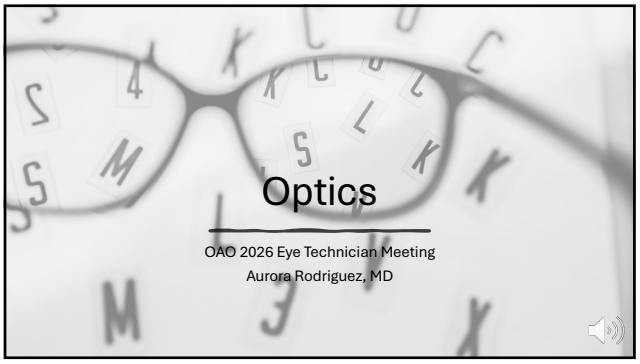


1

No financial Disclosures

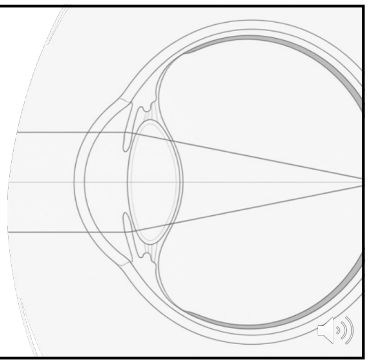
2

OPTICS

Optics is the branch of physics that studies light—how it travels, behaves, and interacts with matter.

Why do we care about optics?

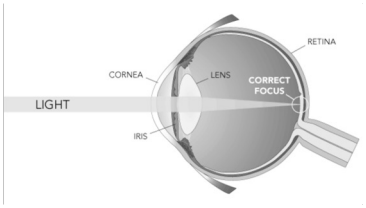
Optics explains how light focuses in the eye, which is essential for understanding vision and correcting refractive errors.



3

Emmetropia

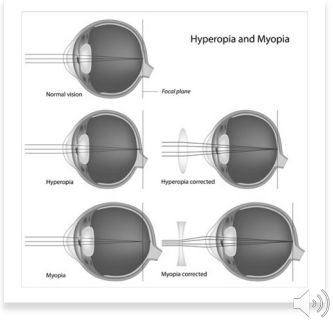
Emmetropia is the state in which the cornea's curvature, the lens's shape, and the spacing between these structures and the retina are perfectly coordinated, allowing light to focus accurately on the retina.



4

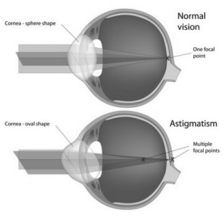
Types of Ametropia or refractive error

When the eye is in a condition where it is unable to bring distant objects into clear focus on the retina.



5

Astigmatism



6

Measurements for Glasses

Pupillary Distance (PD): This measures the distance between the center of the pupils, which is essential for the horizontal placement of lenses to ensure the patient looks through the optical centers.

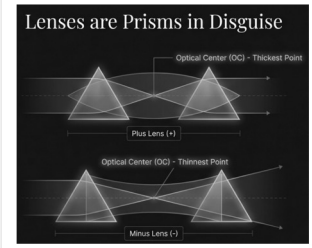
Optical Center (OC): This is the unique point on a lens where light passes through without deviation

7

Clinical implications

• **Clinical Implications:** If the OCs do not align with the patient's pupils, they look through a prismatic area of the lens creating an "induced prism" effect.

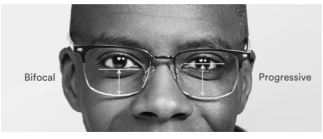
This induces **visual fatigue, headaches, and blurred vision**



8

Segment Height for Multifocals

- **Measurement:** Segment height is measured from the deepest point of the frame to the top of the bifocal line



9

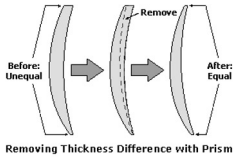
Clinical pearl

- A standard fitting height works well for many people, but it may not meet everyone's individual needs. It's essential to identify the primary activities the glasses will be used for, or where the greatest level of comfort is required.

10

Prism-thinning in progressive lenses

- Strategically grinding the prism into progressive lens blanks to reduce the thickness difference between the upper and lower edges of the lens.



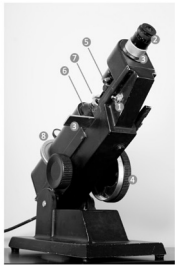
Removing Thickness Difference with Prism

11

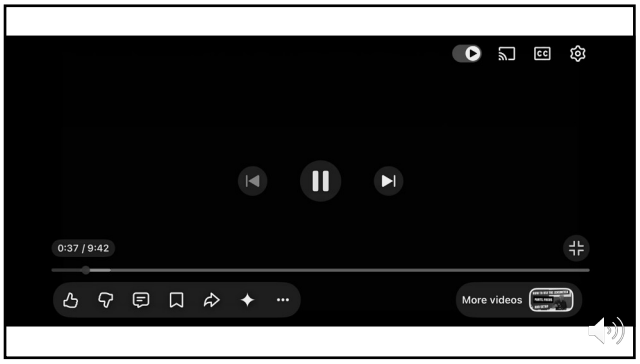
Lensometry

- Lensometry is the fundamental method used to confirm that manufactured eyeglasses accurately correspond to a patient's prescribed correction.

Figure 1. Manual lensometer
1 Power switch
2 Eyepiece
3 Reticle
4 Power wheel
5 Prism compensator
6 Lens stop
7 Lens holder
8 Axis wheel



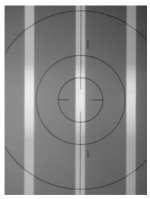
12

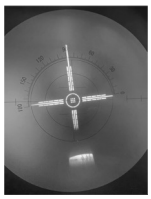


13

Lensometer

- Set power drum to high-negative sphere and then rotate to find the correct power that focuses the thin vertical lines (sphere).
- If working with bifocals, don't forget to bring segment over the lens stop.





14

Thank you!

Any questions: rodriguezau@ohsu.edu

15