

What REALLY Happens in Refraction??

C. Gregory Vickers, OD, FAAO

September 24, 2021 1 hour CE (50 minutes)

Lecture style

Level: Advanced (2 or more years as optician or optometric tech)

Skills: Optics, Refraction

Course Description: In this lecture, Dr. Vickers will explain the ins and outs of refraction. What do we look for? How do we find it? Which is better - 1 or 2?? You'll get the inside track on what happens, what we look for and what our eyes reveal to the trained optometrist.

Objectives:

1. Learn what makes up a glasses/contact lens prescription (overview of optics)
2. Learn what a refractor/phoropter is and the basics of how it works
3. Discover the basics of spherical/cylinder refraction
4. Discover the basics of binocular testing and near visual function testing
5. Learn how contact lens over refractions are done
6. Learn basic documentation of visual acuity and refraction measures

Outline:

1. Optics overview. The basis of what makes up a glasses/contact lens prescription. 10 min
 - a. Plus lenses
 - b. Minus lenses
 - c. Cylinder component
 - i. Plus cylinder
 - ii. Minus cylinder
 - iii. Axis
 - d. Additions for Presbyopia
 - i. Bifocal
 - ii. Trifocal
 - iii. Progressive Lenses
 - e. Contact Lens Prescriptions
 - i. Spherical
 - ii. Toric
 - iii. Bifocals
 - iv. Other components: base curve, diameter
 - v. Soft lenses vs rigid and other types of specialty contact lenses
2. What is a refractor/phoropter? How does it work? Overview of the instrument. 10 min
 - a. Spherical component
 - b. Cylinder component
 - i. Power
 - ii. Axis
 - iii. Jackson Cross Cylinder
 - c. How to occlude an eye
3. Overview of the technique of spherical/cylinder refraction. 10 min

- a. Begin with the patient's habitual prescription, the autorefractor data or the retinoscopy data
 - b. Acuity target to use
 - c. Controlling for accommodation
 - d. Finding the spherical component
 - e. Refining the cylinder component
 - i. Power
 - ii. Axis
 - f. Myopia—how to make sure the patient is not overminused
4. Testing binocularity and near visual function. 10 min
 - a. Presbyopia
 - i. What distance to set the near card
 - ii. Which target
 - iii. Plus build up
 - iv. Negative Relative Accommodation/Positive Relative Accommodation
 - b. Binocular Testing
 - i. Phoria
 1. Distance
 2. Near
 - ii. Vergences
 1. Base Out
 2. Base In
 3. Norms for distance and near
 5. Contact lens over refractions. 5 min
 - a. Spherical only
 - b. Spherical and Cylinder
 6. Proper use of digital acuity chart and documentation. 5 min
 - a. How to use acuity chart
 - b. Documenting visual acuity findings
 - c. Documenting refraction findings
 - i. Refraction for glasses
 - ii. Over refraction with contact lenses

What REALLY Happens in Refraction?? A Workshop

C. Gregory Vickers, OD, FAAO

9/24/21 1 hour CE Workshop style

Level: Advanced (2 or more years as optician or optometric tech)

PREREQUISITE: What Really Happens in Refraction Lecture given just prior to the workshop Skills: Optics, Refraction

Dr. Vickers will provide a hands on workshop to let us look through the other side of the phoropter. What do you need to see and how does it work? This hands on experience will bring understanding refraction to a new level. Due to equipment availability the workshop will be limited in size.

Objectives:

1. Hands on experience with a refractor/phoropter to learn the basics of how it works
2. Hands on experience with spherical/cylinder refraction
3. Hands on experience with binocular testing and near visual function testing
4. Learn documentation of visual acuity and refraction measures

Outline:

Hands on with the instrument. One person refracting and one acting as the patient with rotations.

1. Hands on review of the instrument
 - a. Spherical component
 - b. Cylinder component
 - i. Power
 - ii. Axis
 - iii. Jackson Cross Cylinder
 - c. How to occlude an eye
2. Hands on technique of spherical/cylinder refraction
 - a. Set up the target
 - b. Find the spherical component
 - c. Refine the cylinder component
 - i. Power
 - ii. Axis
 - d. Myopia—how to make sure the patient is not overminused
3. Testing binocularity and near visual function
 - a. Presbyopia
 - i. Set the near card with correct target
 - ii. Plus build up
 - iii. Negative Relative Accommodation/Positive Relative Accommodation
 - b. Binocular Testing
 - i. Distance
 1. Phoria
 2. Base In and Base Out Vergences
 - ii. Near
 1. Phoria
 2. Base In and Base Out Vergences
4. Hands on use of digital acuity chart and documentation