



Prescribing for Binocular Vision Disorders

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Frequent falls with bumps on face

Can't stop the fall with their hands.

01

Light Sensitivity

Visual information that can't be ignored or organized.

02



4 Conditions

For Binocular Vision Disorders



**Convergence
Excess**

More eso at near

**Convergence
Insufficiency**

More exo at near

**Divergence
Excess**

More exo at far

**Divergence
Insufficiency**

More eso at far

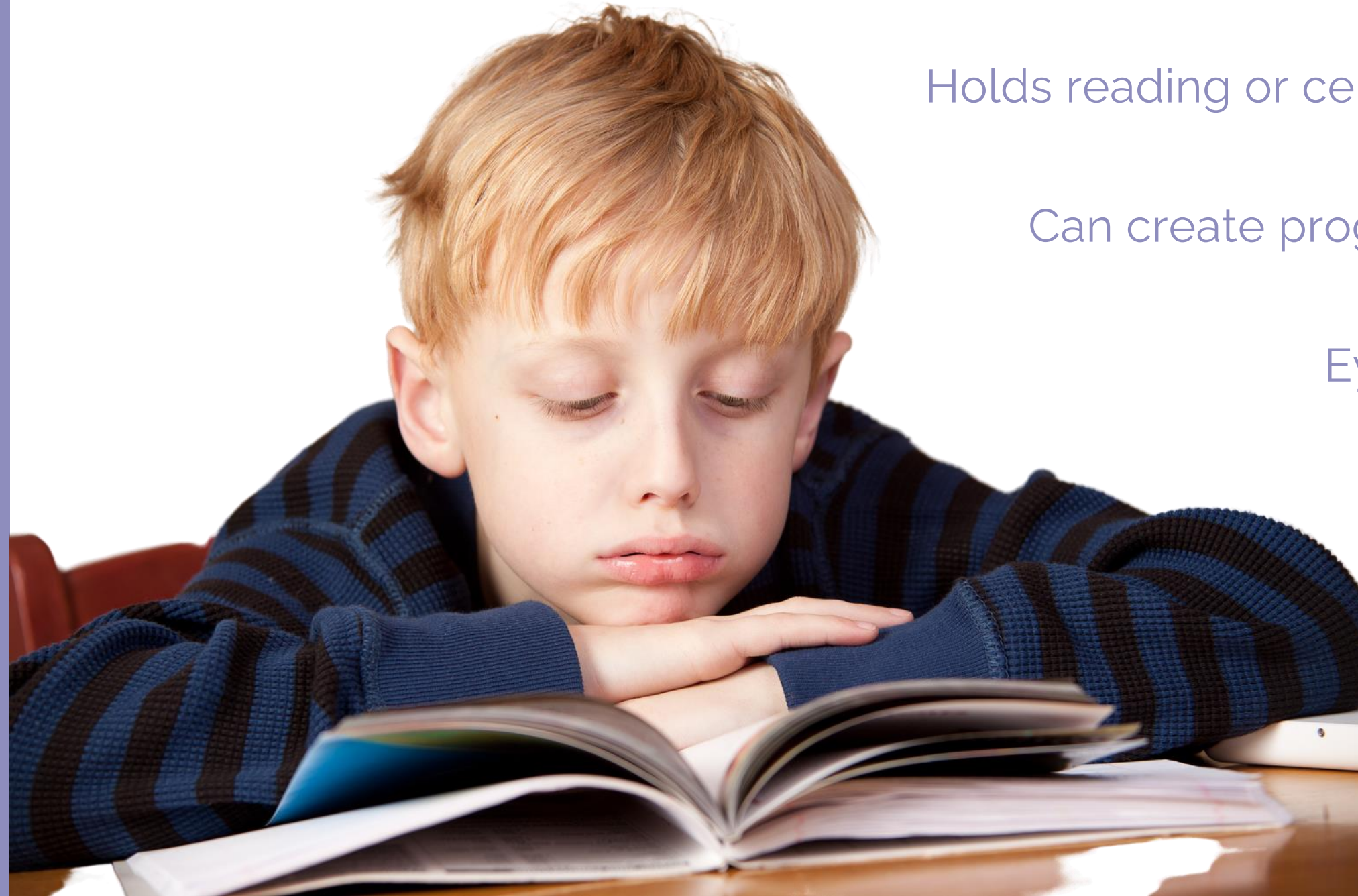
Convergence Excess

Esoposture at near.
Norm: 6 exophoria at 40 cm.
Less than 6 exophoria is
considered esoposture.

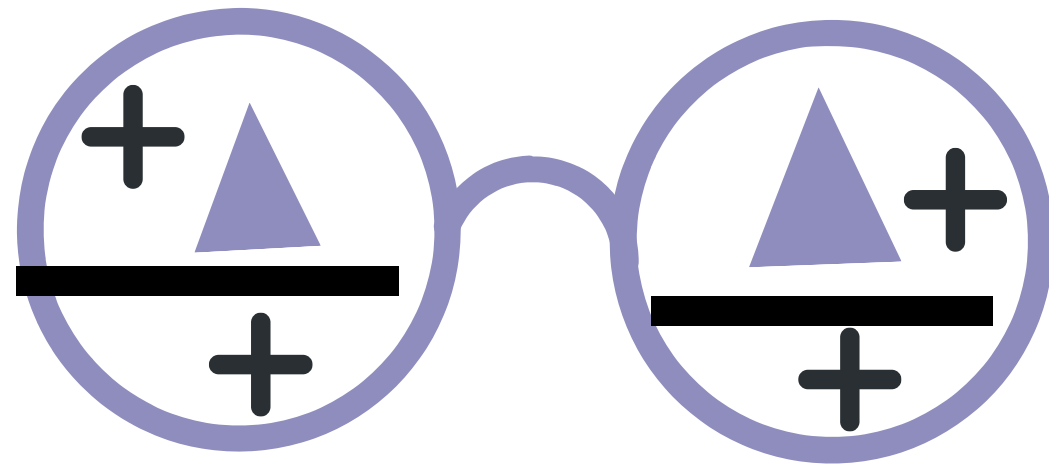


Convergence Excess

Blur.
Holds reading or cell phone
close.
Can create progressive
myopia.
Eyestrain.



Convergence Excess

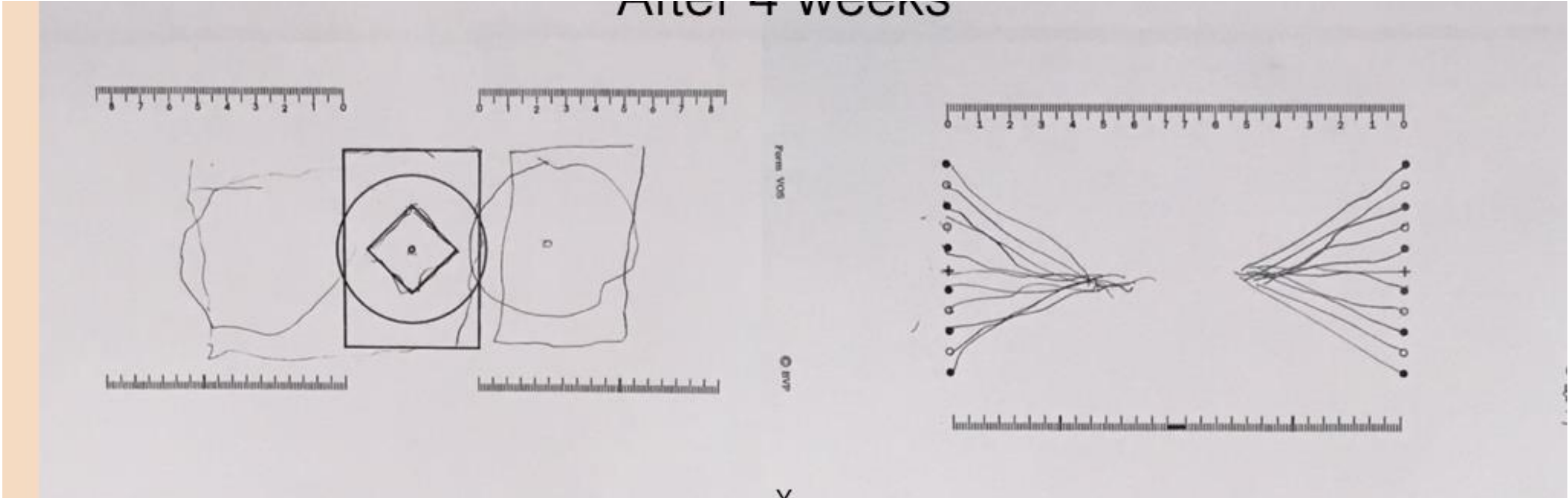


Plus at near.
Small amount of BD micro
prism.
Bi-nasal at medial canthus.

06



Convergence Excess



Divergence Excess

Exoposture at distance

08



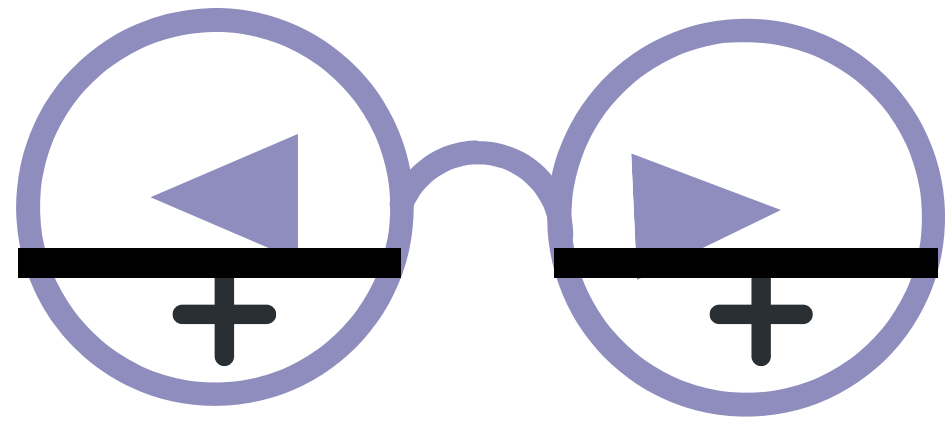
Divergence Excess

Eye turns out when looking at
distance.

Poor depth perception.
Difficulty with ball catch.

Hard to ride a bike.





Divergence Excess

Bifocals.

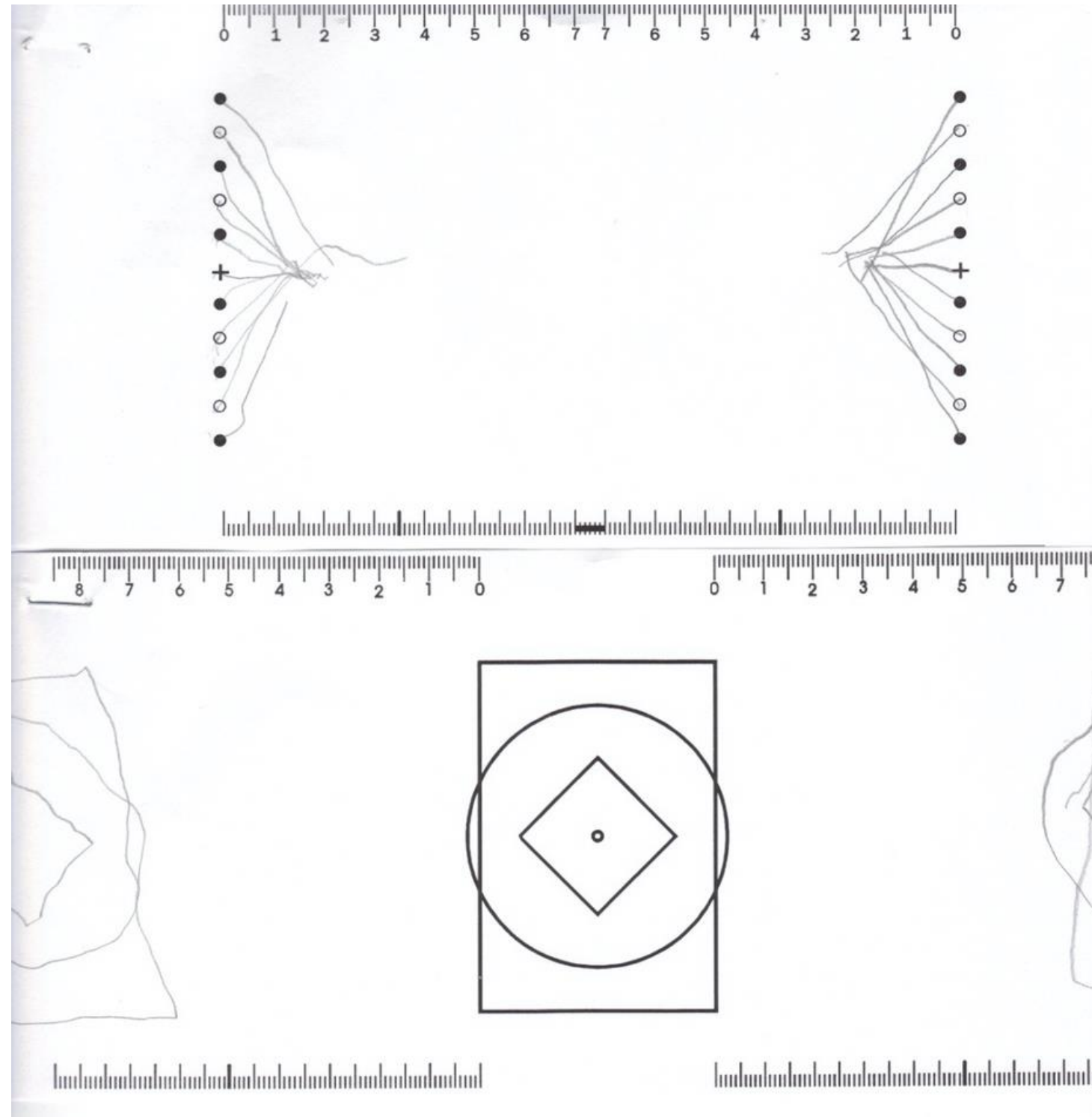
Micro prism: BI or BU.

Bi-nasal 2 mm nasal to limbus.

Line awareness at temporal
limbus of deviating eye.



Divergence Excess



Divergence Insufficiency

More esophoric at distance.



Divergence Insufficiency

Double when driving

Eyes turn in when looking far

Blur

Headaches

Poor depth perception

Motion sickness

Photosensitivity

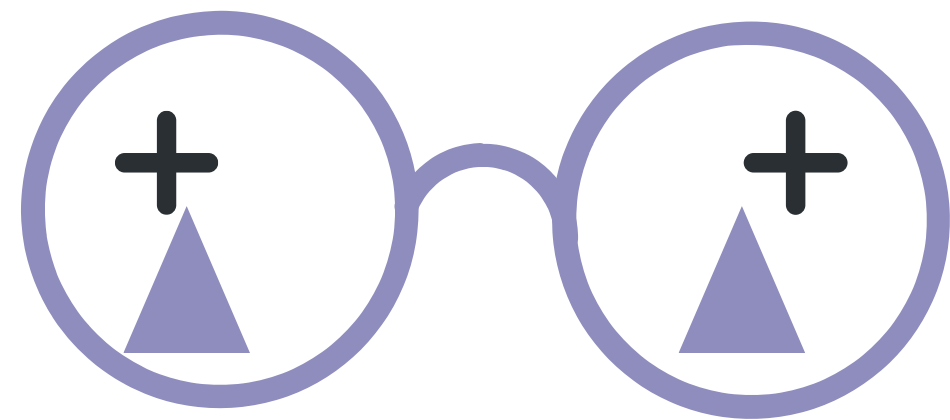


Divergence Insufficiency

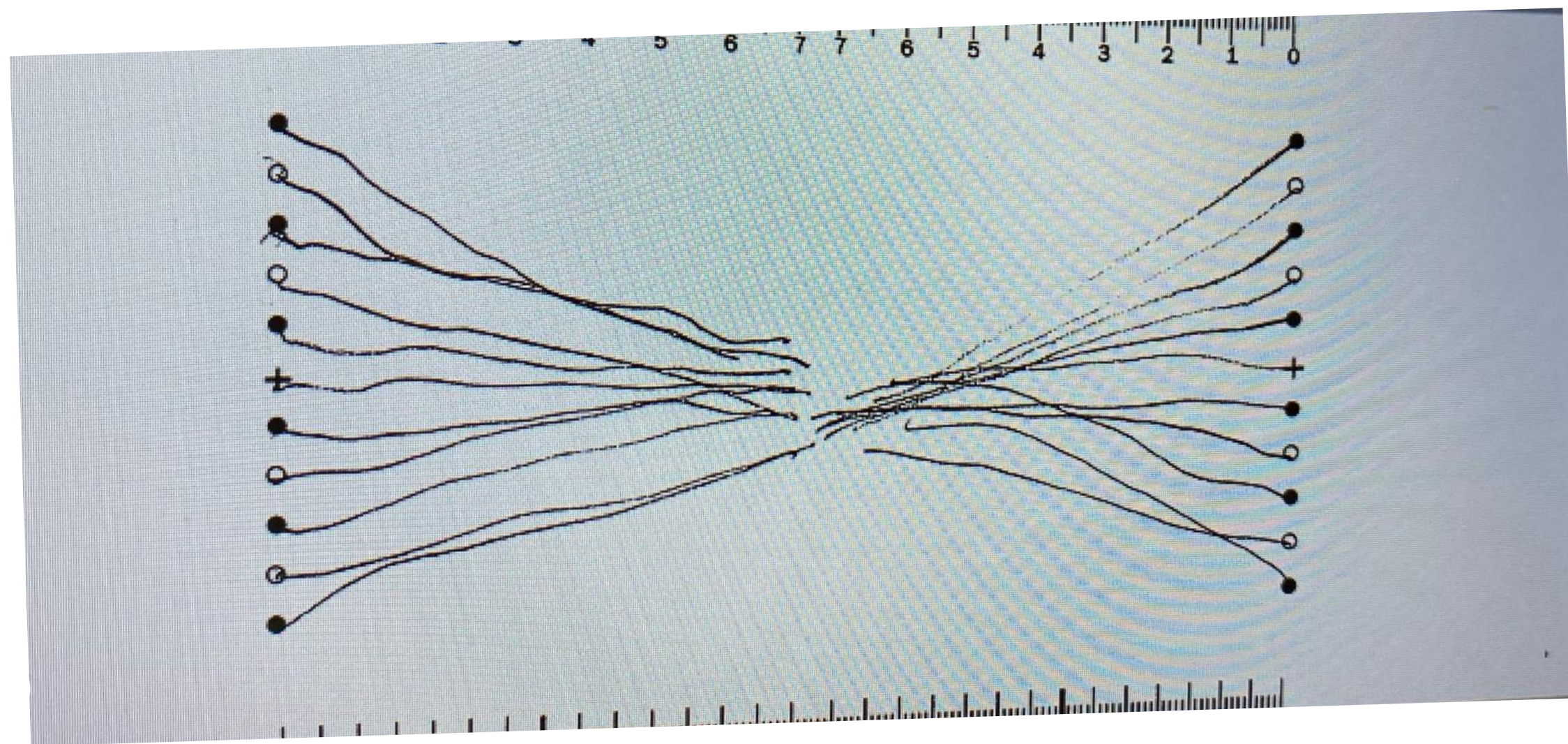
Micro prism BD up to 2pd

Plus lens for distance and near

Narrow bi-nasal at medial canthus

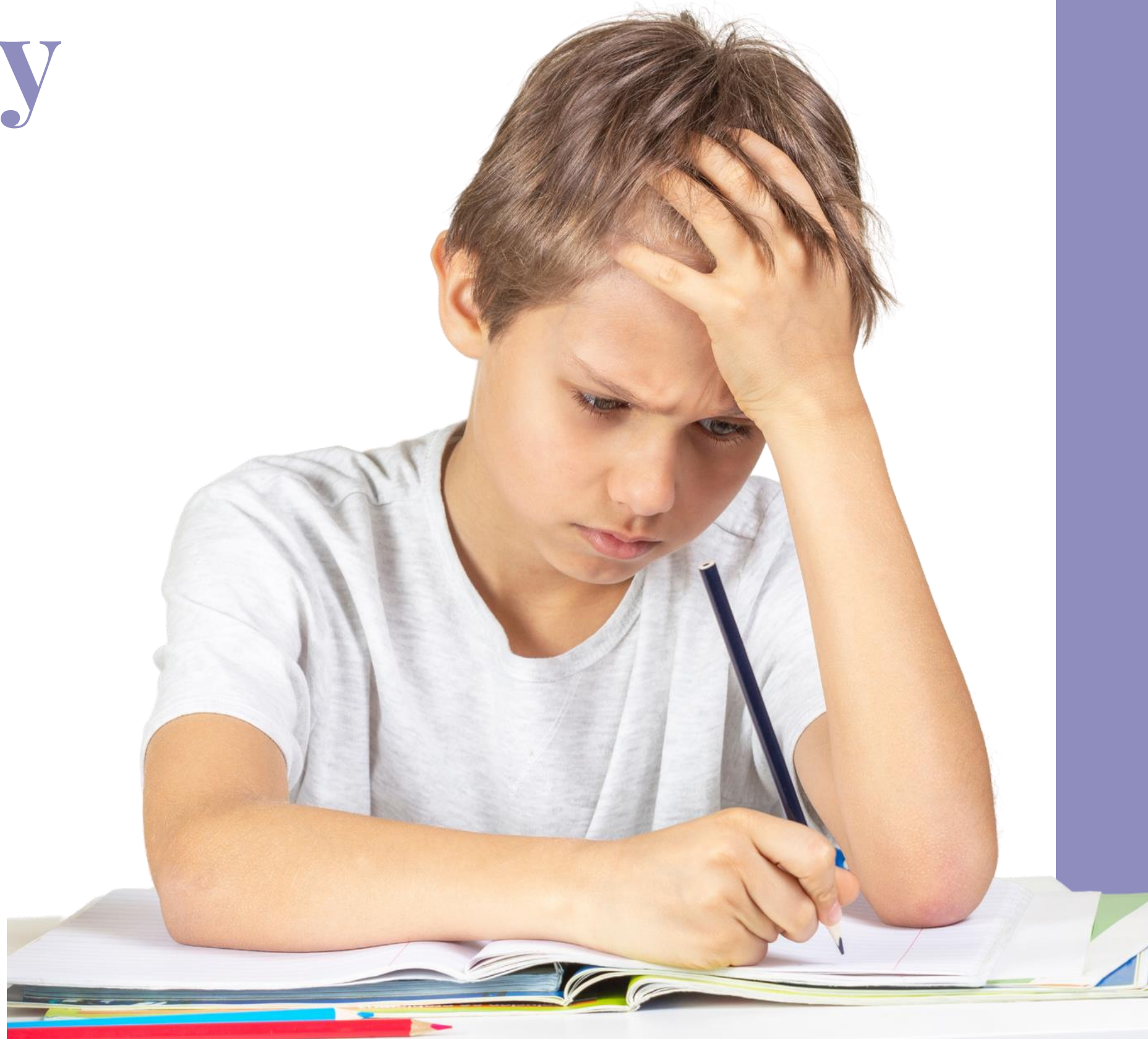


Divergence Insufficiency



Convergence Insufficiency

Exoposture when looking at near



Convergence Insufficiency

Eyestrain

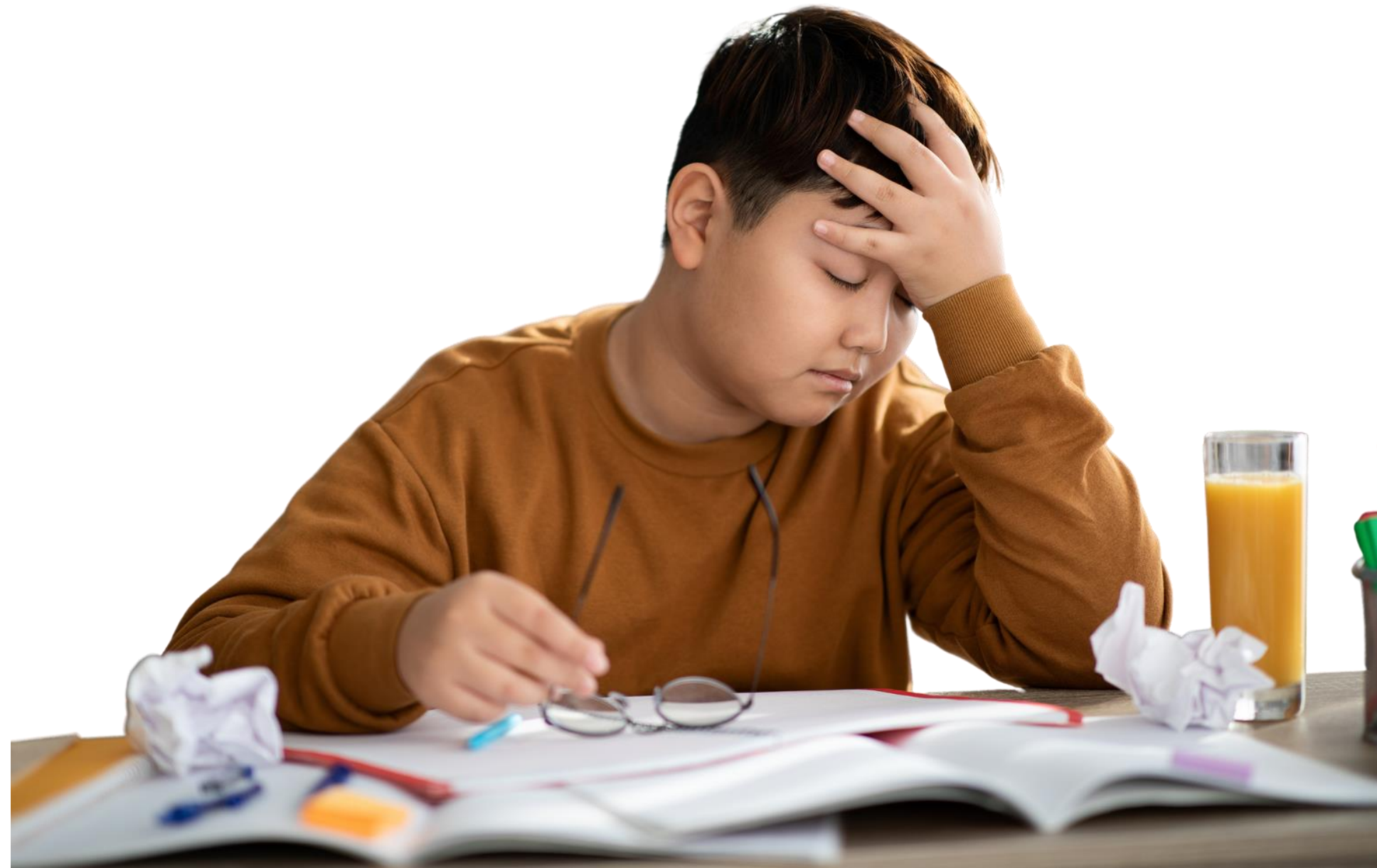
Double at near

Blur

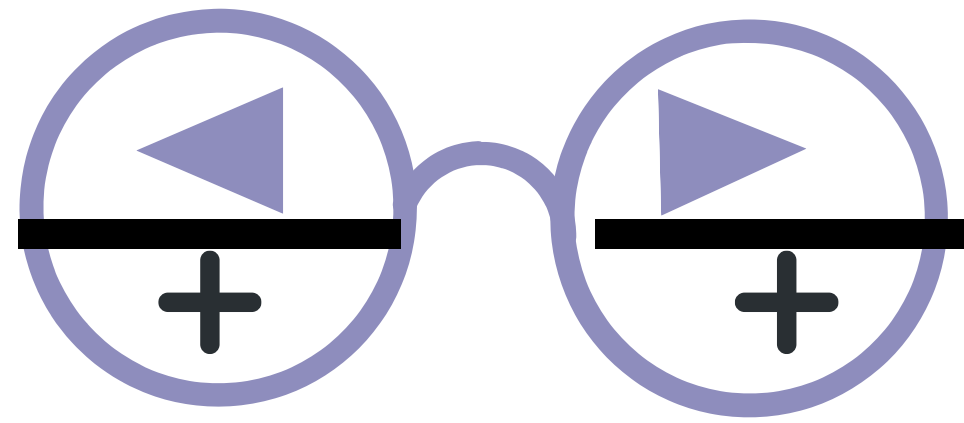
Headaches

Poor attention

Eyestrain



Convergence Insufficiency

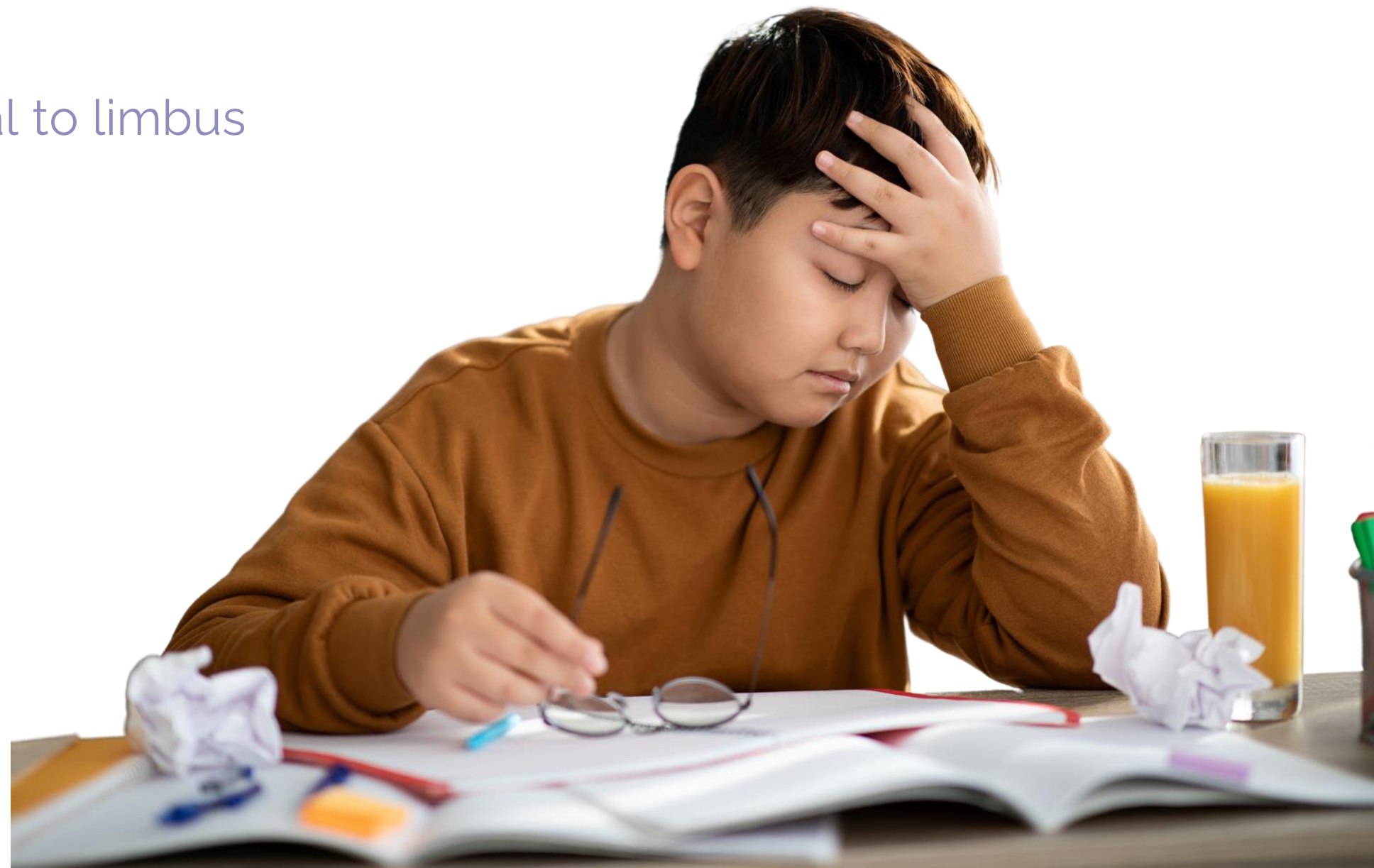


BI micro prism

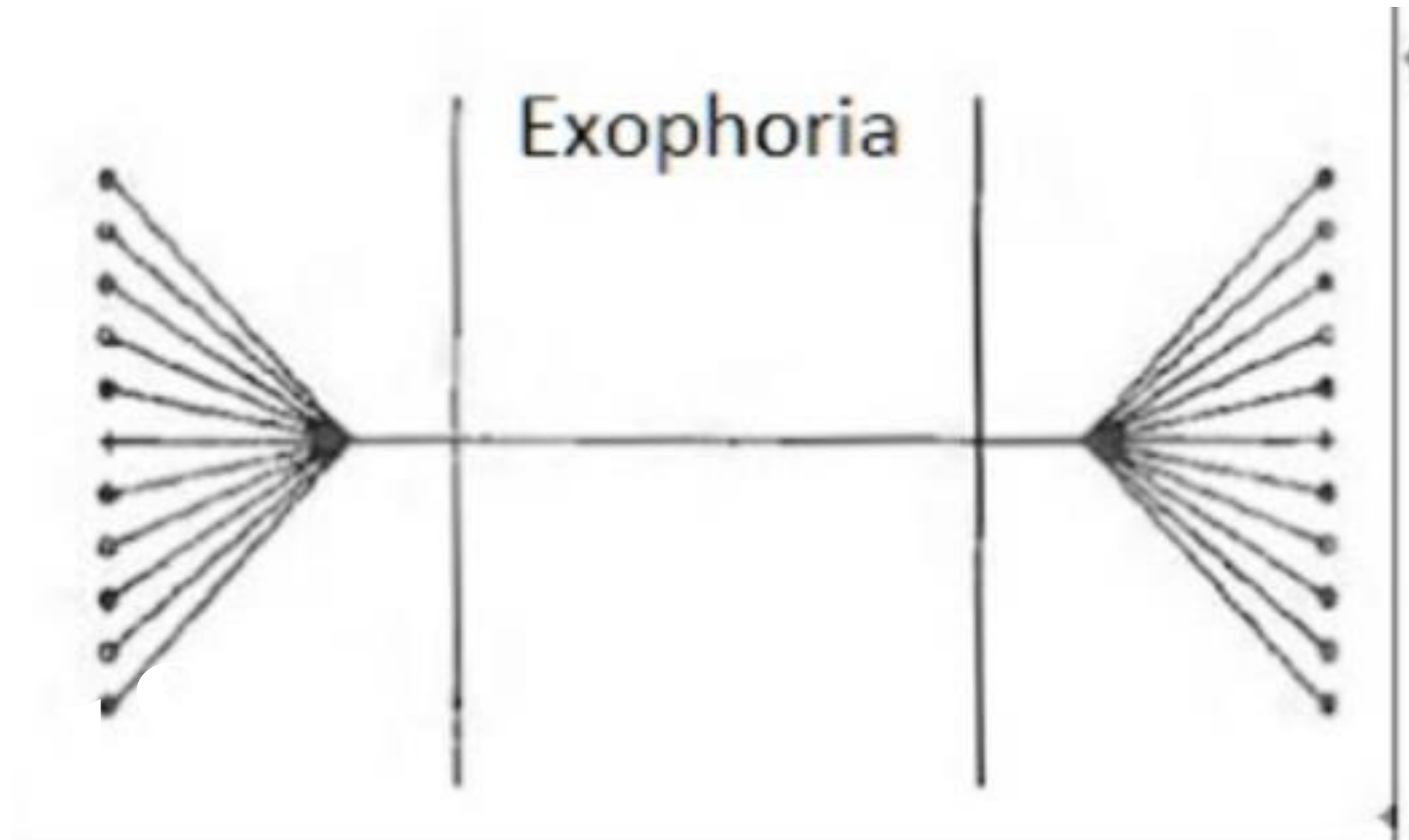
Bifocal

Low plus

Bi-nasal 1 mm nasal to limbus



Convergence Insufficiency



PRESCRIBING OPTIONS

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LENSES

Symmetry



PRISMS

Less is better



OCCLUSION

Bi-nasals

Goals for Prescribing

Can be more than one.



Improve Performance

When vision works well it guides and leads.

Increase Productivity

Efficient vision allows tasks to be completed in less time.

Change Behavior

Better vision reduces frustration.

Improve Function

Easier to achieve automaticity with good vision.

Guide Development

Organized and well oriented visual process allows for natural development to take place.



Prescribing Options

01 **COMPENSATORY**

Only works when being worn.

02 **THERAPEUTIC**

Effect lasts after lenses are removed.

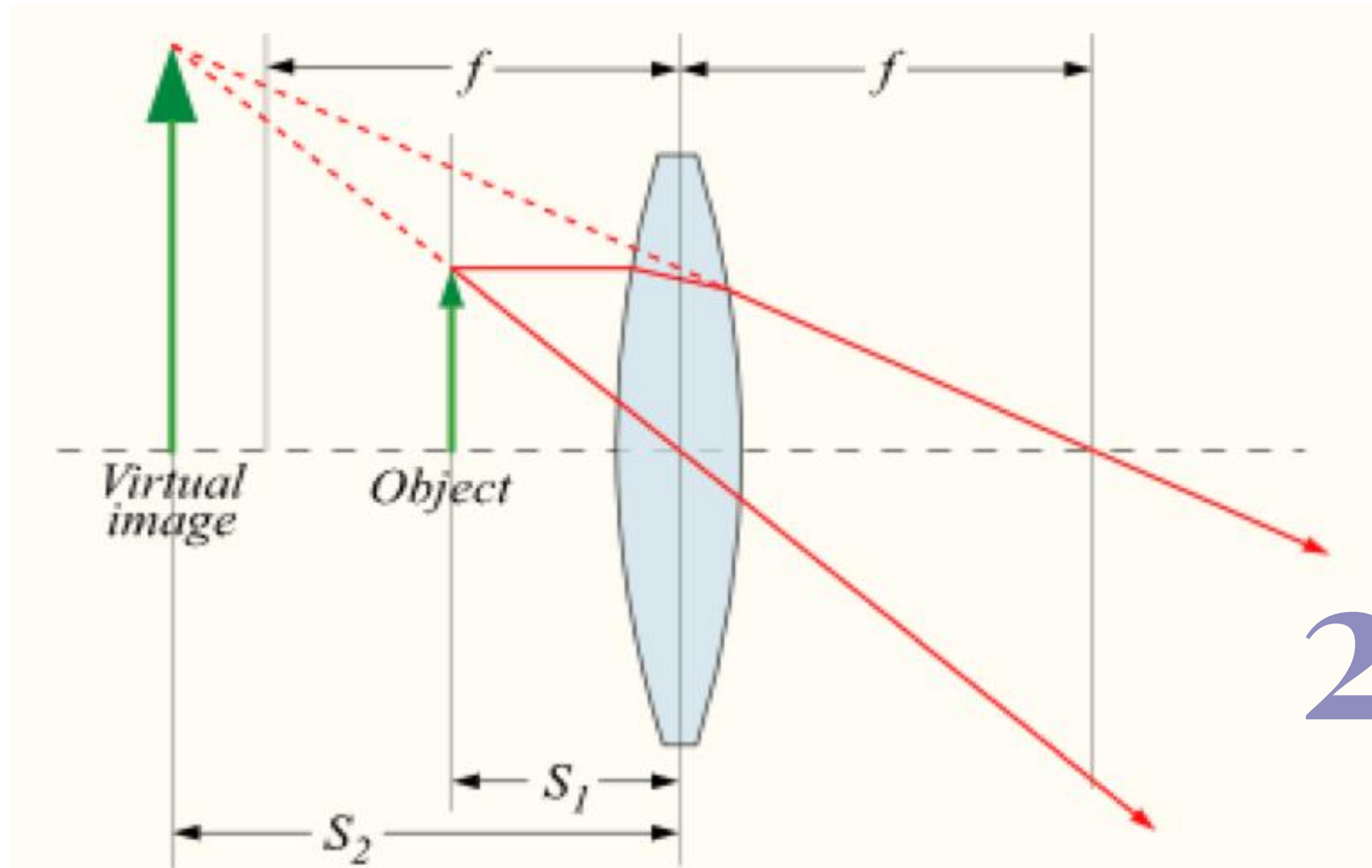
03 **COMBINATION**

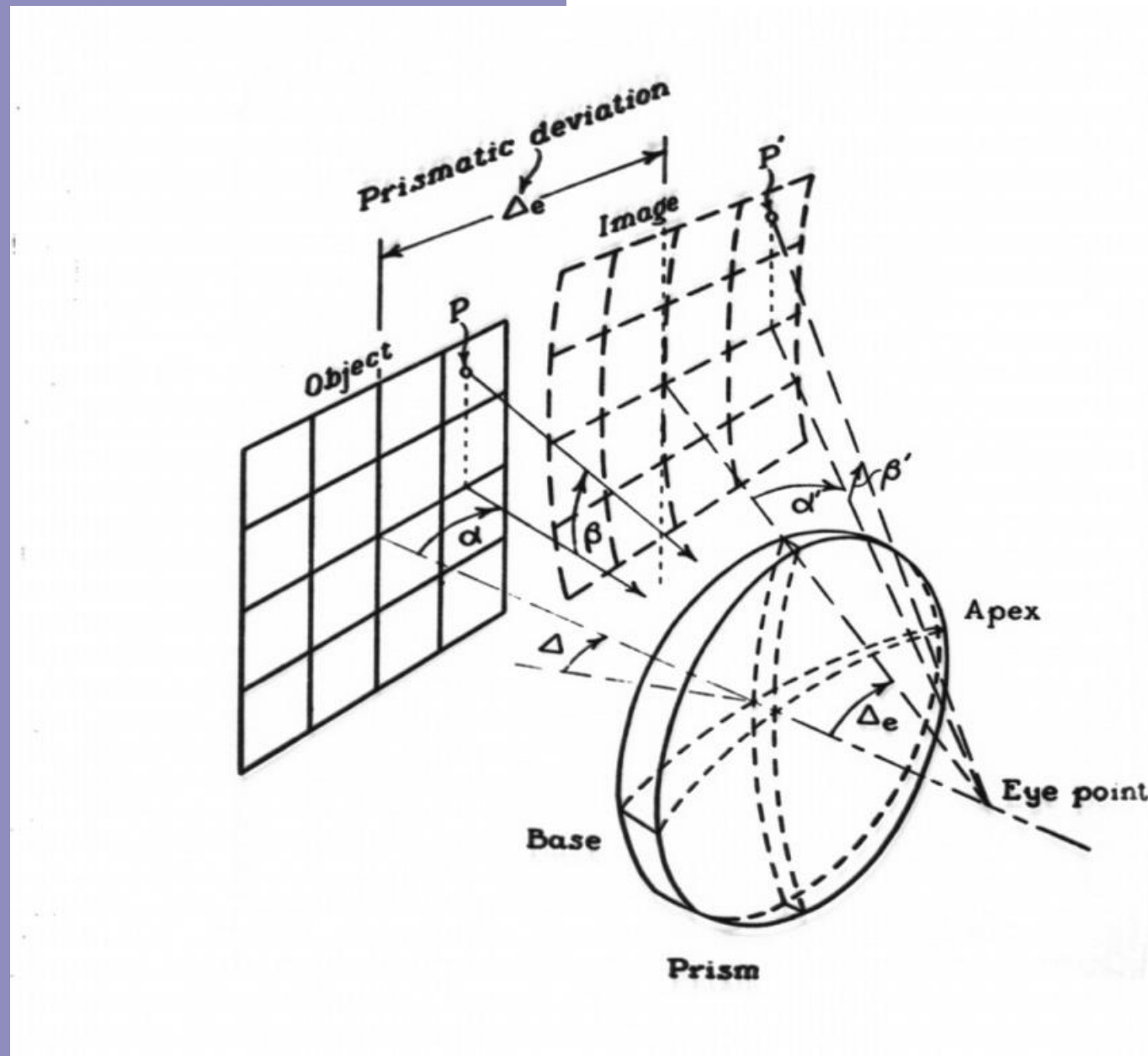
Compensatory + therapeutic

Convex Lens

(Object between Focal Distance and Lens)

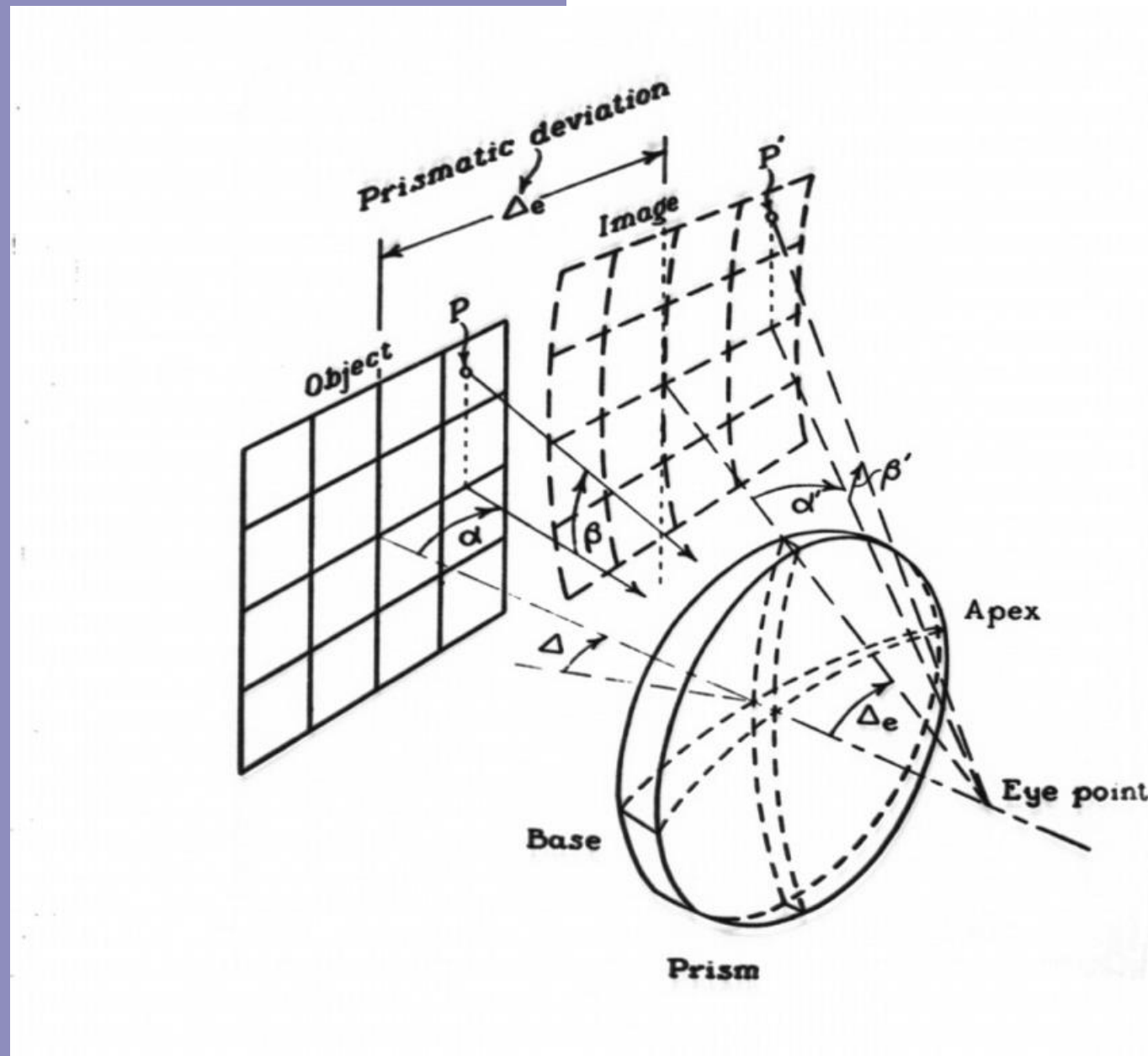
When the real object is between the focal distance and the lens, the virtual image occurs farther away and larger. (Large Out)





Thin lens vs. Thick lens optics

Optics and ophthalmic lenses are more complicated because prismatic effects must be considered.

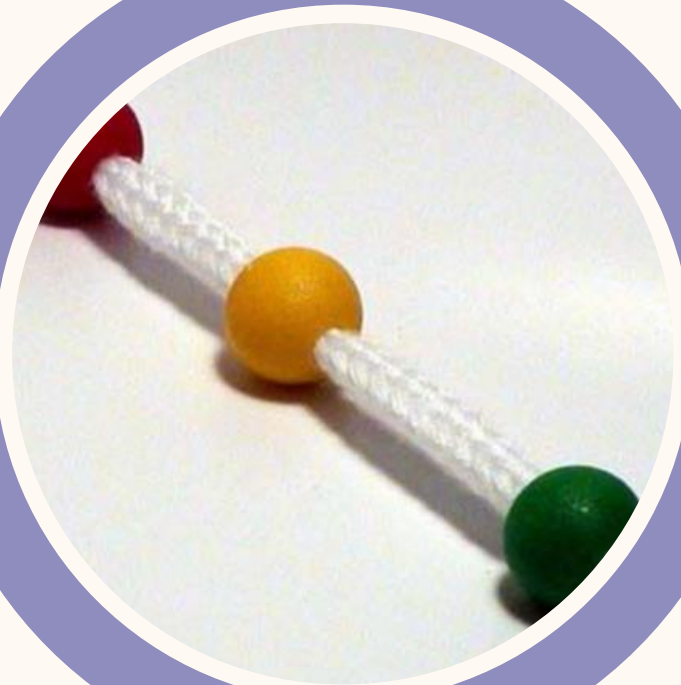


Thin lens vs. Thick lens optics

“Power” of the lens away from the optical center (OC) is not the same as at the OC.

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SUPPRESSION OR DIPLOPIA



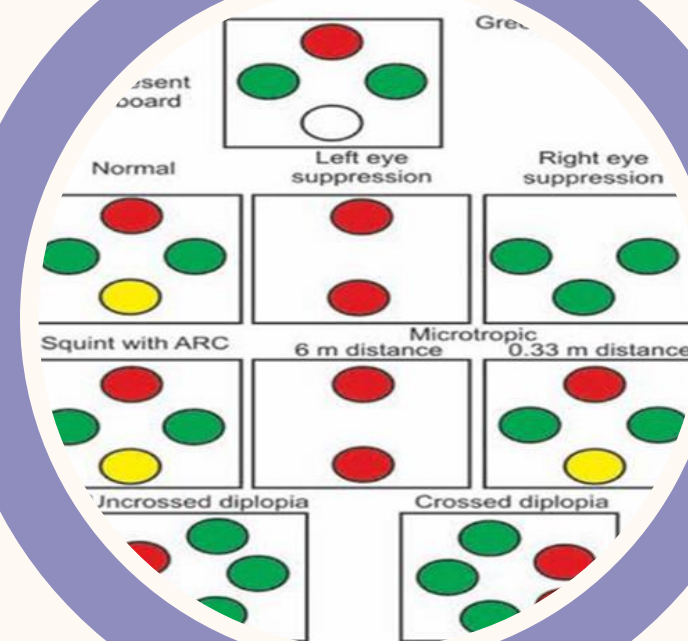
MILD

More Symptoms



STRONG

Rule Out Strabismus



NONE

Diplopia

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PRESCRIBING OPTIONS



LENSES

Symmetry



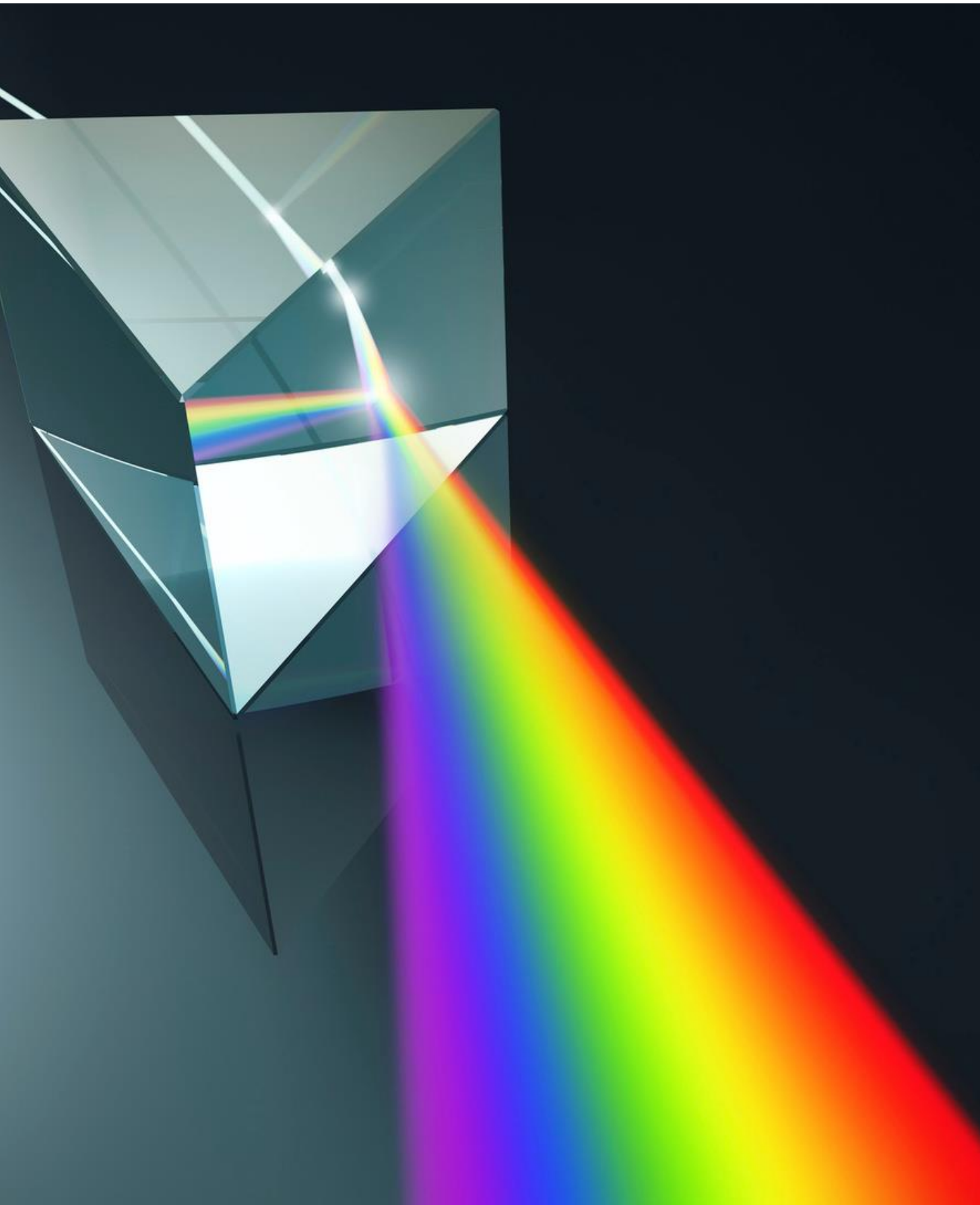
PRISMS

Less is better



OCCLUSION

Bi-nasals

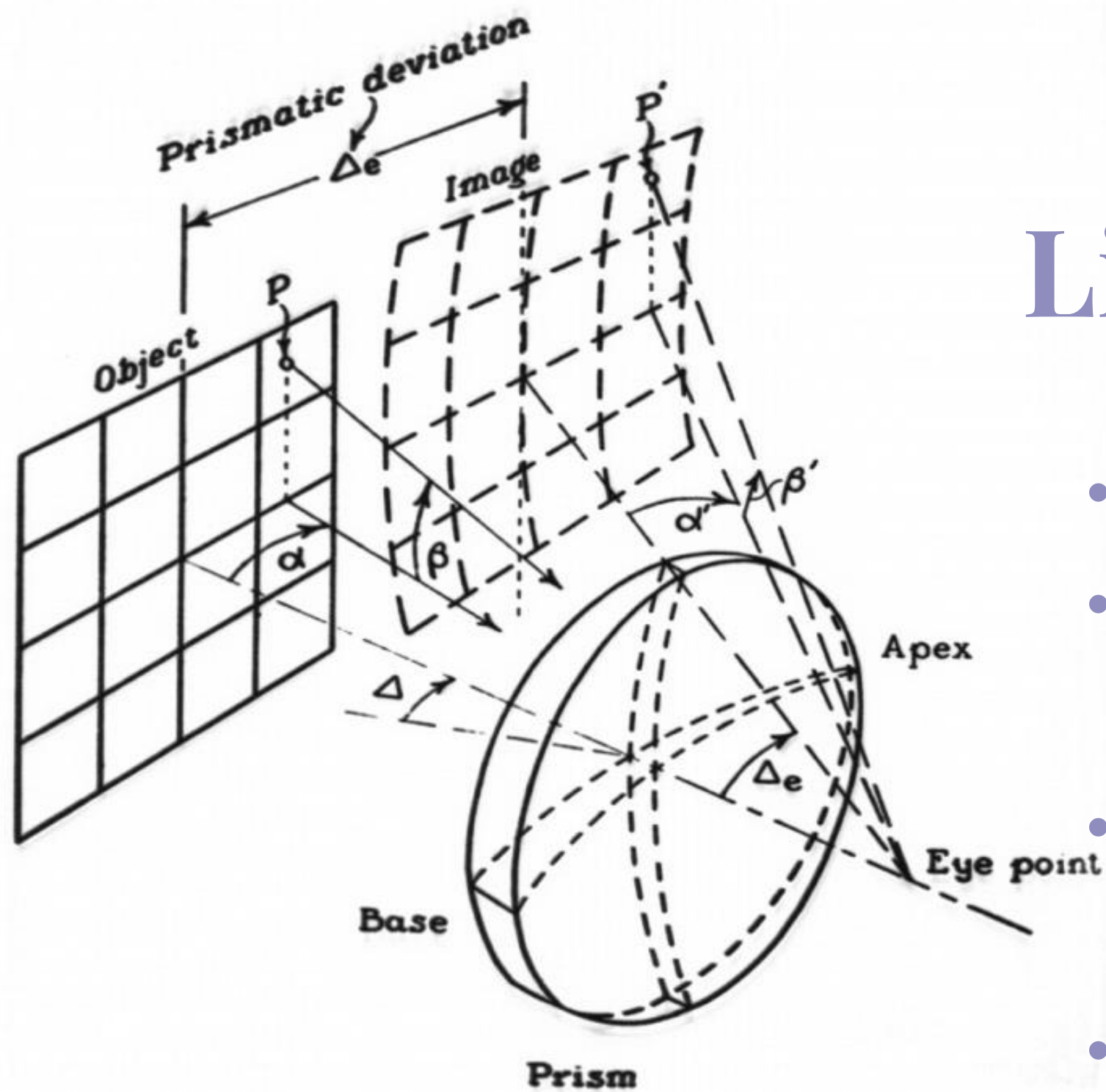


Prism Prescribing Options

- 01 COMPENSATORY**
This prescription corrects the angle of deviation. Without it the eye deviates.
- 02 THERAPEUTIC**
This prism creates a slight shift and slant that changes the deviation slightly but allows for the system to do some of the correction. When removed the results are still present.
- 03 COMBINATION**
Using both lateral and vertical prism for a paralyzed muscle.

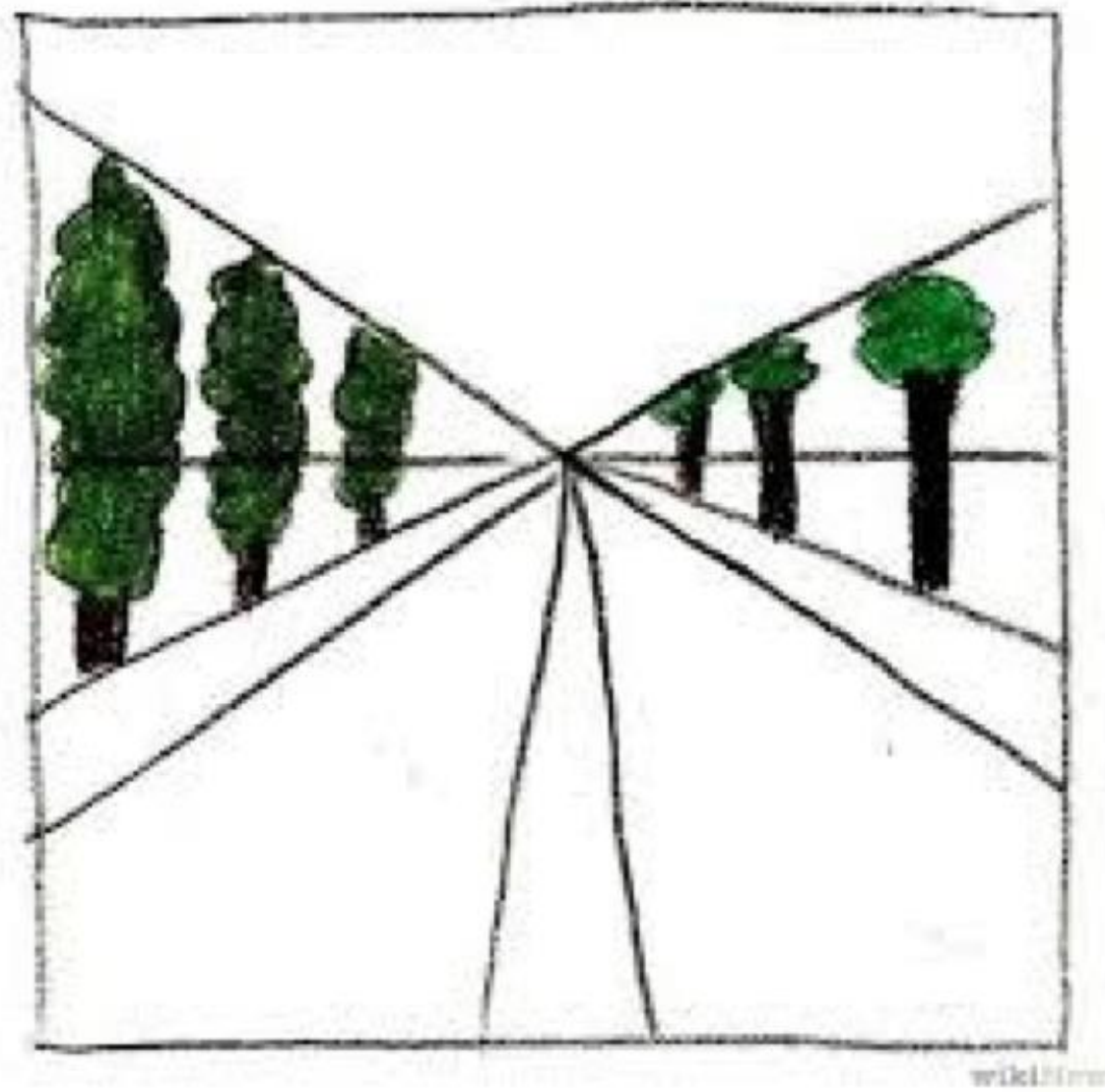
“The ophthalmic optics of prisms is characterized by having a non-uniform deviation of light rays.”

Ron Jones, OD, PhD

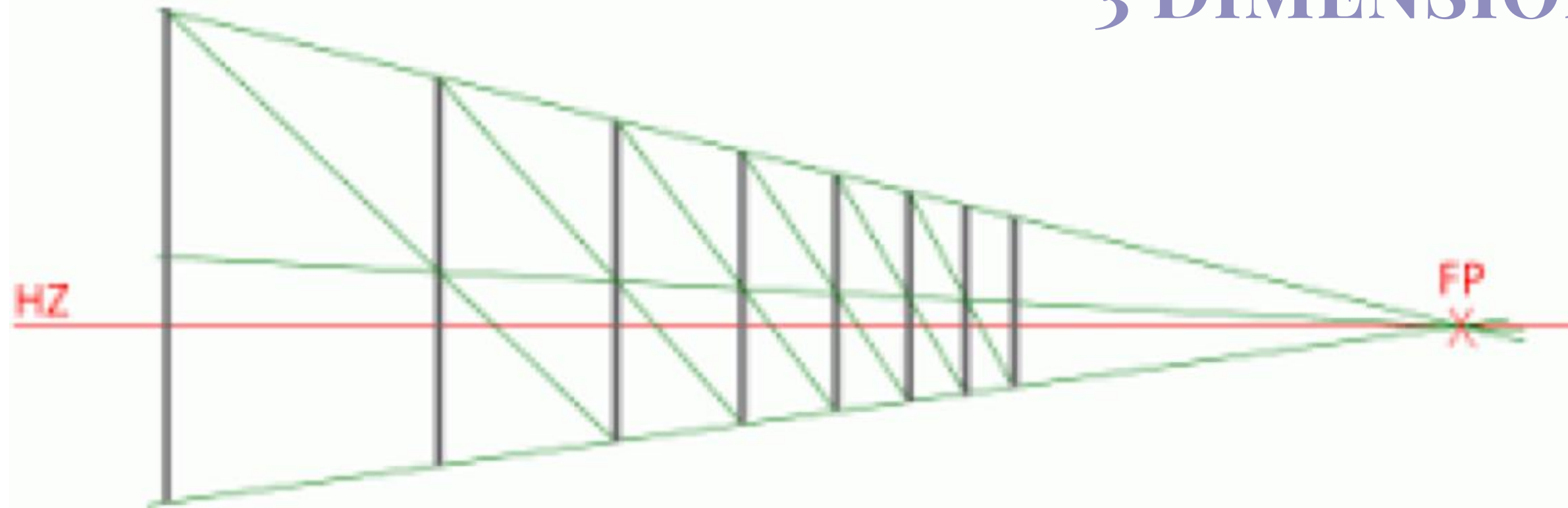


Linear Perspective

- Asymmetric magnification
- Curvature of lines perpendicular to base-apex
- Rotation of lines parallel to base-apex
- Base-curve dependent!



**REACTION TO
PRISM CAN BE
2 DIMENSIONAL OR
3 DIMENSIONAL.**

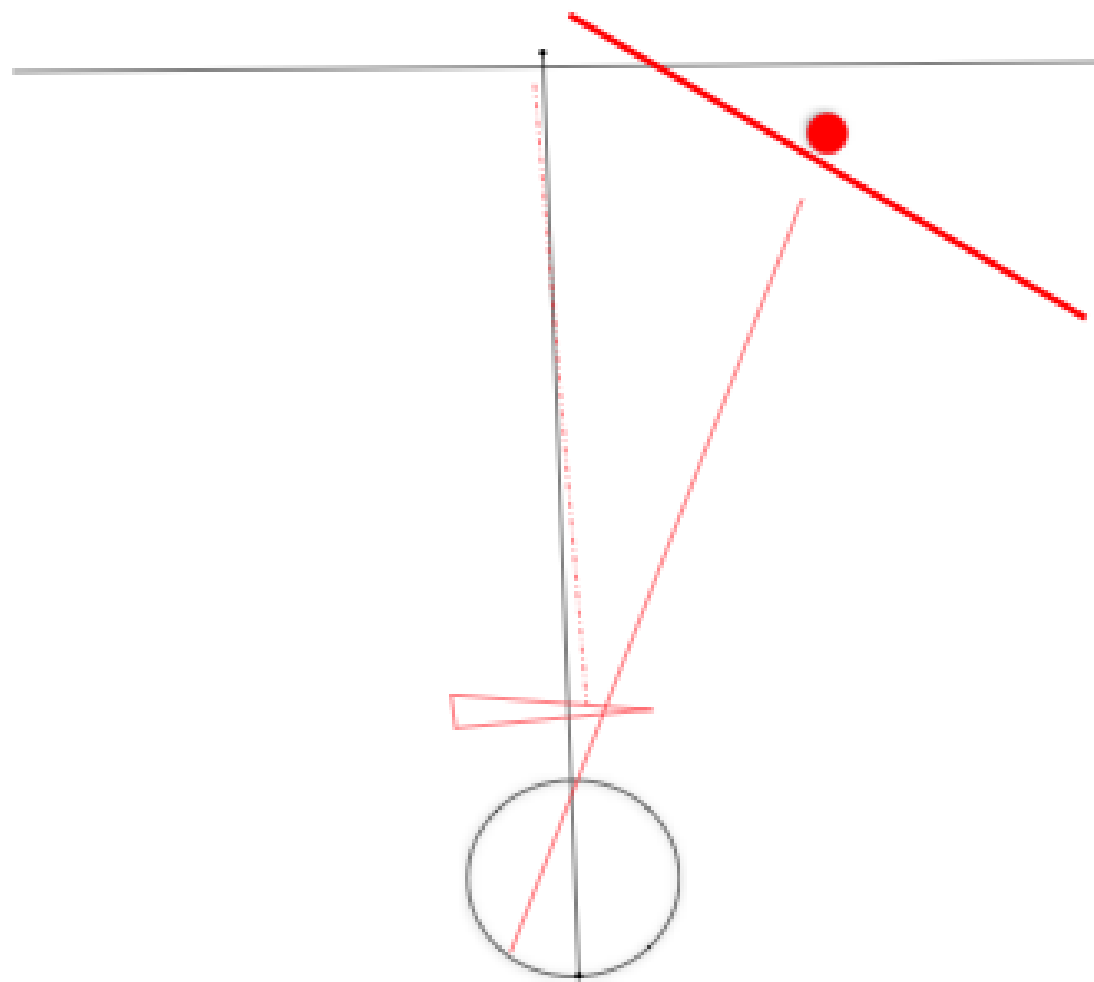



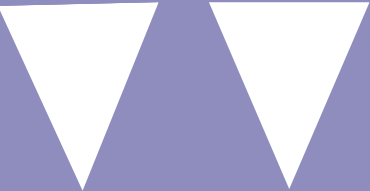
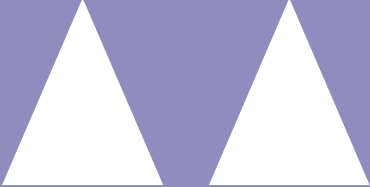
Spatial Distortions of Prisms

Asymmetric magnification

- Effect is equivalent to an induced slant.
- Only apparent with an extended surface.

R. Jones, OD, PhD



- **Exo posture (exophoria, exotropia):**
 - **BI prism** 
 - **BU yoked prism** 
- **Eso posture (esophoria, esotropia):**
 - **BD yoked prism** 

Paradoxical responses are possible. If prescribed may need to be changed more often.



Yoked Base Down

- Mobility
- Eso posture
- Anterior Egocentric Shift
- Increases experience of superior space



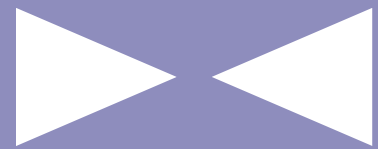
Yoked Base Up

- Mobility
- Exo posture
- Posterior Egocentric Shift
- Increases experience of inferior space



Vertical Prism is used for...

- Diplopia due to CN paralysis
- Hypertropia
- Hyperphoria (rare)
- Disassociated OVT activities



Lateral BO

- Eso posture mostly to compensate



Lateral BI

- Exo posture and near comfort

Use lined bifocal instead of progressive



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Computer distance will be different than near PD

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PRESCRIBING OPTIONS



LENSES

Symmetry



PRISMS

Less is better



OCCLUSION

Bi-nasals

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Occlusion



BI-NASAL OCCLUSION

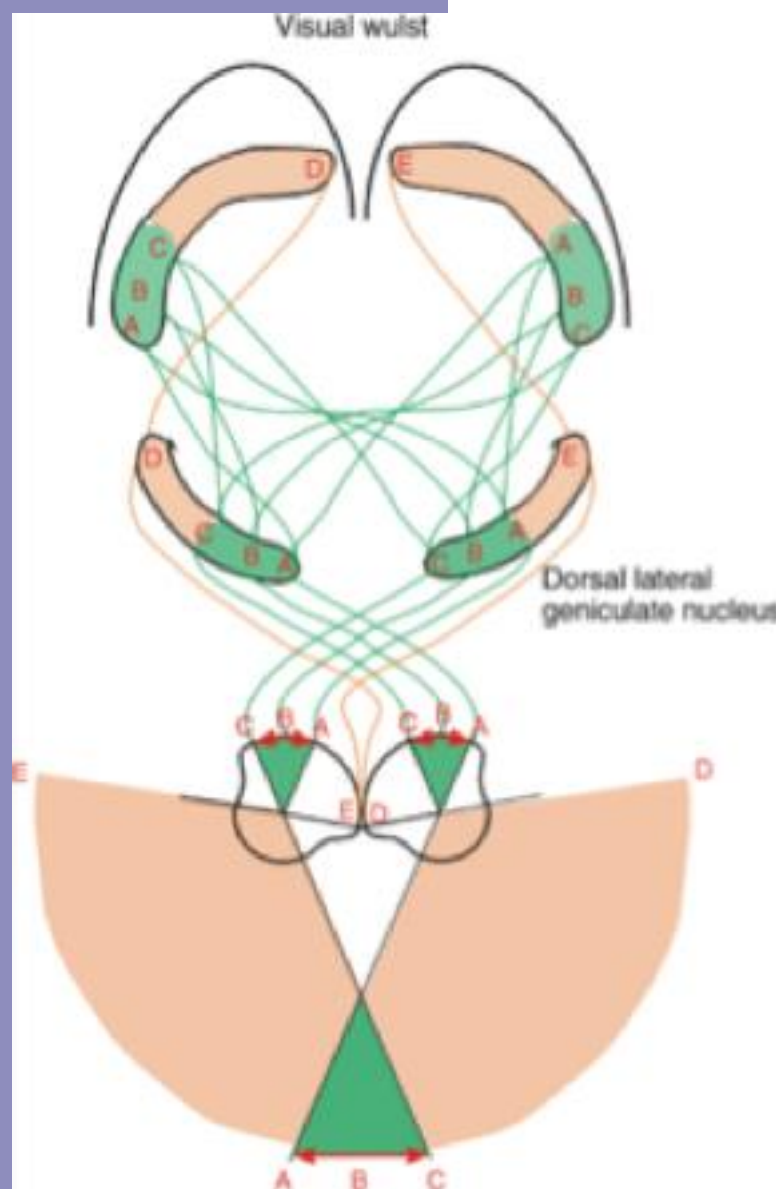
Change how one judges egocenter.

OCCLUDES CROSSED VISUAL FIELD

Helps with orientation and reduces veering to one side.

GIVE MINIMUM AMOUNT NEEDED TO REGAIN ACCURATE CENTERING

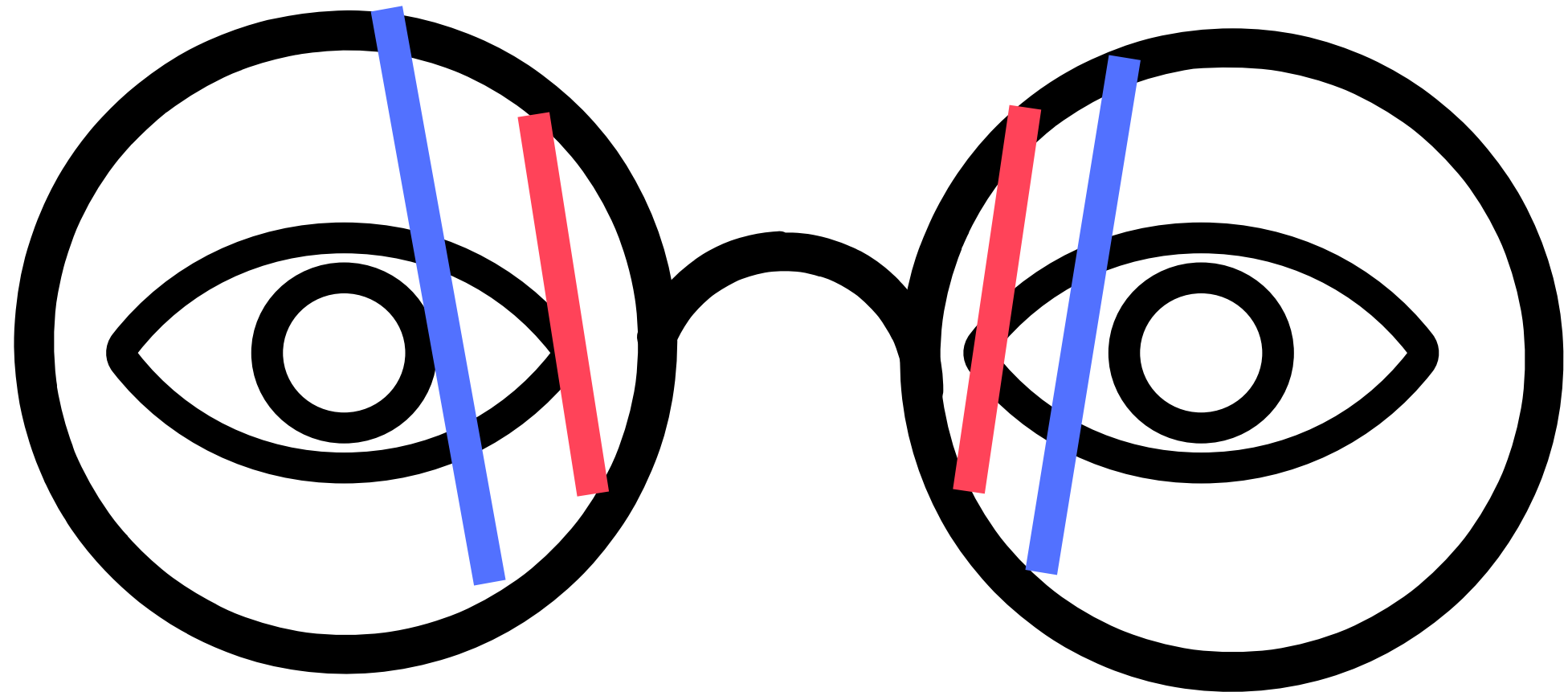
Reduced dependency.



BI-NASAL OCCLUSION

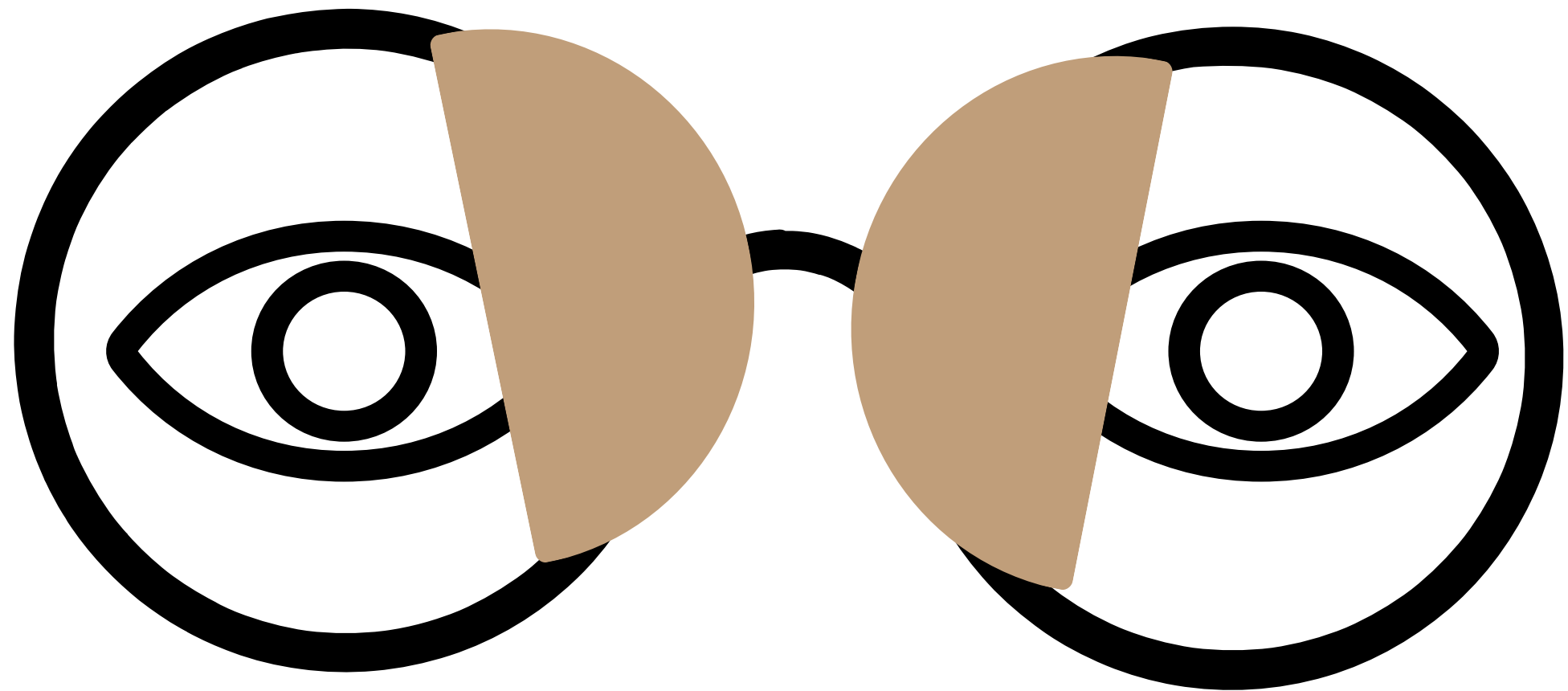
Change how one judges egocenter.

ESO: Red Line
EXO: Blue Line



BI-NASAL OCCLUSION

Change how one judges egocenter.



Patients with high prescriptions put in contact lens and then use low plus for near with needed micro prism and bi-nasal occlusion.

Pearl: Contact Lens Rx



Computer Rx

Single Vision

Desktop or laptop?

Measure working distance

Recharge

AR Coat



**Use least amount of prism
needed to create the
desired change.**

Smaller amounts have less
dependency



Questions???

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