LENS APPLICATION FOR CLINICAL
MANAGEMENT OF CYCLOVERTICAL
DEVIATION ASSOCIATED WITH
VESTIBULAR FUNCTION,
PROPRIOCEPTION, OCULOMOTOR
SKILLS AND EMOTION

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“A lens is an Optometrist’s most valuable tool”

Amiel Francke
A Behavioral lens affects:

- Vestibular function-orientation
- Proprioception-body awareness
- Oculomotor skills-input
- Organization/Integration
- Storage-short term memory
- Retrieval skills
- Utilization of skills
- Speech and language
- Overall Behavior
“Optometric management, be it with lenses, prisms, vision therapy, motor development, light, supplements/nutrition or primitive reflexes is like playing keys on a piano”

Amiel Francke
Playing keys to the Three E’s

- Effective
- Efficient
- Effortless
A vertical prism prescription is considered when

- A patient has a vertical deviation
- Symptomatic complaints are related to vestibular function, proprioception and/or oculomotor imbalance
Typical symptoms of vertical heterophoria

- Eyes tire easily
- Loss of place while reading
- Patient skips lines/ rereads
- Patient reads slowly
- Burning sensation in the eyes
- Eye strain
- Headaches
- Blurring of reading material
Typical symptoms of Visual Pathway Dysfunction affecting the Vestibular Ocular Reflex

- Dizziness
- Fainting
- Loss of balance
- Lack of awareness of body in space
- Agoraphobic symptoms
- Disorientation
Whenever vertical prism is considered

- When to prescribe?
- How much to prescribe?

Questions Behavioral Optometrists must initially answer...
The next question is whether prescribing vertical prism

- Stabilize binocular vision
- Assist in treatment of an accompanying horizontal deviation
Tests used to assess dissociated vertical heterophoria

- Cover test
- Maddox rod
- Von Graefe dissociated test
- Associated phoria test ie Mallett
### Methods used to determine vertical prism prescriptions

- Measurement of the magnitude of the vertical heterophoria
- Vergence range
- Flip prism tests
- Vertical fixation disparity measurements
An Optometric approach used to identify, prescribe and monitor change in vertical heterophoria

- Patient symptoms
- Cover test
- Von Graefe dissociated phoria testing
- Horizontal vergence range
- Cheiromicroscopic tracing
- Trial frame awareness
- Multiple lens changes
### Sequential Strategy for treatment of a vertical deviation

- Prescribe the appropriate lens for far and near
- Determine the dissociated horizontal and vertical deviation at far and near
- Prescribe vertical prism, change as needed
- Prescribe VT according to EXO or ESO posture
- Prescribe VT according to vertical vergence demand
- Establish efficient binocular vision in open visual space at all distances
Teacher; 21YO WF

- 21 mo. Soda bottle exploded in OS>OD
- 7 hr. Surgery to remove glass
- 24 mo. Surgery for vitrectomy, scleral buckle, lens implant OS
- 27 mo. Patching/Rx 6 hrs./day
  One Brain/Kinesiology/PT ie muscle tightness, clenched teeth etc
- 17 yr. Strabismic surgery created; dizziness / imbalance, choking/difficult swallowing; led to visual assessment
SF Demonstrating Trauma to Iris and Cornea of Left Eye
Chief Complaints

- Constant diplopia
- Headache, ocular pain and heaviness
- Variable vision throughout the day
- Top student throughout her career
Evaluation 3 mo. after First Child Birth 11/04/08

All prior symptoms increased

- Dizziness, diplopia
- Loss of balance; tripped 2x, loss of place and skipping lines
- Objective (Retinoscopy):
  OD -4.00-2.50x75
  OS +8.50
- Subjective:     Dist       Near
  OD -4.50-2.50x75  Va 20/30+/-  20/40
  OS +8.00          Va 20/40+/-  20/100
- Cover Test;
  D/N; Constant Variable LF 50^ ET/ 30^ RH
Exam through New Rx 12/02/08

Diagnostic Rx: Worn 2 hrs/night; HA, dizziness increasing

- OD -4.50-2.50×75  10 BD 10 BO
- OS +8.00  10 BU 10 BO
- Worth Four Dot:
  Suppression / Diplopia
- Normal Correspondence; Bagolini, After Image Transfer
First Cheiroscopic Assessment
12/02/08: ? Aniso/cyclo
## Basic Skills Therapy

- **Motility - Saccadic Fixator, Monocular**
  - Prism Jump, pegboard rotator
- **Accommodation – Monocular/Biocular**
- **Lustre**
- **Kinesthetic /Somatic Superimposition:**
  - Brock String
  - Quoits
  - Anti suppression techniques;
  - MFBF-posture board
Reevaluation 1/08/09: First Complaint of Image Size Difference

- Increased ability to put one image in front of the other image
- Increased reading comfort; 20 min.
- +.50 over objective / plano over subjective
- Va Distance; OD 20/25- Near; OD 20/40
  OS 20/30+/- OS 20/100
- Cover Test; Ortho @ Distance Variable Int Lf
  HET @ near ? ARC

Plan: Consider further binocular stability leading to CL / Rx
Cheiroscope: Improved Organization/Stability 12/30/08
Reevaluation 2/17/09; 8 VT sessions
1/15/09-2/03/09

- Increased balance
- Increased comfort
- Decreased reading comfort; increased distractibility ie size difference
- VA; Dist: OD 20/30- Near: 20/40-
  OS 20/40- 20/50-
Cheiroscope plateau 2/03/09
Rx Contact Lens and Spectacle over correction 2/24/09

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Spectacle over correction;

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First Cheiroscope through CL: Near
Equal Image Size/Vertical Deviation
6/09/09
S. Awaya; New Aniseikonia Tests
Handaya Co., LTD.
Presentation of equal image size
24 VT sessions: 4/05/09-10/15/09, First complaint of Cyclodeviation

- **4/28/09; Modified Over Rx:**
  
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- **9/10/09; Modified Over Rx:**
  
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Assessment of Cyclodeviation
11/05/09

- Magnitude of Deviation; The New Cyclo Tests
  Shinobu Awaya, M.D.
- Responsiveness of Deviation; Prism Rotation Cylinder Rotation
- Cyclomotor vs Structural Deviation; Pinhole differentiating-Iris Lens
S. Awaya; New Cyclo Tests
Handaya Co., LTD.
Techniques used to Treat Cyclodeviation

- Maddox Rod;
  Able to create motor change measurable through S. Awaya’s Tests
- Hand held synoptophore, Quoits, Stop n’ Go card, Red/Green acetate
- Peripheral fusion
- Central / peripheral fusion
Hand Held Synoptophore; free space superimposition
Handheld Quoits; Manually adjusted/Held in Left/Down Gaze
Stop ’n GO Free Space Fusion Trainer
Arrangement for Chiastopic Fusion
Result of Chiastopic Fusion

Diagram showing the result of Chiastopic Fusion with a central black circle and two white circles connected by arrows labeled 'Black' and 'Clear'.
Result of Orthopic Fusion
Anti Suppression with Binocular Awareness Control
Cheiroscope Variability 7/14/09
Cheiroscope Variability 10/15/09
First Cheiroscope Demonstrating Cyclo Deviation 10/29/09?
Cheiroscope; Demonstrating Stabilized Cyclo Deviation 2/02/10
First Experience of Simultaneous Space 11/05/09

- Handheld Quoits while being aware of peripheral space
- Able to unite Central/Peripheral awareness through Gaze Down/Left
First Expression of Inner Awareness  
11/05/09

- Quoits; “Ropes sounds like Floating”
- Always felt as if she didn’t exist; she didn’t feel space
- She felt divided; as if a line ran through the middle of her head, separating RE from LE
- Tightened her body; “to keep Strong”, “helps bring herself together”, “not sure how? Trying to keep RE over LE”
- Created stomach ache and headache, muscle tightness, inflexibility treated by; **One Brain / Kinesiology / PT**
Inner feelings continue 1/24/09

- Realized double Identity; outside appeared secure/inside tight
- First felt truth at the beginning of VT; first felt unified brain
- Looking for a point of distinction between peripheral and central field
- Parts of space escaping when approaching unified field
References:

- Consultation; Ken Cuiffreda O.D., Allen Cohen O.D., Jay Cohen O.D.