

جامعة المستقبل / كلية التقنيات الصحة والطبية

المرحلة الثانية

المحاضرة الخامسة

**Department of Optics Techniques**

**Lecture5**

# **Retinoscopy**

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## **Retinoscopy**

Retinoscopy is an objective refraction device that can estimate a person's refractive error without them needing to say anything to you. Retinoscopy should be done for every person that you examine as it gives you information that you cannot get any other way. It is also extremely useful for people who cannot communicate with you – such as young children or people with mental. Doing retinoscopy for every person that you examine will make your refraction faster, more efficient and more accurate. Light is directed into the patient's eye to illuminate the retina. An image of the illuminated retina is formed at the patient's far point (the reflex stage).

### **Parts of Retinoscope**

- **Power switch**
  - Turns the retinoscope on and off
  - Controls the brightness of the light.
  
- **Small globe (light bulb)**
  - Provides the light
  
- **Electric supply**
  - Batteries (disposable or rechargeable) in the retinoscope handle, or
  - A power cord to connect the retinoscope to the main electricity.
  
- **Mirror**
  - Reflects light from the globe into the person's eye
  
- **Sight hole (viewing hole)**
  - Allows the red reflex to be seen.
  
- **Slide knob or sleeve**

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- Rotates the axis of the retinoscopes light, and
  - Changes the light beam from divergent to convergent light.

If a retinoscope is not working, it is usually because:

- It needs new batteries, or its rechargeable batteries need to be recharged.
- The light globe needs changing – each globe usually lasts for several years.

## **The uses of retinoscopy**

Retinoscopy allows you to:

1. Estimate a person's refractive error before you begin your subjective refraction, it provides a starting point for your refraction.
2. Estimate the refractive errors of people who have problems communicating with you, such as:

- ❖ babies or young children
- ❖ people with a physical or mental disability
- ❖ people who speak a language that you do not understand
- ❖ Deaf or mute people.

Detect some eye diseases (like cataract or corneal opacities) that can affect a person's vision and your refraction examination.

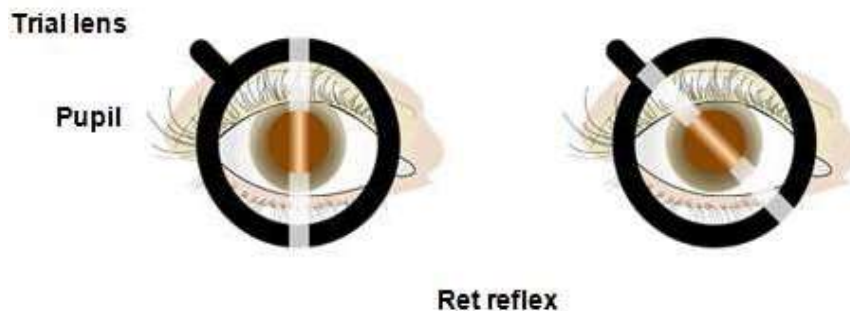
## **Red reflex and type of movement**

When we shine the light of a retinoscope into a person's eye, we can look at the light reflected back from the retina. This reflected light is called the retinoscopic reflex (or simply, the "red reflex"). The red reflex looks like a red light inside the person's pupil.

Depending on the person's refractive error, when we move the retinoscope, the red reflex will move in a particular way inside the pupil which looks like a narrow band of red light that covers part of 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. This movement is called "sweeping". Sweeping is done to "scope" (search) for refractive error in a person's eye.

Sweeping should be a smooth, repetitive movement. It should be done several times back-and-forth, up-and-down and in oblique directions. Sweeping in different directions lets us look for astigmatism and measure the refractive error of the eye in different power meridians of the eye.

### Light from streak on trial lens rim



**Figure (1): View through the sight hole of a streak retinoscop**

When you move the retinoscope, the red reflex also moves. The movements of the red reflex may be "with", "against" or "neutral".

### **With movement**

When the red reflex moves in the same direction as the sweeping motion of the retinoscope streak, it is called "with".



**Figure 5:** A red reflex showing "with" movement.

**Figure (2):** A red reflex showing "With" movement.

### **Against movement**

When the red reflex moves in the opposite direction to the sweeping motion of the retinoscope streak, it is called "against" movement.



**Figure (3):** A red reflex showing "Aganist" movement.