

Prism, Prism, Prism!

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Prism, Prism, Prism! Part I: Introduction to the Therapeutic use of prism in Vision Therapy

I: Learning Objectives:

1. Develop functional understanding of a prism diopter
2. Understand spatial perception changes caused by viewing through prism
3. Learn about therapy techniques that utilize prisms



Compensatory – reduces work, moves the image to where the eye sees

Therapeutic – increases work, moves the image to where we want the eyes to look

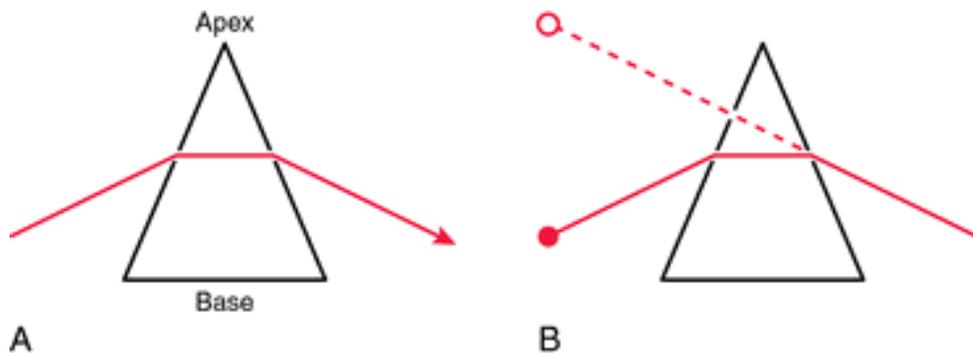
*Therapeutic prism is used to challenge and build the visual system. The goal of these exercises is to use prism in order to improve **sensory perception** and **oculomotor control**.*

- 1) Vision Therapy utilizing Prism:
 - a) Monocular Prism
 - b) Dissociating Prism (Bi-ocular training)
 - c) Binocular Prism
 - d) Yoked Prism

2) Definition of a prism:

A transparent solid with sides that converge at an angle

- a) Prisms cause a deflection of a ray of light toward the thickest portion (the base) - this causes the image to appear toward the apex.
- b) Prism splits white light into its component colors
- c) A prism alters the apparent location of objects



3) Prism diopter:

- i) Prism Diopter: deviation of 1 cm at a distance of 1 meter
- ii) Demonstration of prism optics: Carl Hillier's "Laser-Assisted Hess Lancaster"
- iii) Demonstration of prism optics: Clinical: Comitancy Testing
- iv) Demonstration of prism optics: Determining prism diopter power of unknown prism

4) Vision Training Techniques: Learn about therapy techniques that utilize prisms

- a) Stimulate eye movement toward apex of prism
- b) Stimulate convergence
- c) Stimulate divergence
- d) Decrease suppression

e) Reorganize spatial perception: There are three dimensional perceptual shifts; the base expands space and the apex constricts space.

i) May see BO prism cause images to appear SMALLER and CLOSER

ii) May see BI prism cause images to appear LARGER and FURTHER

5) Monocular Prism Therapy:

a) Saccadic Accuracy in direction and amplitude (oculomotor)

Demonstration: Monocular Prism Saccades

b) Just Noticeable Differences (sensory localization: direction and amplitude)

c) Understanding spatial perception changes caused by viewing through prism

i) Spatial Awareness: Robert Nurisio, COVT: The patient should have some awareness of the prism "moving the world" in the direction of the prism apex, as the light is bent towards the base of the prism.

(1) Direction

(2) Amplitude

(3) Size

(4) Distance

(5) Distortions

(6) Clarity

(7) Color

ii) Demonstrations with Fresnel prism

iii) Demonstrations with loose prism/prism bar

iv) Stimulate the understimulated part of the retina (Base-IN prism, used monocularly for the treatment of Esotropia)

6) Dissociating Prism Therapy:

a) Bi-ocular Training using BU/BD prism or enough BI prism to create diplopia

b) Motor Alignment

i) Howell Phoria Card

ii) Voluntary Vergences

iii) Prism Eye Rotations

c) Accommodation and Vergence Relationships (the AC/A)

i) Valenti Cross-Cylinder: adding cross cylinder lenses to engage both the accommodative and vergence systems

ii) G-560: adding plus and minus lenses to learn accommodative and vergence control and accuracy

d) Adding tactile, auditory, and visually-guided motor activities to vision training

i) Squinchel

ii) R-K Diplopia

7) Binocular Vision Therapy

a) Prism Flipper

b) Prism Rotations

c) Loose prism and Prism Bar training

d) Risley Prism use with stereoscopes

e) BIM/BOP = Base-In with Minus/Base-Out with Plus



8) Yoked Prism Therapy

9) References

1) <http://livingwithdiplopia.blogspot.com/2012/01/rehabilitating-lazy-eye-while-promoting.html>

2) VT and Prism by Robert Nurisio, COVT
<https://vtworks.wordpress.com/2014/03/31/vt-and-prism/>

3) [Relieving Prism](#) by Dr. Kelly Frantz

4) Applied Concepts in Vision Therapy by Dr. Leonard Press (Editor) OEPF

5) The Vision Therapist's Toolkit by Thomas Headline, Irene Wahlmeier and Vicki Bedes OEPF

6) Tools of Behavioral Vision Care: Prisms (Vision Therapist Vol 37, #4, 95/96)

7) [The Rationale for the Use of Prism in the Vision Therapy Room](#) by Dr. Rob Fox