


On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Conference Advisory Board considers content and speakers for future meetings to provide you with the best education possible.



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Disclaimers


Paige Shoven has received honorarium from EssilorLuxottica and Neurolens.

All relevant relationships have been mitigated.

I work for EssilorLuxottica

I previously worked for Neurolens

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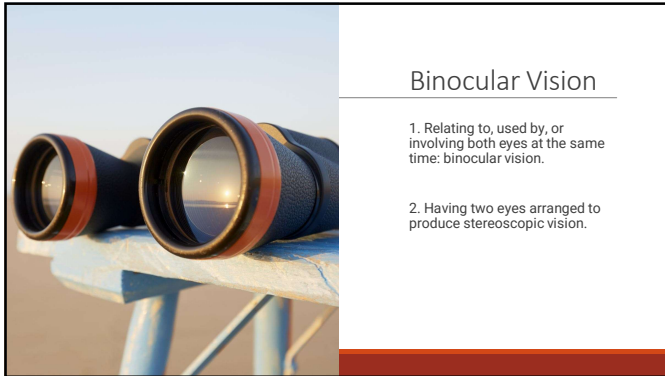


Two Eyes and One Brain

What could possibly go wrong?

PAIGE SHOVEN M.ED, ABOC

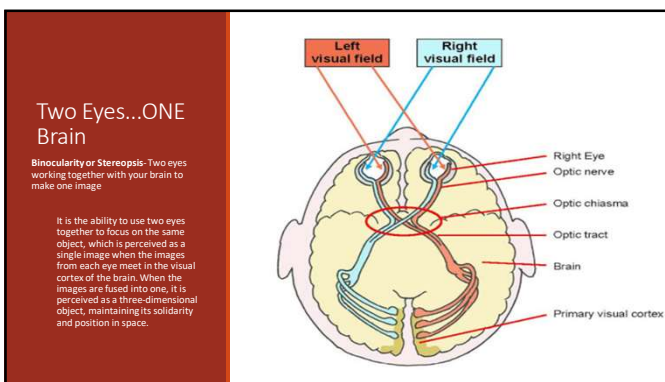
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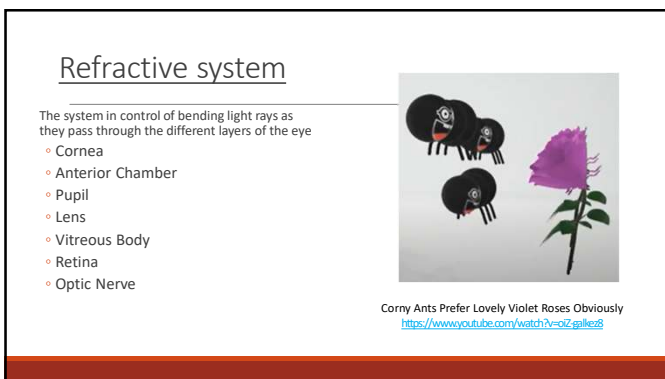
Binocular Vision

1. Relating to, used by, or involving both eyes at the same time: binocular vision.
2. Having two eyes arranged to produce stereoscopic vision.

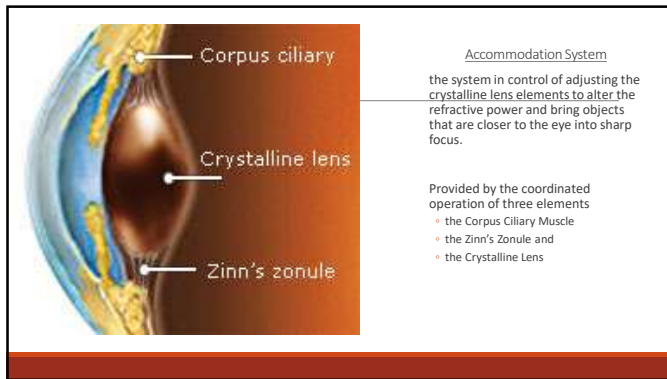
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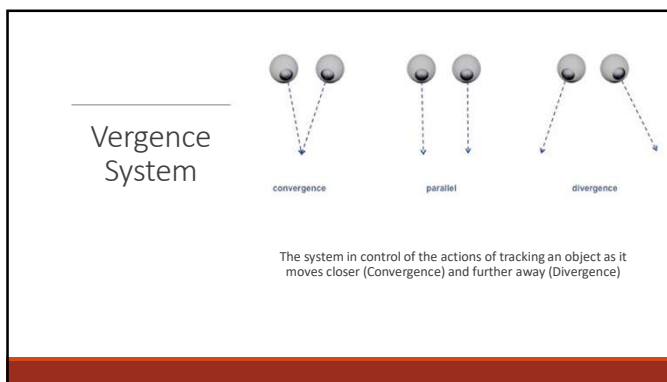
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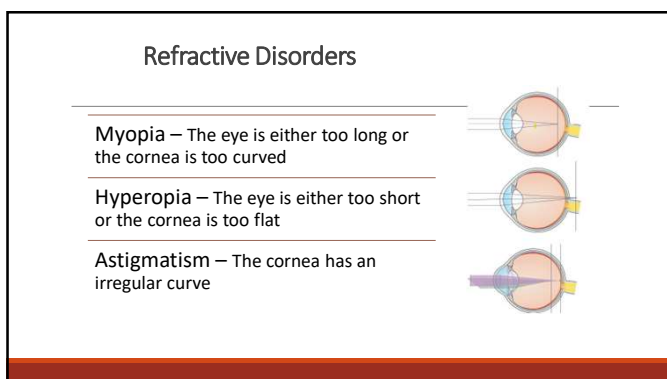
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Symptoms

- Difficulty seeing
- Vision Blurriness
- Eye Strain
- Burning or aching eyes
- Headaches
- Difficulty with Night Vision
- Squinting

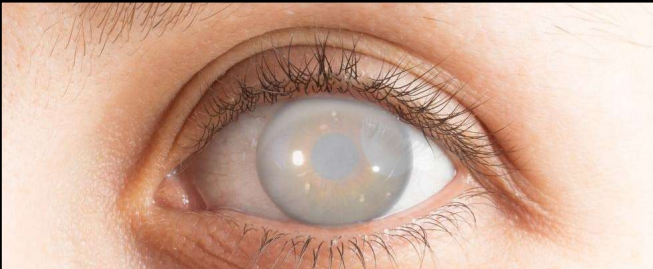
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Treatment plans

- Glasses
 - Single Vision
 - Computer
 - Progressive (other bifocal designs)
- Contact Lenses
 - Soft
 - Hard
 - Scleral
 - Ortho- K
- Surgery
 - Lasik
 - PRK

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Cataracts – the clouding or opacity of the normally clear lens that may develop as a result of aging, metabolic disorders, trauma, or heredity.

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Treatment – Surgery

More options today then ever before!

Small Incision – Sound waves break up the lens and uses a vacuum to clean before setting the new lens into place
 Extracapsular – Larger incision, but can remove the lens in one piece
 Laser Assisted – helps correct astigmatism
 Fixed- Focus Monofocal – correct distance in both eyes or distance in one and near in the other
 Accommodating Focus Monofocal – allows you to focus at different distances, like a youthful eye
 Multifocal – like a multifocal contact lens
 Toric – helps to correct astigmatism issues

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Age Related Macular Degeneration (AMD) a problem that occurs when the macula, a part of the retina, is damaged

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Treatment – There is no cure

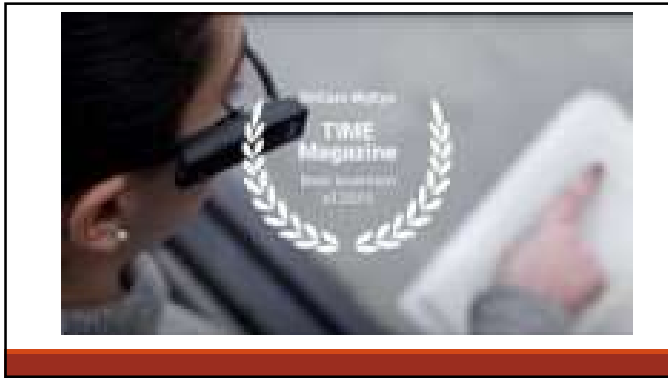
Damage can not be reversed

To slow the progression doctors will prescribe supplements and vitamins
 Anti -VEGF Drugs injected into the eye
 Photodynamic therapy (PDT) using injections and laser treatments
 New wearable technologies are available
 ORCAM

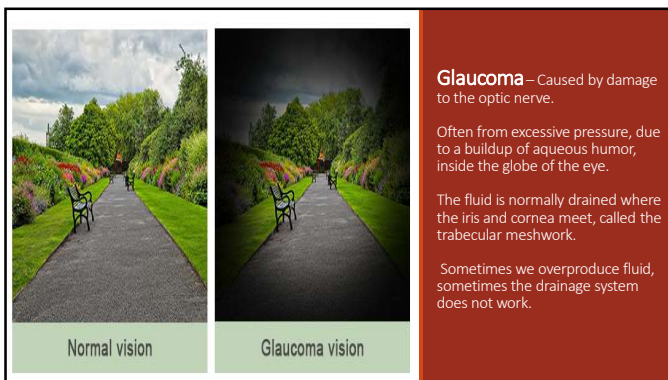


New Feature
"Hey OrCam"
 New OrCam MyCams features – text reading, facial recognition, product identification, and more – can be activated with voice commands. Simply speak "Hey OrCam," followed by the voice command for complete hands-free usage of the device.

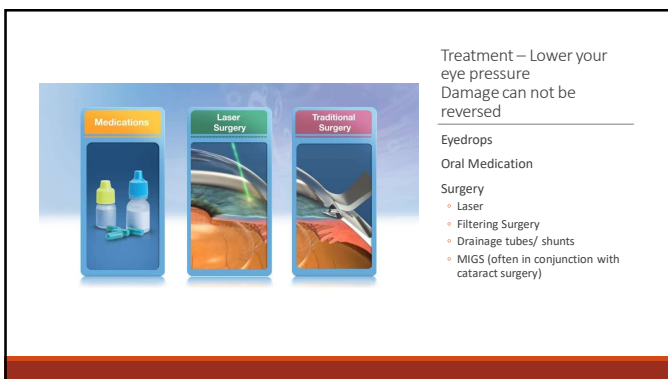
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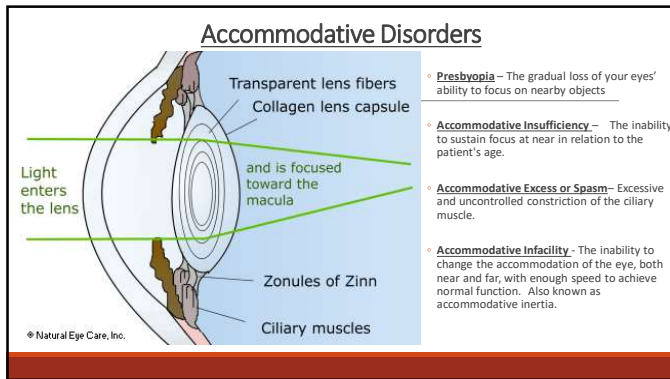
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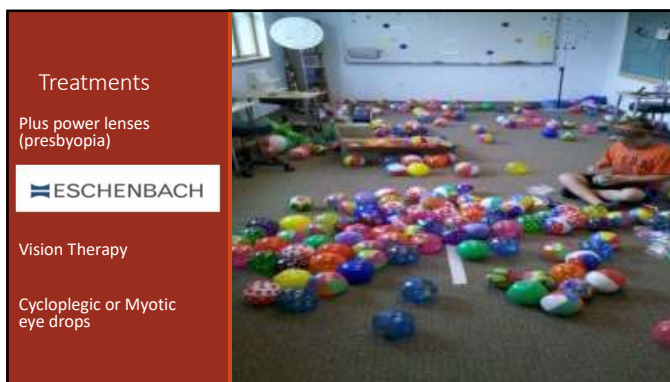
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Orthoptic Vision Therapist (covid.org)

Evaluating and treating patient with disorders of the visual system with an emphasis on binocular vision and eye movements

COVD COLLEGE OF OPTOMETRISTS IN VISION DEVELOPMENT
PREVENTION • ENHANCEMENT • REHABILITATION

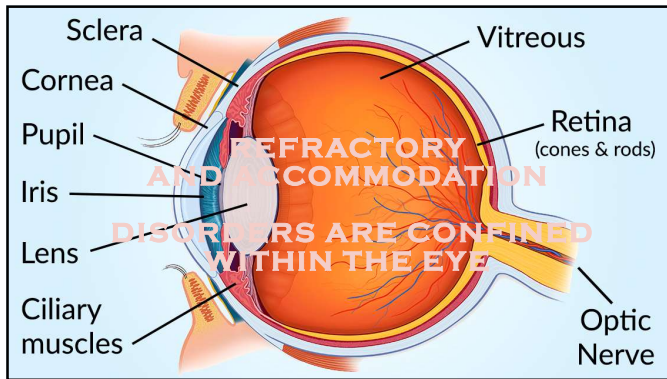
Vision therapists employed by Fellows are eligible to become Board Certified in vision development, vision therapy, and vision rehabilitation as Certified Optometric Vision Therapists (COVTs).

To be eligible for application to the COVT process, you must have experience working in a vision therapy office setting for a minimum of 2,000 hours. (about 1 year at 40 hrs/ week)

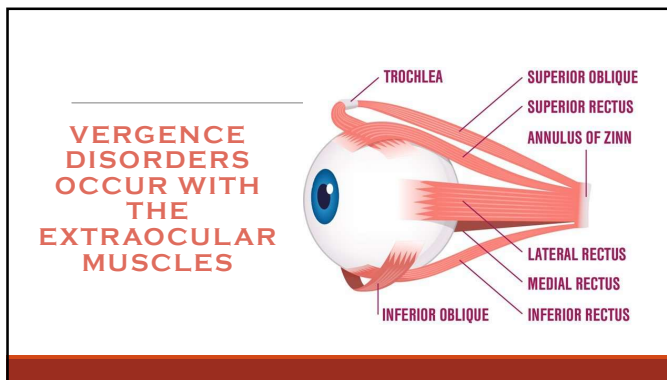
The process involves:
submitting responses to a series of Guided Study Open Book Questions on various clinical topics and successfully completing a multiple-choice written examination and oral interview.

Once you have applied for certification as an optometric vision therapist, you have up to four years to complete the certification process.

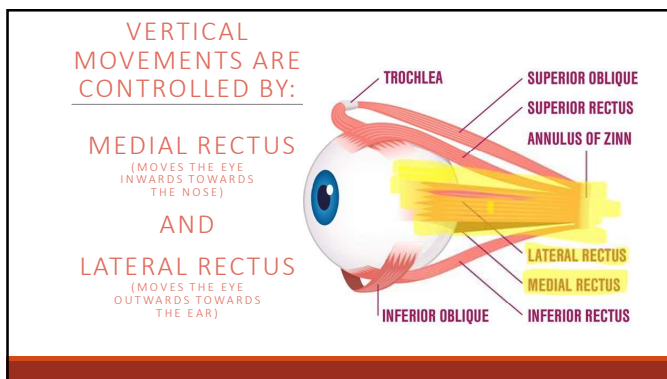
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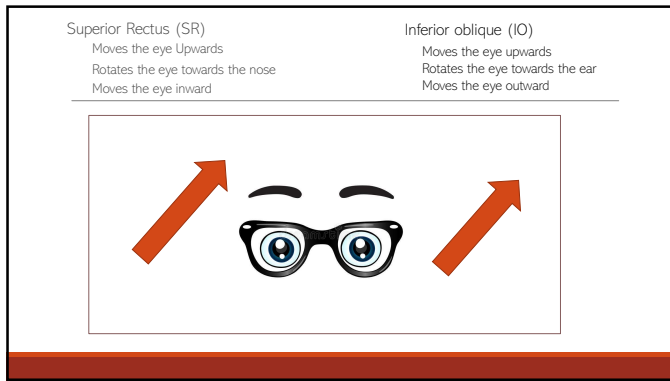
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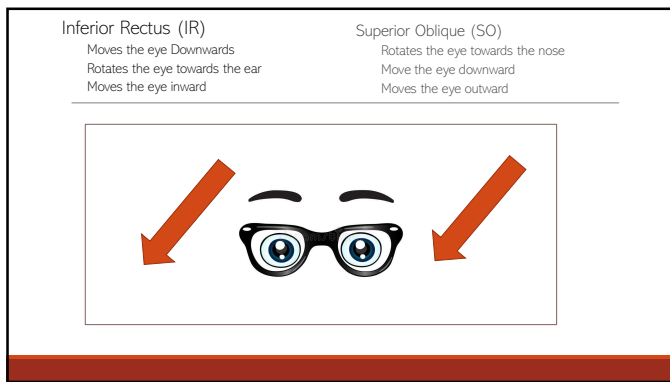
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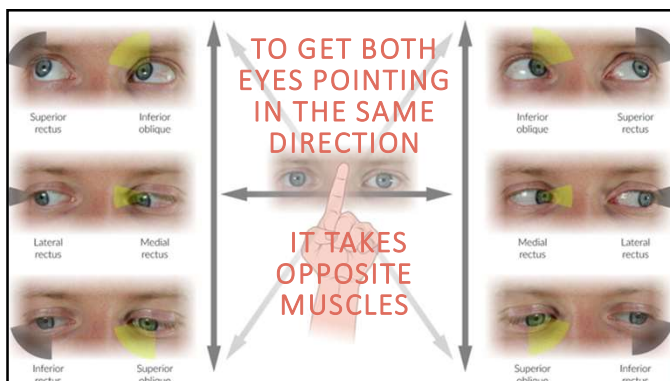
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Vergence Disorders

- Amblyopia
- Strabismus
- Exophoria
- Esophoria
- Convergence Insufficiency (CI)
- Convergence Excess (CE)
- Divergence Insufficiency (DI)
- Divergence Excess (DE)
- Vertical Heterophoria
- Visual Vestibular Integration

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Amblyopia (Lazy Eye)

A disorder of sight in which the brain fails to process inputs from one eye and over time favors the other eye.

It results in decreased vision in an eye that otherwise typically appears normal.

- A patient's visual acuity can be worse in one eye.

In extreme cases, the brain will **suppress**, or turn off, the vision of the amblyopic eye.

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Strabismus (Crossed Eye)

An Extreme misalignment of the eyes



Hypertropia: An ocular misalignment that occurs when one eye looks like it is higher than the other or looking above the other.



Hypotropia: An ocular misalignment that occurs when one eye looks like it is lower than the other or looking below the other.



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Strabismus (Crossed Eye)

An Extreme misalignment of the eyes



Exotropia: An ocular misalignment that occurs when one or both eyes looks like it is turning out towards the patient's ear



Esotropia: An ocular misalignment that occurs when one eye or both eyes looks like it is turning in toward the patient's nose

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The Basics: Standard Prism helps these patients

If eyes have the same amount of phoria or misalignment at all distances



**Convergence
ESOPHORIC (ESO)**
Eyes naturally turn in,
Use BASE OUT to correct

11% of Patients are Esophoric



**Parallel
ORTHOPHORIC (ORTHO)**
Eyes naturally align
where they should

2% of Patients are Orthophoric



**Divergence
EXOPHORIC (EXO)**
Eyes naturally turn out,
Use BASE IN to correct

87% of Patients are Exophoric

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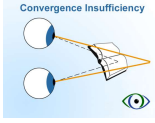
Convergence Insufficiency (CI)

Patients who are EXO at distance and MORE EXO at near

A patient has insufficient convergence to work close without having symptoms

Not enough converging – the eyes sit too far out at near and BI prism is needed to correct
They have difficulty maintaining the convergence needed

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Primary CI	Secondary CI
<p>Most common form of CI</p> <p>Small exophoria measurements</p> <p>Might be exuberated by stress or work</p>	<p>Brought on by</p> <ul style="list-style-type: none"> Presbyopia Uncorrected Myopia Intermittent Exotropia Vertical muscle defects Parkinson's Disease Some Autoimmune diseases
 <p>Convergence Insufficiency</p>	<p>*Treating the underlying issue could help with the CI symptoms</p>

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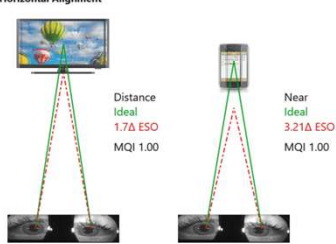
Convergence Excess (CE)

Patients who are ESO at distance and MORE ESO at near

Patients' eyes want to focus too far inward when reading

They are over converging to see what they want to look at

Horizontal Alignment



Distance
Ideal
1.7Δ ESO
MQI 1.00


Near
Ideal
3.21Δ ESO
MQI 1.00

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Divergence Insufficiency (DI)

Patients who are ESO at distance and LESS ESO at near

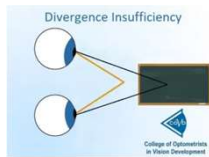
Patients will report seeing double vision at distance, but fused vision at near



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Primary DI

Most common form of DI
Unknown source of origin



Secondary DI

Appears in conjunction with other neurological disorders
Encephalitis
Intercranial hypertension
Miller – Fisher Syndrome (a rare, acquired nerve disease that is a variant of Guillain-Barré syndrome)
Intracranial mass lesions

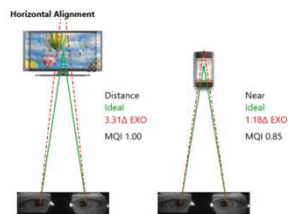
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Divergence Excess (DE)

Patients who are EXO at distance and LESS EXO at near

Patients can complain of diplopia at distance but have less issues at near

Patients might intermittently suppress the vision from one eye to stop the diplopia at distance



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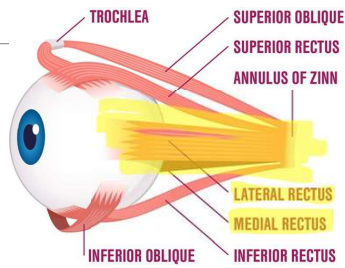
Horizontal Phoria Vergence Disorders

Vergence Disorder	Distance	Near
Basic Exophoria	EXO	EXO
Basic Esophoria	ESO	ESO
Convergence Insufficiency	EXO	EXO
Convergence Excess	ESO	ESO
Divergence Insufficiency	ESO	ESO
Divergence Excess	EXO	EXO

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Vertical Heterophoria

Misalignment of the Medial and/or Lateral Rectus muscles in the eye



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Treatments

Surgery
Vision Therapy
Syntonic
Phototherapy
Prism
Standard
Slab off
Fresnel
Contoured



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Syntonic Phototherapy

The more than 70-year-old science of using colors in small time frames, up to 10 minutes, to correct visual problems.

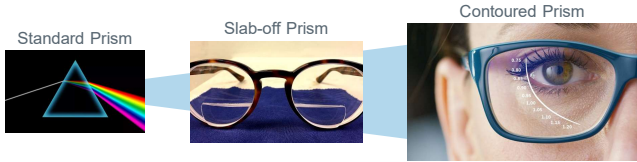
Usually prescribed in conjunctions with vision therapy

Red and orange can treat Amblyopia

Green and Yellow can treat Esophoria

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The Evolution of Prism



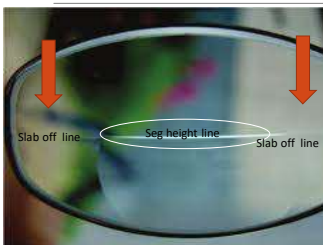
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Standard prism

Usually prescribed when a patient complains of diplopia (double vision)
 Uses the same value throughout the entirety of the lens
 Can be ordered Base In/Base Out or Base Up/Base Down
 Corrects Vertical and Horizontal misalignments
 Can be in one lens or divided between both lenses
 Discovered by Sir Isaac Newton in the 1660's
 Added into the glasses RX in the 1930's

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Slab Off Prism (Ben Franklin invented bifocals in the 1770's)



A technique used to neutralize unwanted prism effect when looking down the bifocal.
 Used when lens powers between each eye is greater than 3 diopters
 Allows the near image not to appear to jump
 Can be added to a FT lens or a PAL (in some instances, ask your lab)
 Applied to the most minus or least plus
 Corrects vertical prism only

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Fresnel prism is usually used for temporary usage (recovering TBIs)

Usually applied to only one lens

Attaches like a sticker using water to activate the adhesive

Needs to be traced and applied at either 0° or 180° line


Discovered by Augustin Jean Fresnel in 1822



Hillary Clinton following her TBI in 2012

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Contoured Prism



90% of patients have a greater misalignment at near than they do at distance

Allows for more base in prism at near than at distance

Think a progressive lens design that uses prism instead of power as the user looks down the lens

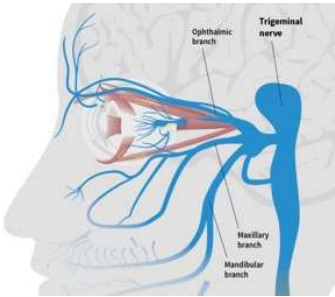
Only available from neurolens, using the neurolens measurement device

82% of patients report a decrease in painful symptoms
54% say they are significantly reduced or completely gone!

First patent in 2006 by Dr. Jeff Krall

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Visual Vestibular Integration



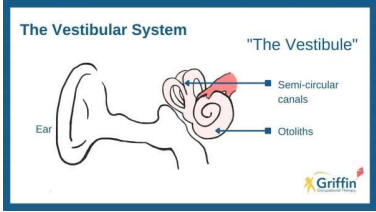
Visual (eye)
Vestibular (ear)
Integration (together)

How your eyes and ears work together to help the brain know where you are as a person in relation to other objects around you either stationary or in motion

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We know the visual, what is the Vestibular System

The vestibular system is a sensory system that is responsible for providing our brain with information about motion, head position, and spatial orientation. It also is involved with motor functions that allow us to keep our balance, stabilize our head and body during movement, and maintain posture.



The Vestibular System

"The Vestibule"


Semi-circular canals

Otoliths

Griffin


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The visual vestibular system can keep the horizon steady, no matter where you move, your gaze is stabilized in a large part.



In part 2 of the 'What is Sensory Integration' series we are unpacking the Vestibular System with STAR Institute's Associate Director, Virginia Spielmann. – Denver Colorado

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Achieving Binocularity

COMES WITH MANY SOLUTIONS. IT IS OUR JOB TO FIND THE RIGHT ONE FOR OUR INDIVIDUAL PATIENTS!

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Questions?

Thank You for Coming

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References

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2. Scheiman, M., & Wick, B. (2014). Clinical management of binocular vision: Heterophoric, accommodative, and eye movement disorders. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins. p. 347-381
3. Cooper, J. S., MS, OD., et al. Optometric Clinical Practice Guidelines: Care of the Patient with Accommodative and Vergence Dysfunction. Retrieved May 17, 2018, from <https://www.aoa.org/optometrists/tools-and-resources/clinical-care-publications/clinical-practice-guidelines>

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