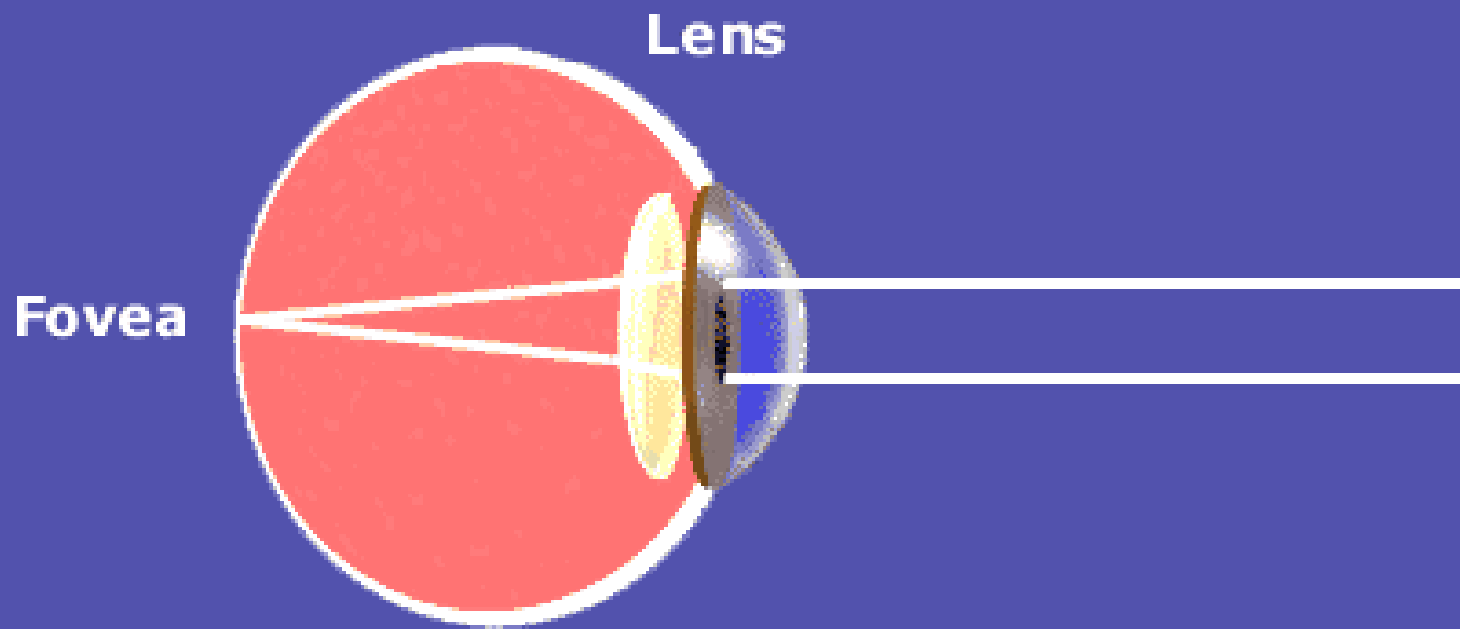
Refractive Errors

- Emmetropia(normal)
- Ametropia=RE
 - Myopia
 - Hyperopia
 - Astigmatism

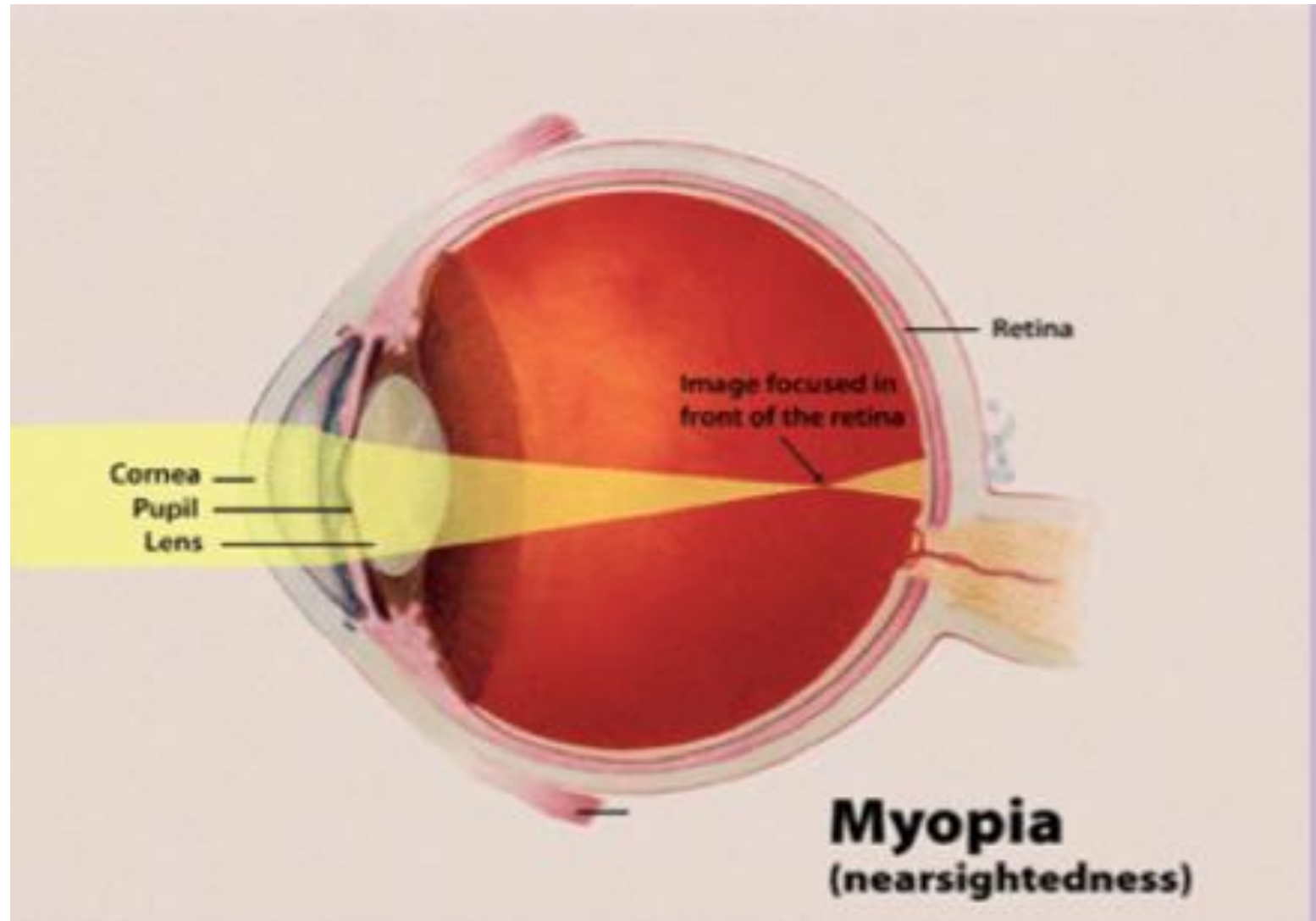


Emmetropia

PERFECT VISION - EMMETROPIA



Myopia

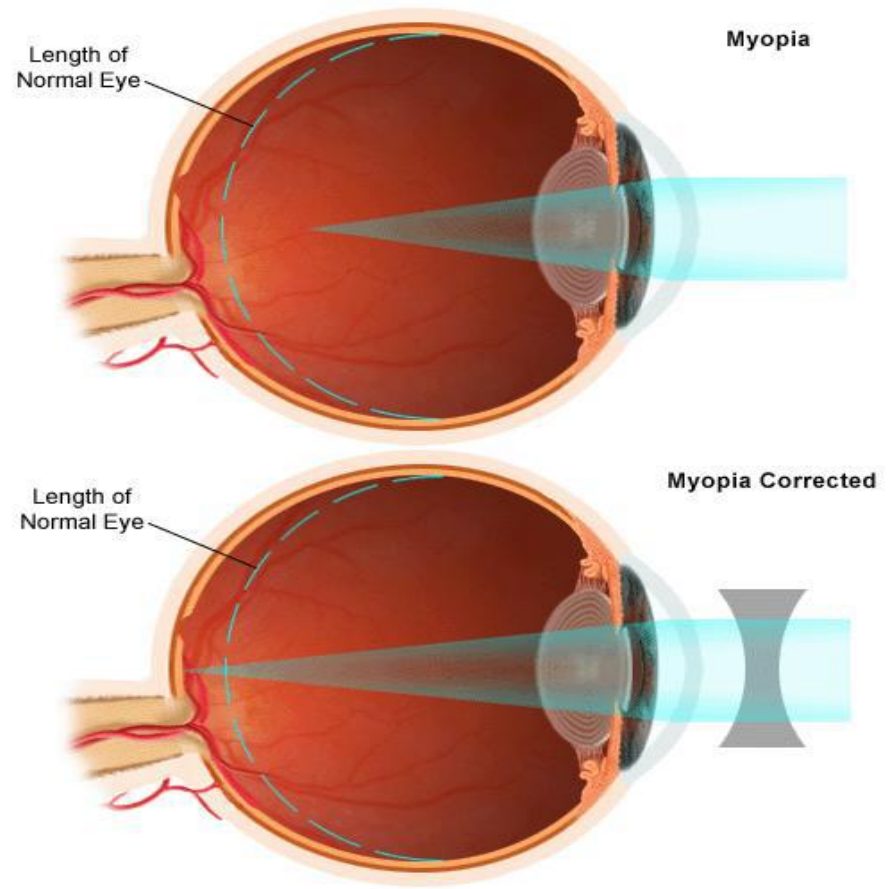


Myopic Vision



Causes of Myopia

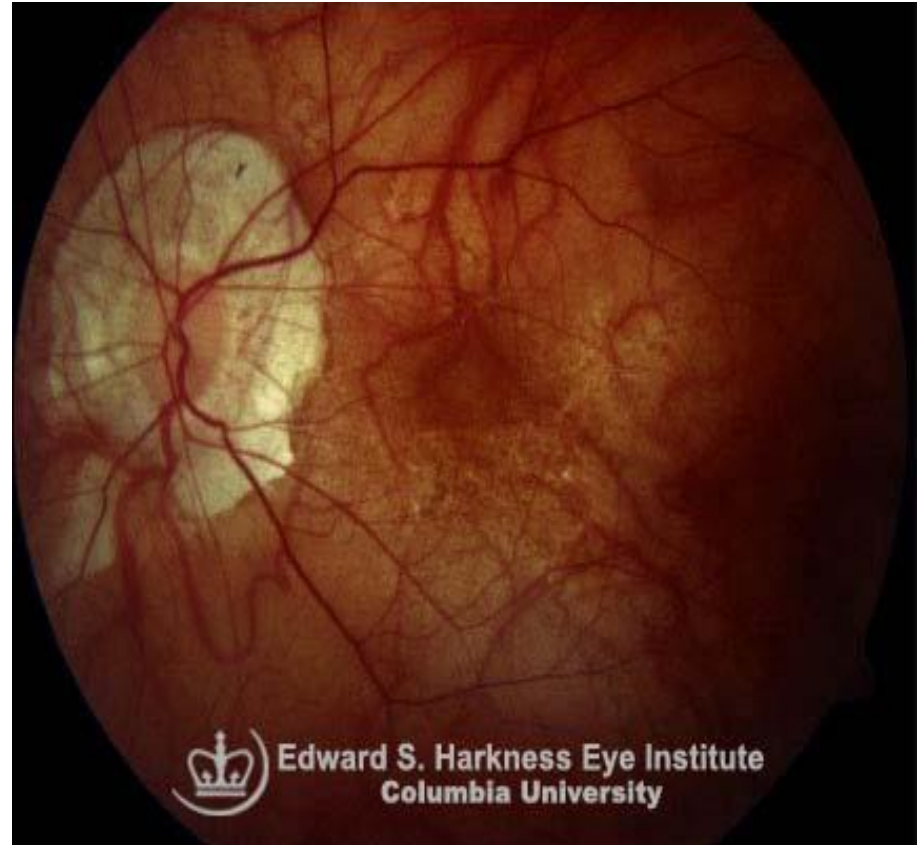
- Increase axial length:
 - congenital glaucoma
 - posterior staphyloma



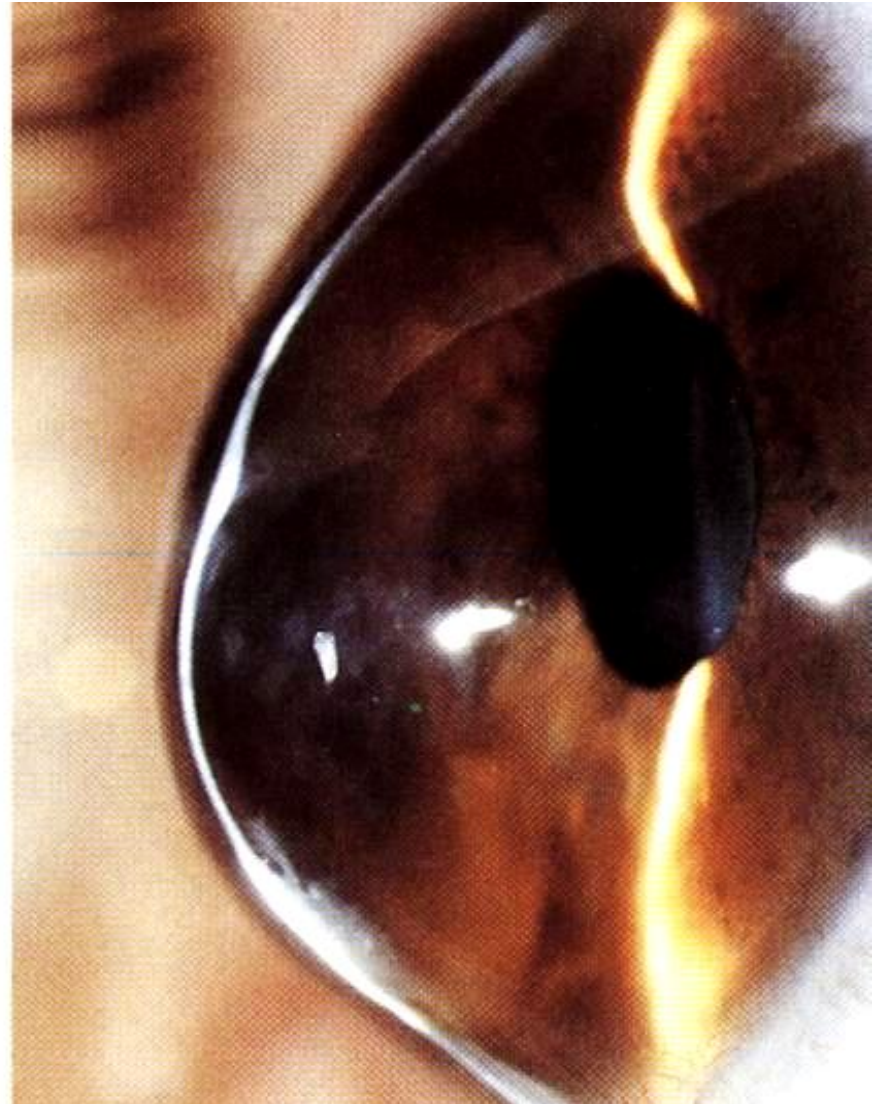
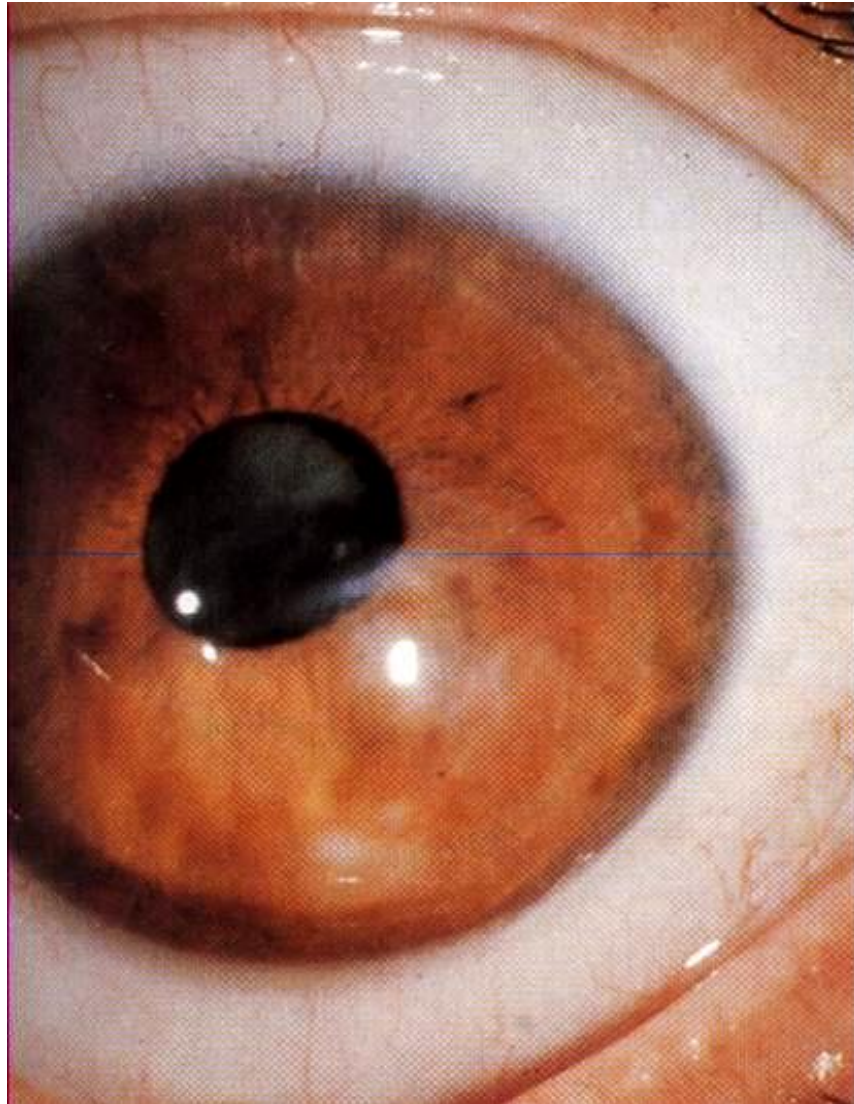
Myopia

Morphologic eye changes:

- Deep anterior chamber
- Atrophy of ciliary muscle
- Vitreous may collapse prematurely → opacification
- **Fundus changes:** loss of pigment in RPE , large disc and white crescent-shaped area on temporal side , RPE atrophy in macular area , posterior staphyloma , retinal degeneration → hole → increase risk of **RD**



Deep Anterior Chamber



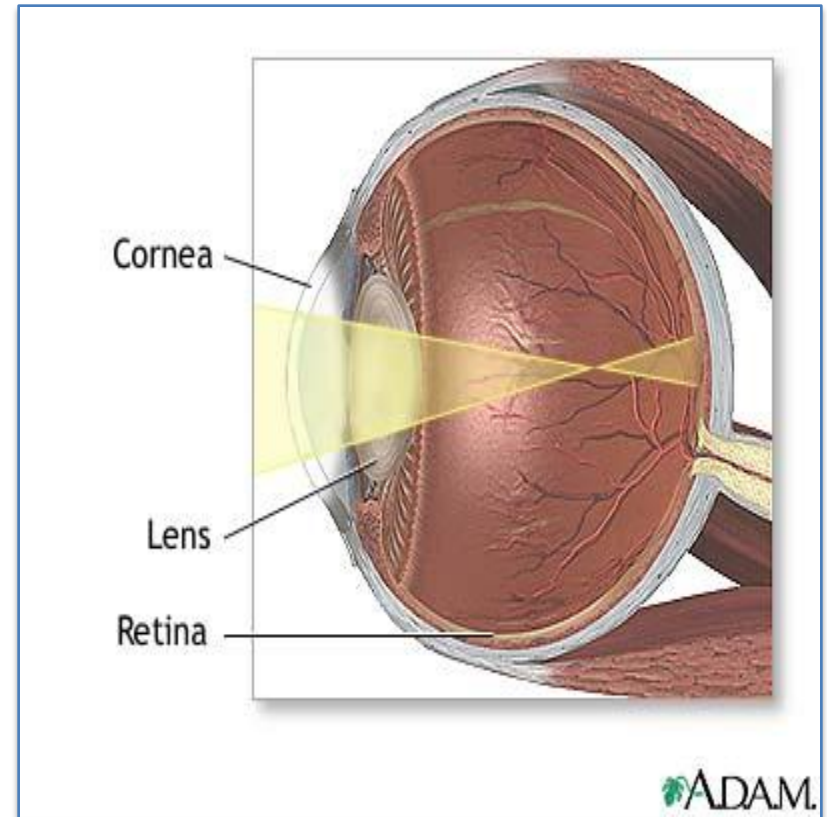
Myopia

- What is the type of refractive error?
 - Myopia
- What type of lens would you use to correct it?
 - A concave lens



Myopia

- Name of this refractive error?
 - Myopia
- How is it corrected?
 - It is corrected by a concave (minus) lens.

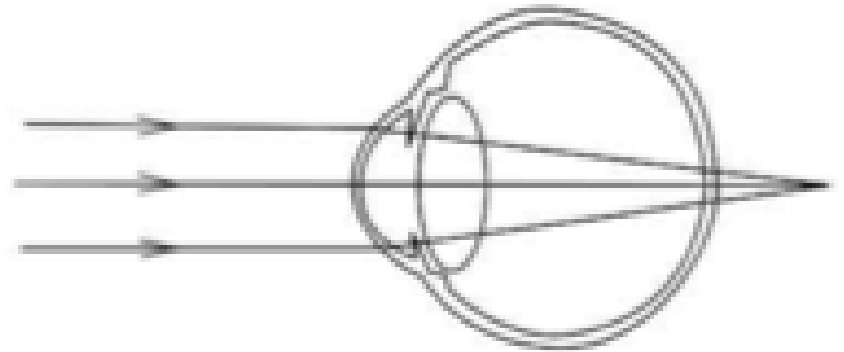


Hyperopic Vision



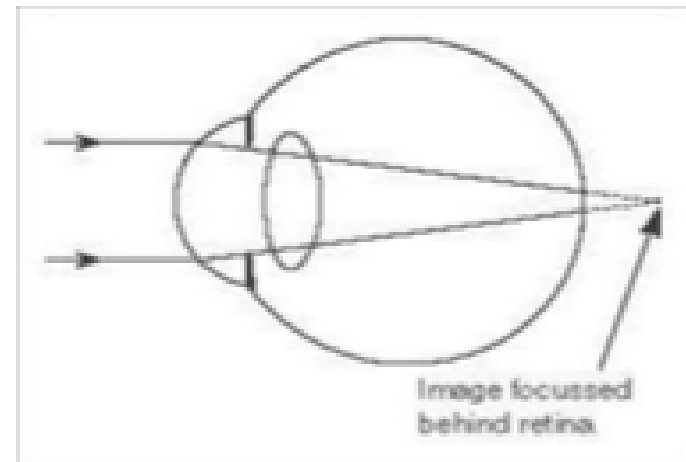
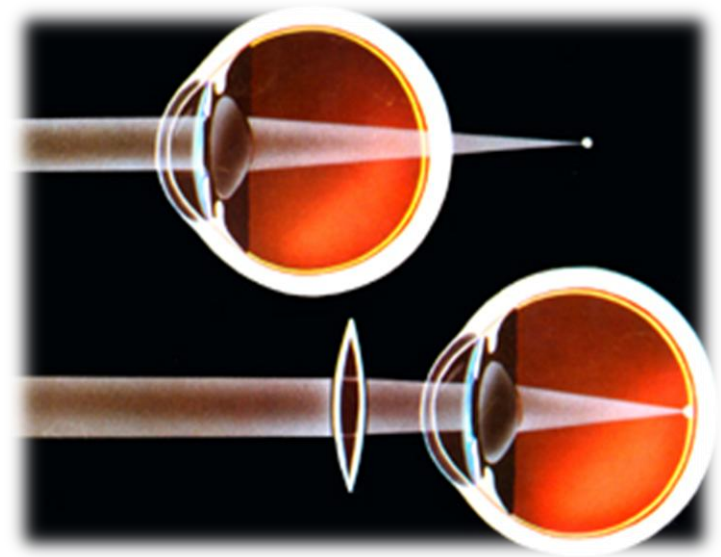
Hyperopia

- What is the Refractive Error?
 - Hyperopia
- If this error was without accommodation, when accommodation occurs, will it increase or decrease the error?
 - Decrease

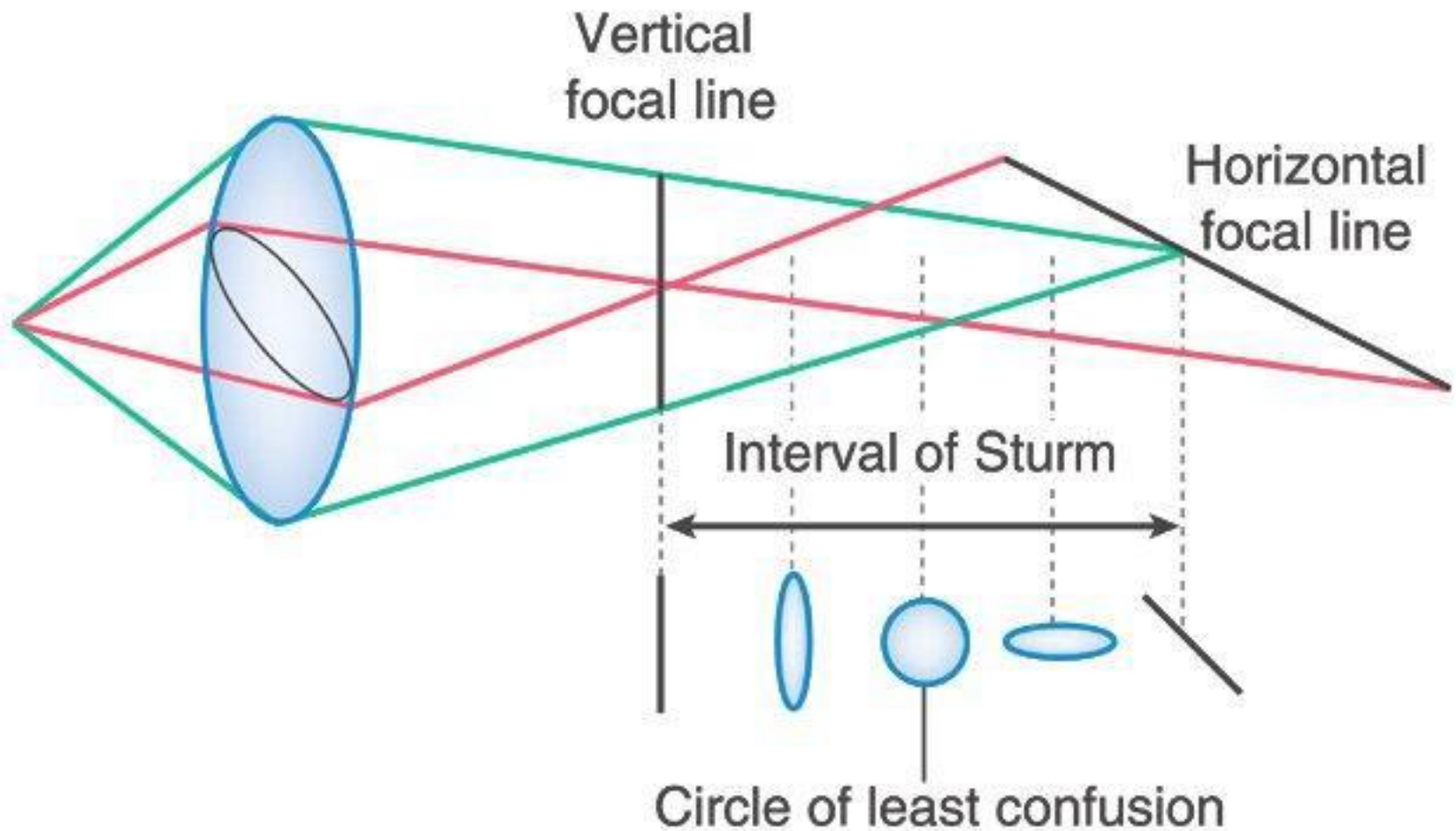


Hyperopia

- What is the refractive error illustrated in the diagram?
 - Hyperopia
- What type of lens could be used to correct it?
 - A Convex lens



Astigmatism

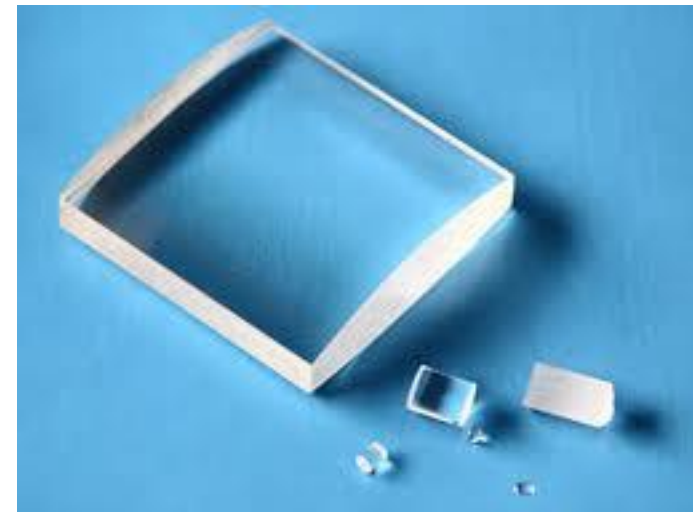


Astigmatism

- What refractive error is this lens used to correct?
 - Astigmatism

According to the original Slide:
“Dr.Otibi said any lens with 2 white lines is cylindrical”

This slide didn't come with an image so I added two from Google based on this statement
I could be wrong
“lens is cylindrical because there were 2 white lines on its frame”



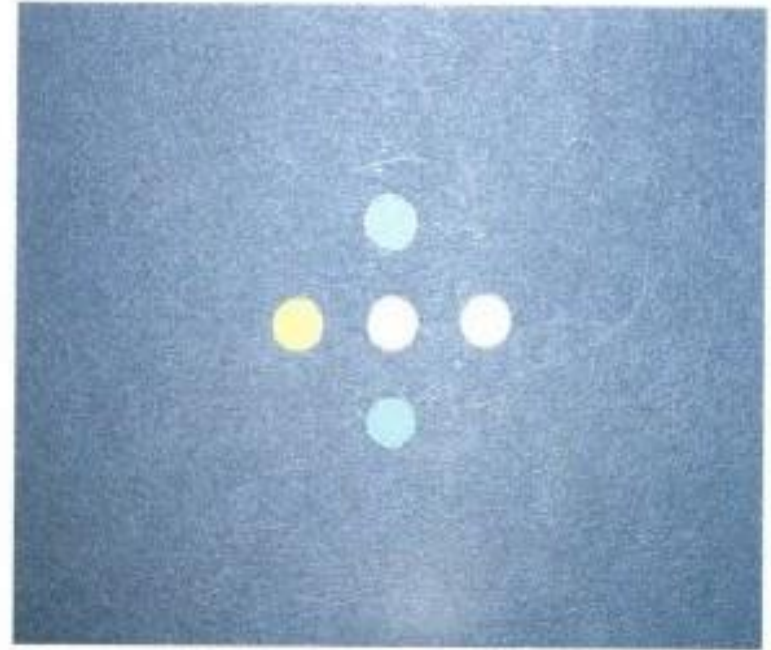
Pinhole

- What is this instrument?
 - Pinhole
- What is it's clinical value?
 - For testing central vision, vision getting better indicates a refractive error.



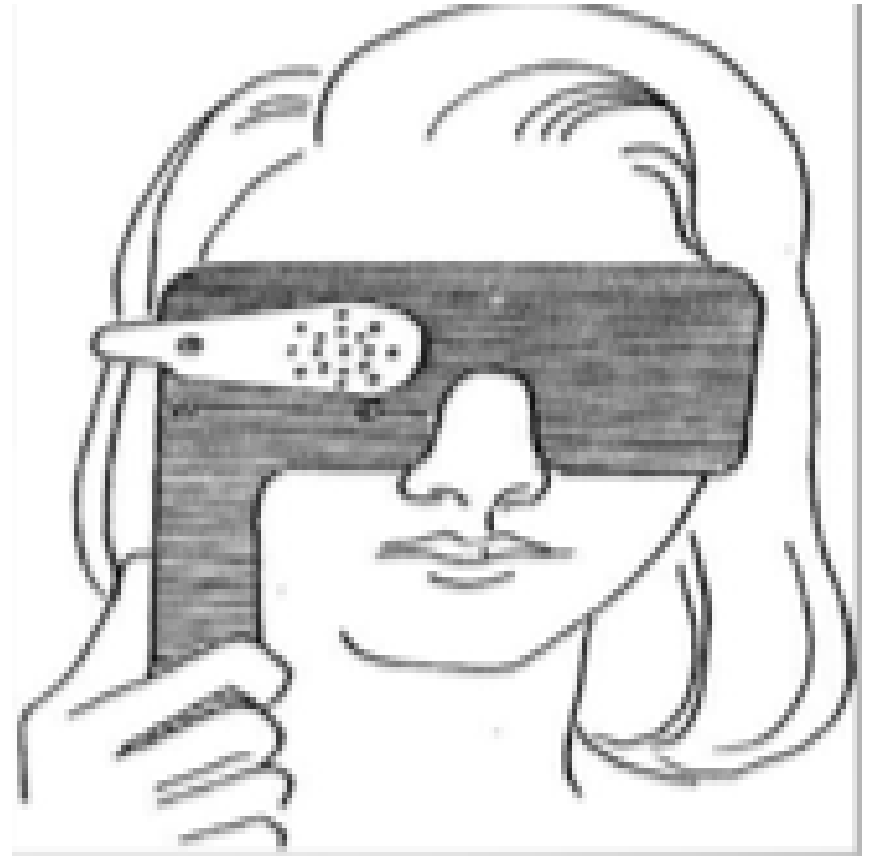
Pinhole

- What is this instrument ?
 - Pinhole
- What is it used for?
 - Central vision testing to re-correct refraction if necessary .



Pinhole

- **Name this device?**
 - A pinhole testing device
- **What is the value of it?**
 - Determines if a problem with acuity is the result of a refractive error (and thus correctable with glasses) or due to another process.
- **Explanation:**
 - In testing distant visual acuity, looking through a pinhole is useful for patient with blurred vision.
 - Vision can be improved if the defective vision is due to a refractive error.
 - Vision cannot be improved if it is due to an organic eye disease.



Pinhole

- This patient can see 100/20, using this tool she become 20/20 so she has:
 - A Refractive error
 - R.D.



I left the original statement and added a picture of “thick glasses” assuming this is what’s meant by the description

They gave us a pic of an old man wearing a huge glasses (a really thick one) I didn’t find it in KANKSKI or in the other exams, I even searched in the internet but I couldn’t find anything ☹ sorry

- **This patient has?**

- Aphakia
- Myopia
- Spherophakia
- Psuedophakia

- **From internet!!** Aphakic spectacle corrections require powers of +8.00 to +15.00diopters.
- Such high powered corrections produce a number of difficulties among those people.

- ☞ Spectacle magnification of about 35%
- ☞ Decreased field of view with ring scotoma
- ☞ Aberrations and swimming of objects in field of view
- ☞ "Popeye" appearance of patients
- ☞ Sensitivity to exact position of the lens
- ☞ **Lens weight and thickness**



LASIK

- Laser Assisted Stromal In-situ Keratomileusis

