

جامعة المستقبل / كلية التقنيات الصحة والطبية
قسم تقنيات البصريات

المرحلة الثانية

المحاضرة السادسة

Department of Optics Techniques

Lecture6

Retinoscopy

Dr. Dhay ali sabur

Retinoscopy

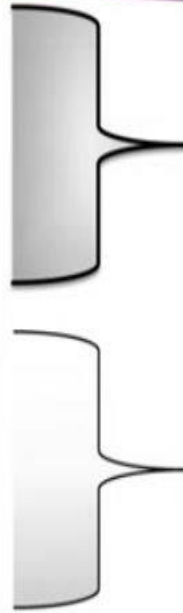
- ▶ When the practitioner shines the light of a retinoscope into an eye, they see the light reflected from the retina.
- ▶ **This reflected light is called the retinoscopic reflex, or 'red reflex';**
- ▶ it looks like a red light inside the pupil. Depending on the person's refractive error,
- ▶ **when the practitioner moves the retinoscope, the red reflex will move in a certain way inside the pupil.**
- ▶ Trial lenses can be used to measure the amount of movement that a red reflex has so that the refractive error can be estimated accurately

Types of Retinoscopy :

- There are two types of retinoscopes:
 - 1 **Streak retinoscopes**
 - 2 **mirror retinoscopes (simple retinoscopes)**

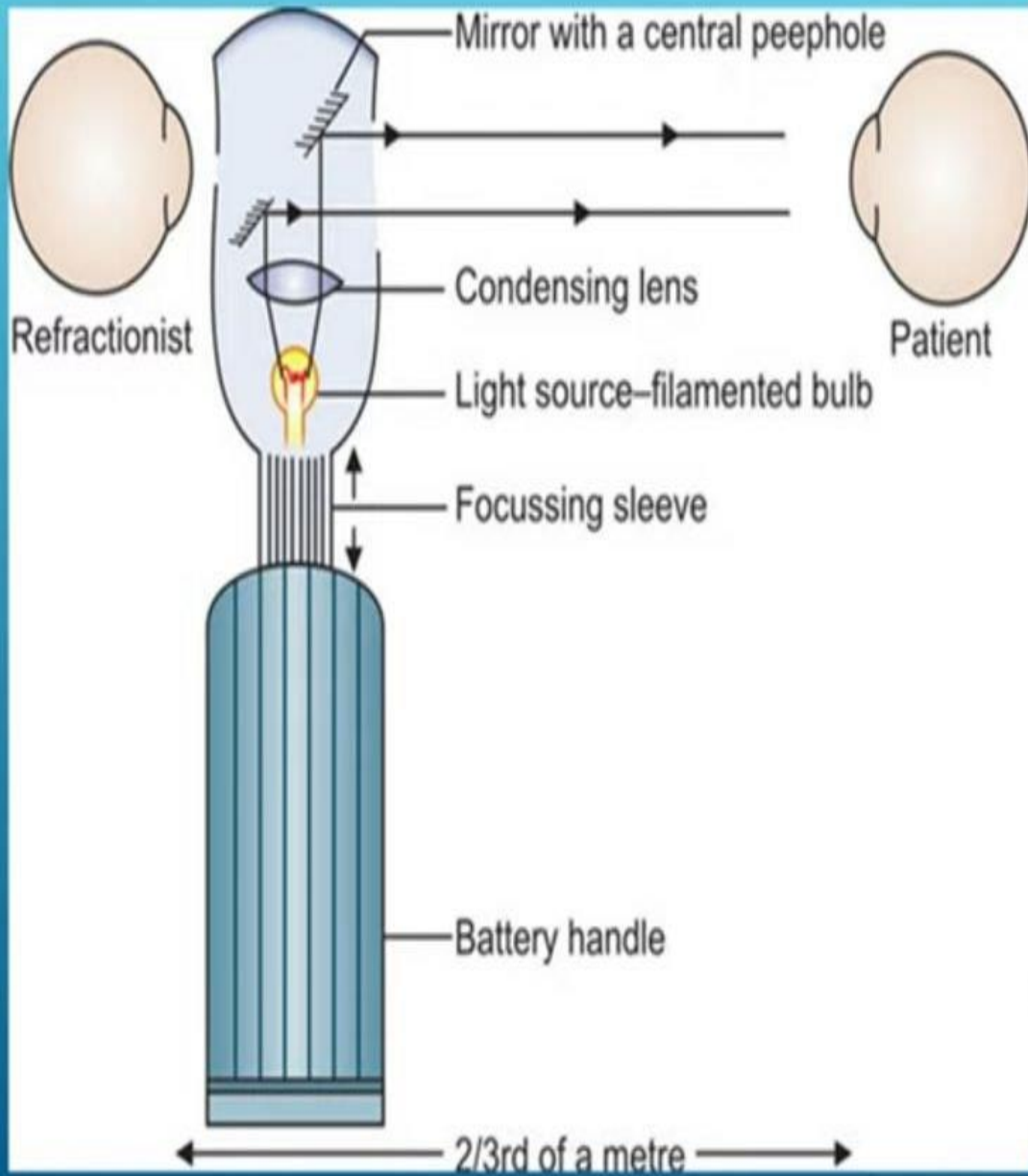
They both measure refractive errors in the eye

1- Streak retinoscopes contain from:



Upper part contain from ;
-Light source
-mirror
-condensing lens
-Focusing sleeve

Lower part contain from the
battery



Retinoscope have many shapes



Working by battery



chargable



ELECTROLYTE

Rules of examination



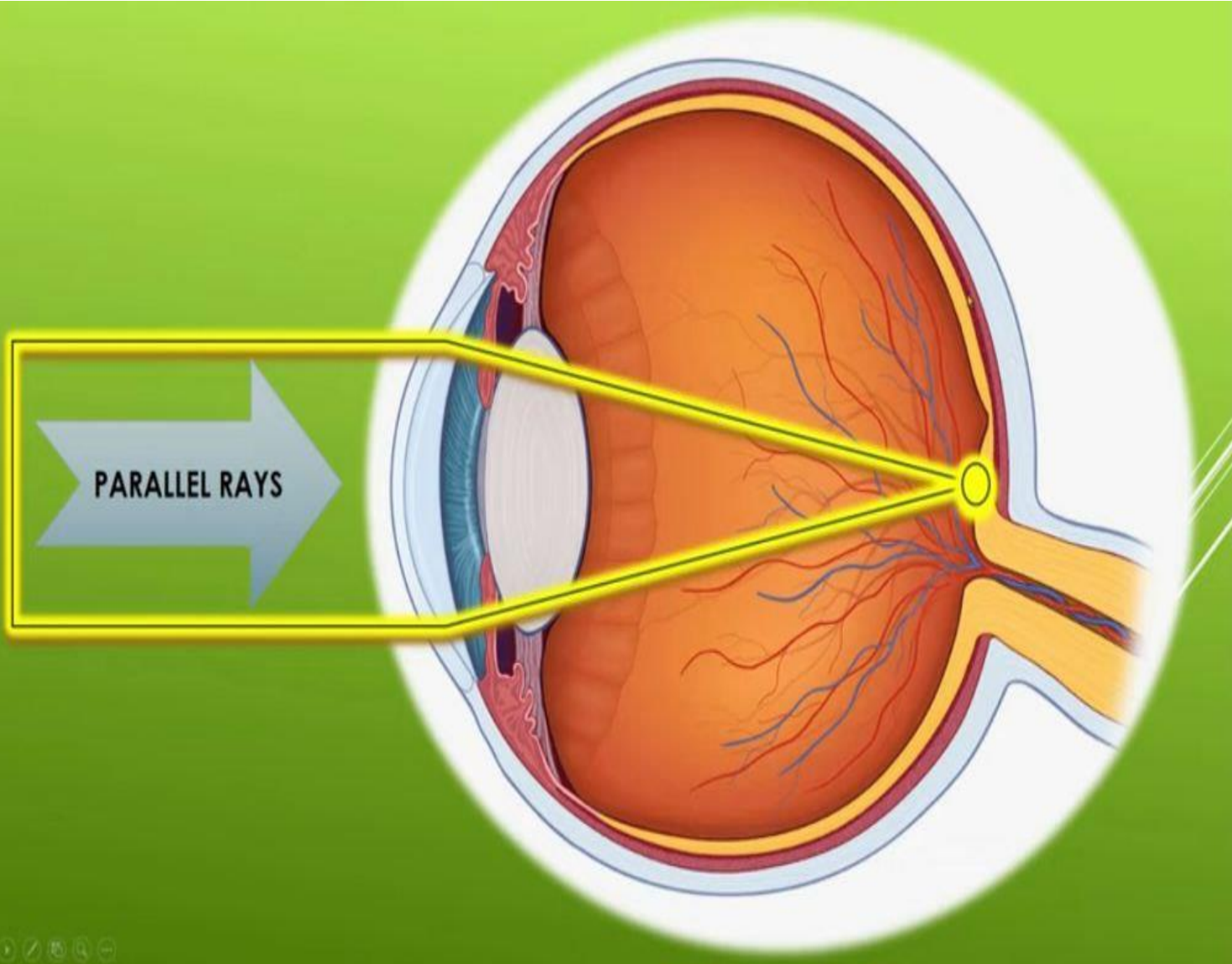
Dark room

The patient looking at the snellens chart

The patient seated and the examiner sit with the distance between them 1m , 3 quarter or half m



1m , 3 quarter or half meter



WORKIN DISTANCE

- Working distance may be 1m or 3 quarter or half m
w.d was 1m → subtract 1 diopter
- 3 quarter m → subtract 1.5 diopter
- half m → subtract 2 diopter

At this distance, the examiner can clearly see the movement of light over the patient's pupil
The examiner can use and change the experimental lenses from the lens box conveniently

If you use a working distance of 67 cm: subtract 1.50D from the lens power that neutralize the red reflex because: $P = 100/f$ in cm

$$= 100/67 = 1.5 \text{ D}$$

Compensating for working distance:

There are two ways to compensate for the retinoscopy working distance when estimating a person's distance refractive error:

Calculation method:

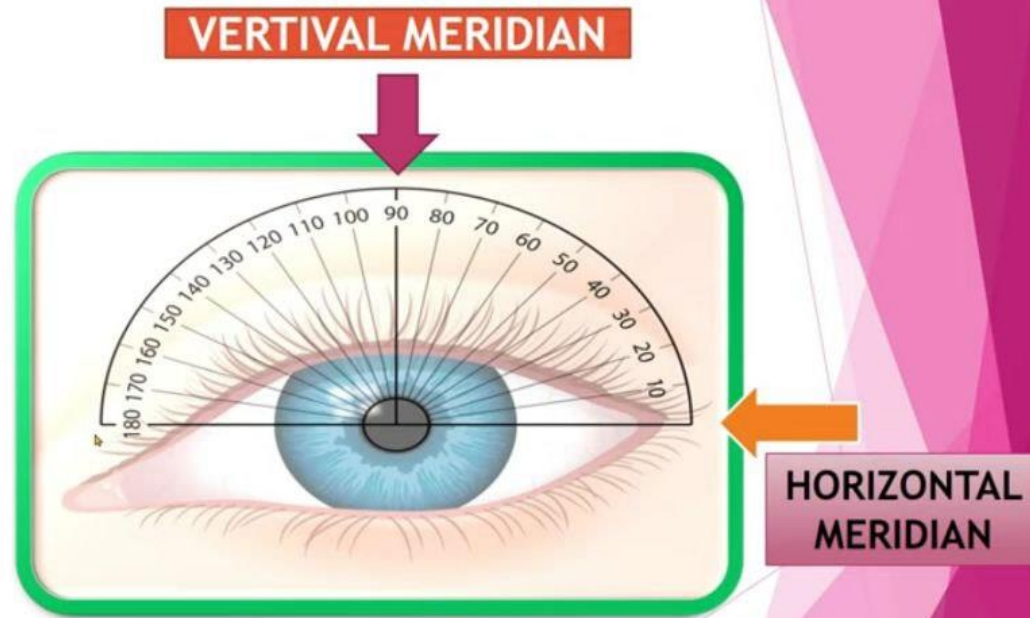
- Find the trial lenses that give neutrality.
- Subtract 1.50 D (or 2.00 D) from the power of these trial lenses (depending on your working distance).
- This is the power of the lens that will correct the person's refractive error (as measured by retinoscopy).

Example 1:

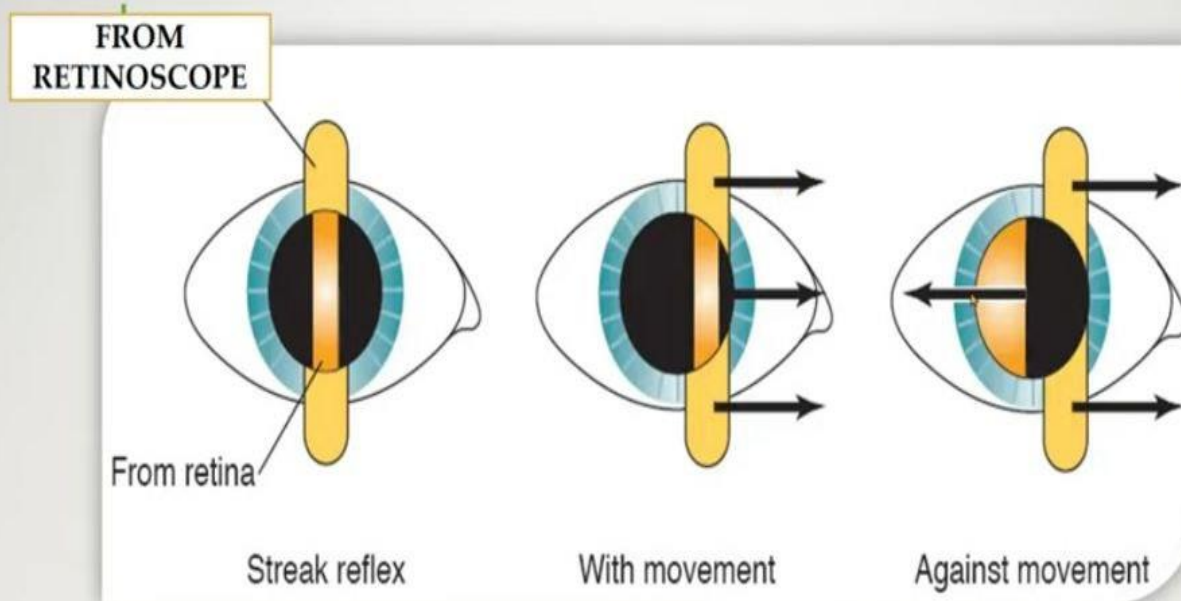
→ A +5.00 D trial lens gives a neutral ret reflex at a working distance of 67 cm

$$\rightarrow +5.00 \text{ D} - 1.50 \text{ D} = +3.50 \text{ D}$$

تقسيم محاور العين



Motion of retinoscope



POSSIBLE CASES

1- AGAINST MOTION

MYOPIA MORE THAN 1
DIOPTER CORRECTED BY
CONCAVE LENSES

2- WITH MOTION

PUTTING +1.00 D.S OCCURE
ONE FROM THIS POSSIBLE
CASES

IF NEUTRAL MEAN
EMMETROPIC EYE

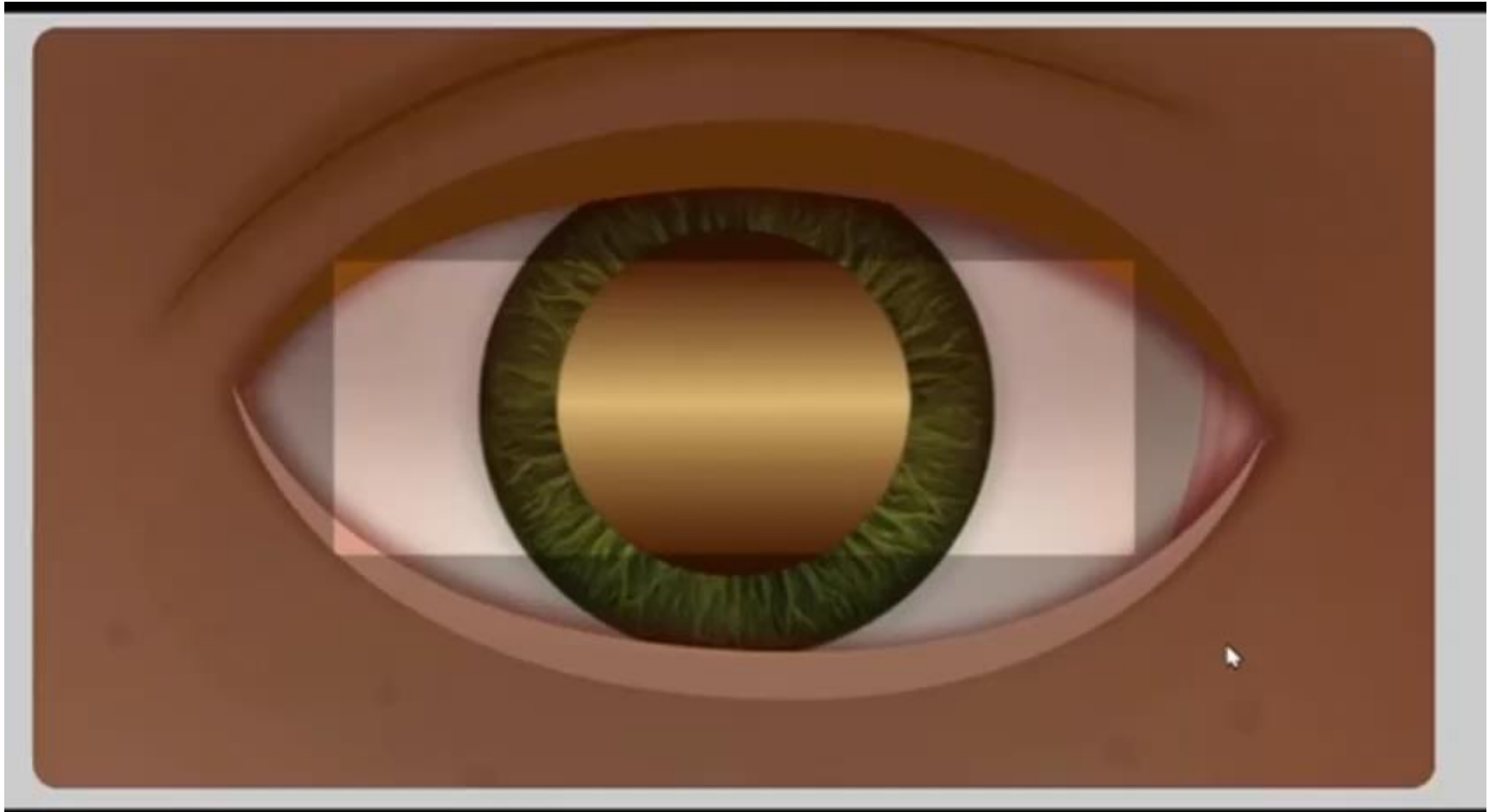
IF BECOME
AGAINST
DECREASE THE
POWER OF LENS
THIS MEANS
MYOPIA LESS
THAN 1 D

IF REMAIN WITH
INCREASE THE
POWER OF
LENSES AND THIS
MEANS
HYPERMETROPIA

3- NEUTRAL

MYOPIA equal 1 DIOPTER

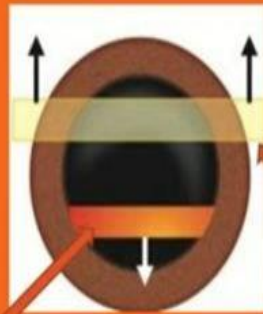
فيديو توضيحي (Against motion)



Against motion

1- AGAINST MOTION

MYOPIA MORE THAN 1 DIOPTER CORRECTED BY CONCAVE LENSES

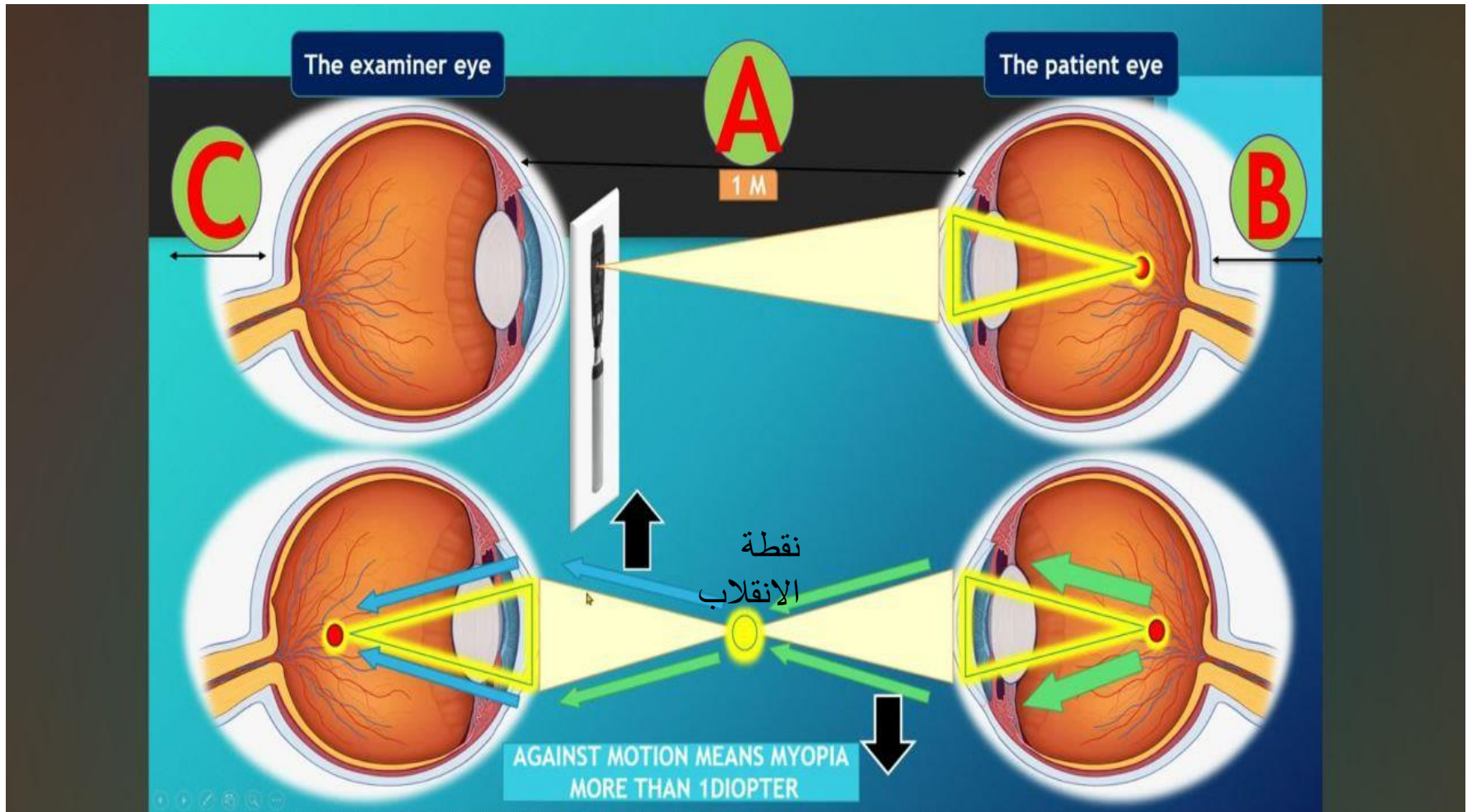


AGAINST MOTION

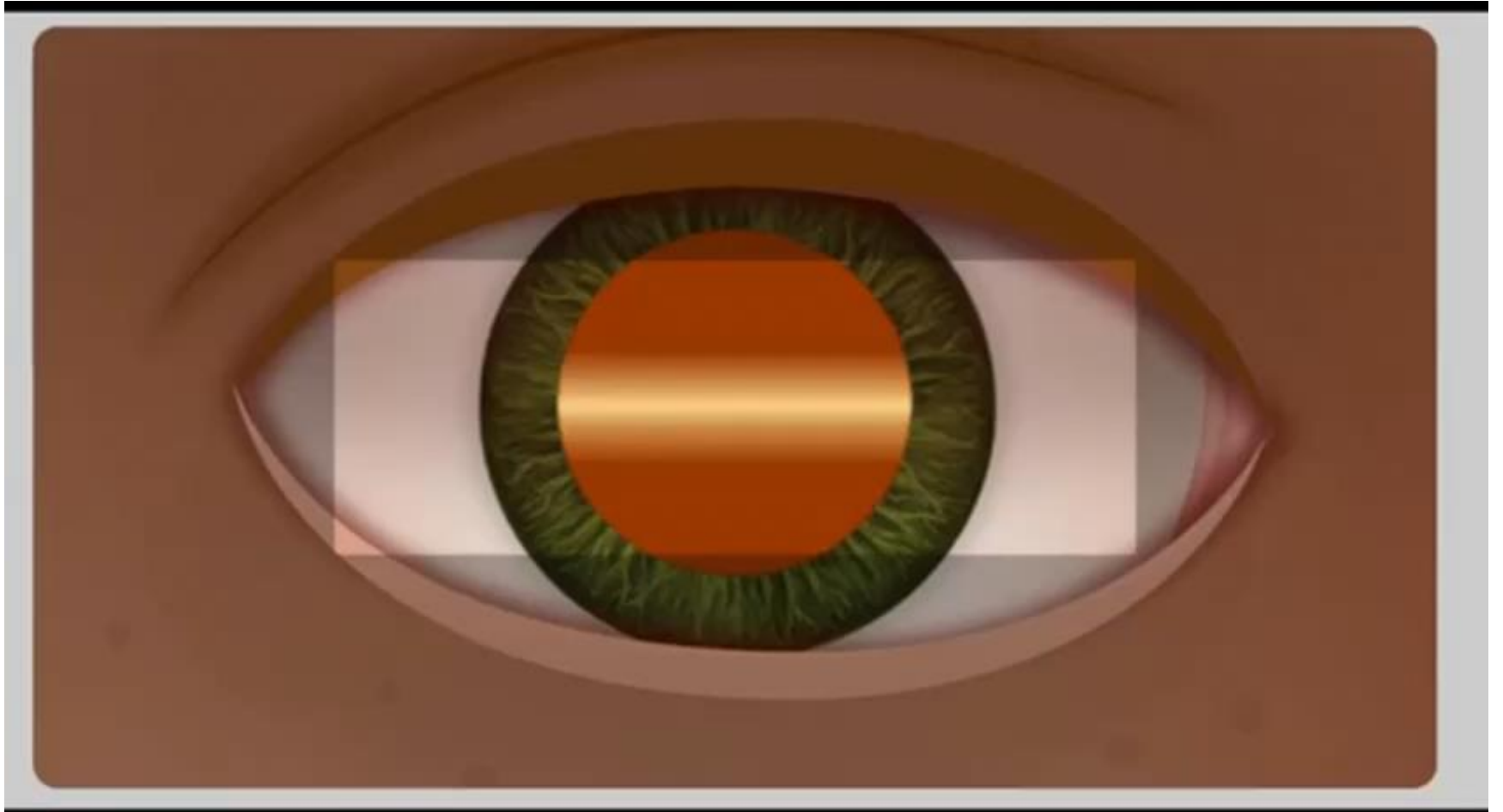
RED REFLEX FROM RETINA

STREAK REFLEX FROM RETINOSCOPE

Against motion



فيديو توضيحي (With motion)



(With motion)

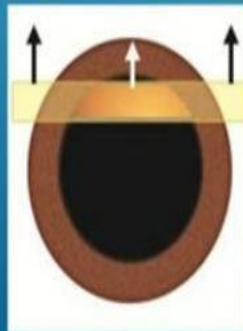
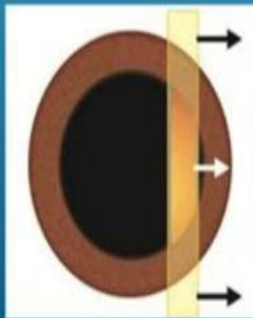
2- WITH MOTION

PUTTING +1.00 D.S OCCURE ONE FROM THIS POSSIBLE CASES

IF NEUTRAL MEAN EMMETROPIC EYE

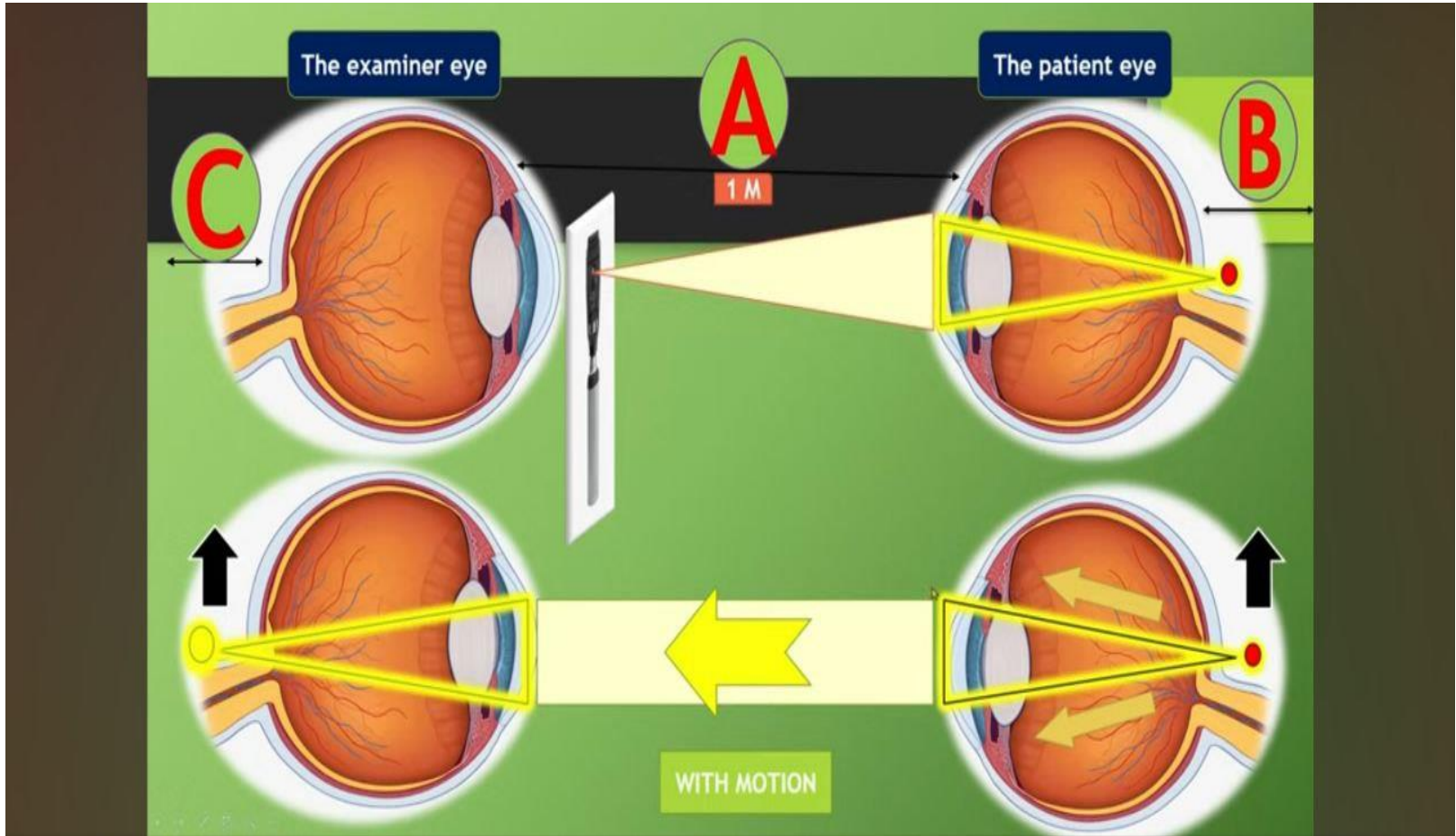
IF BECOME AGAINST DECREASE THE POWER OF LENS THIS MEANS MYOPIA LESS THAN 1 D

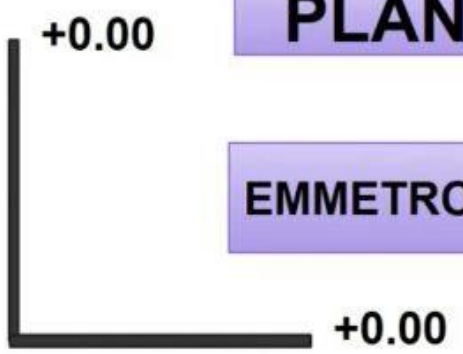
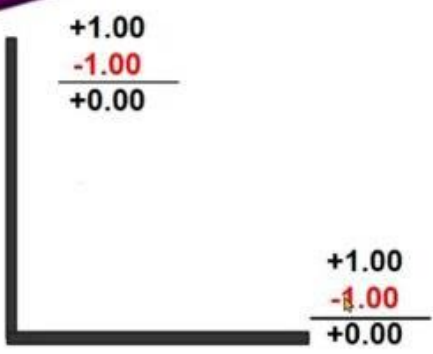
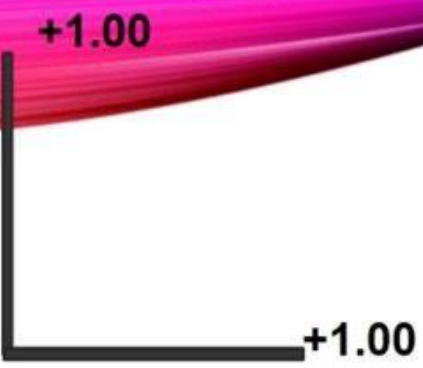
IF REMAIN WITH INCREASE THE POWER OF LENSES AND THIS MEANS HYPERMETROPIA



WITH MOTION

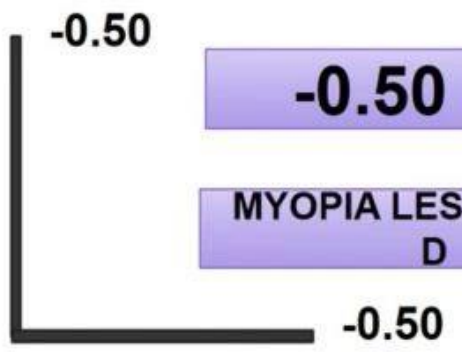
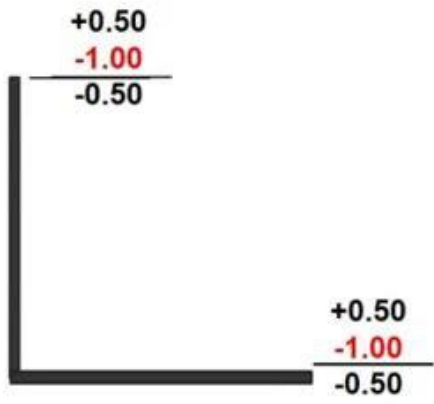
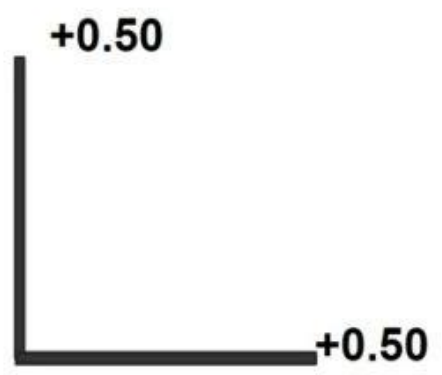
(With motion)





PLANE D.S

EMMETROPIC EYE



-0.50 D.S

**MYOPIA LESS THAN
D**

+2.00



+2.00

+2.00
-1.00
+1.00



+2.00
-1.00
+1.00

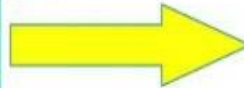
+1.00



+1.00

HYPERMETROPIA
+1.00 D.S

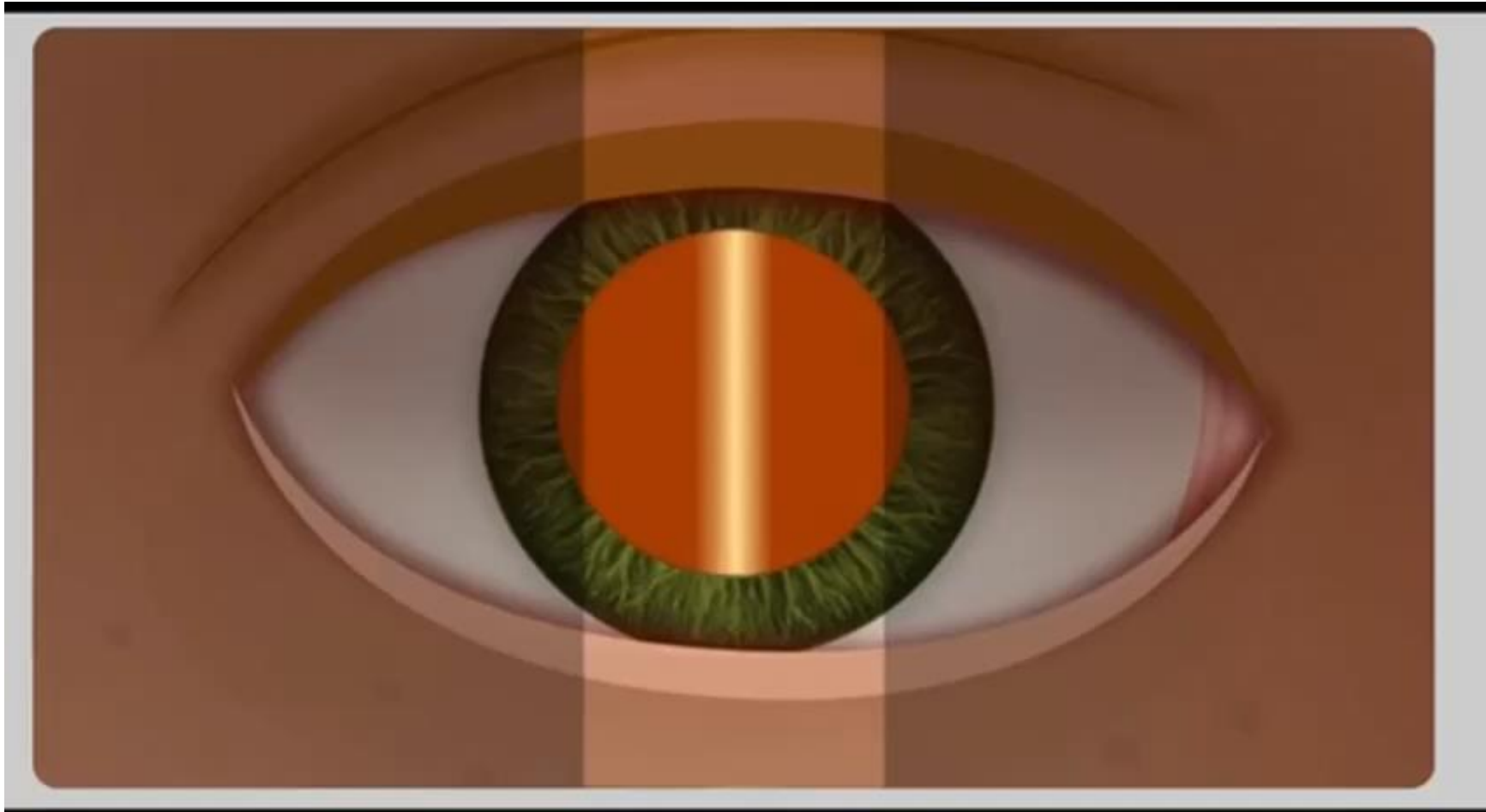
3- NEUTRAL



MYOPIA 1 DIOPTER

VERTICAL AND HORIZONTAL MERIDIANS NEUTRALIZATION





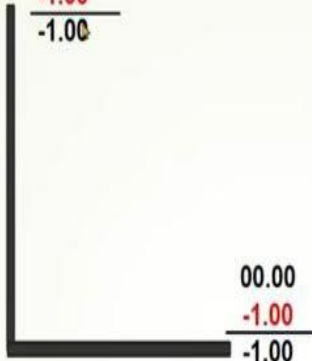
00.00



00.00

-1.00

-1.00

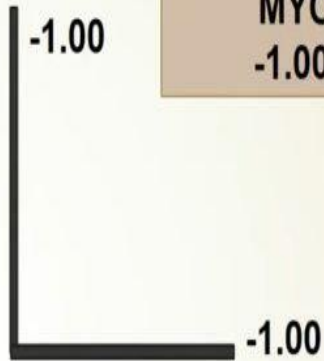


00.00

-1.00

-1.00

-1.00



MYOPIA

-1.00 D.S