

MANAGEMENT OF DECOMPENSATED HETEROPHORIA WITH SPECTACLES

Bruce Evans

Reference: Pickwell's Binocular Vision Anomalies, 5th Edition,
Elsevier, 2007.

TREATMENT OF MOTOR DEVIATION

- Motor deviation
 - Refractive correction / modification
 - Prisms
 - Eye exercises
- Binocular sensory adaptations
 - Phoria: foveal suppression is rare
 - Strabismus: consider both sensory & motor



MOTOR DEVIATION: REFRACTIVE CORRECTION: OVERVIEW

- Mandatory in accommodative esotropia
- Also possible to treat exo-deviations with negative lenses & convergence excess with multifocals
- limited by 4 factors
 - angle of deviation
 - refractive error
 - accommodation
 - AC/A ratio



MOTOR DEVIATION: REFRACTIVE CORRECTION: SPECIFICS

- determine sphere that
 - eliminates strabismus (no diplopia)
 - eliminates FD on Mallett Unit
- Can check (2 mins) don't adapt (North & Henson, 1985)
- prescribe, try to reduce approx. every 3-6/12
- negative adds (Chen et al., 2016) and bifocals/varifocals can work well



MOTOR DEVIATION: REFRACTIVE CORRECTION: MYTHS

- negative adds might cause myopia
 - overminus lenses do not induce clinically significant myopic changes (Rutstein et al., 1989; Paula et al., 2009)
- patient likely to adapt to the over-correction
 - if abnormal BV, tend not to adapt (North & Henson, 1985)
- bifocals might reduce children's ability to accommodate
 - smooth muscle; 14D-3D=11D
 - BF don't reduce amplitude of accommodation (Fresina et al, 2010)
- accommodative (hyperopic) esotropia will not need glasses in later life
 - after 10 yrs, 97% still need Rx (Rutstein & Marsh-Tootle, 1998)

MOTOR DEVIATION: REFRACTIVE CORRECTION: CASE STUDY: D1542

- 11/5/96, female, age 8y, 1 headache a fortnight
 - wearing full cyclo plus (c. +2.00, R=L)
 - cover test: D: 8Δ SOP N: 10Δ RSOT
 - with +2.00 add: N 4Δ RSOT with +2.50 add: N ortho

Date	May 96	July 96	Mar 97	Jun 97	Sep 97	Jan 98	Apr 98	Jun 98	Sep 98
Add	+2.50	+3.00	+2.50	+2.00	+1.75	+1.50	+1.00	+0.50	None

MOTOR DEVIATION: PRISMATIC CORRECTION: OVERVIEW

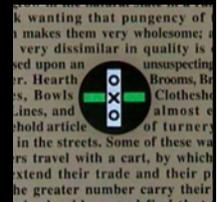
- preferred treatment in small/moderate vertical deviations
- may also help in small/moderate horizontal deviations if not amenable to refractive modification or exercises
- limited by angle of deviation / cosmesis of prism



"There I was, asleep in this little cave here, when suddenly I was attacked by this hideous thing with five heads!"

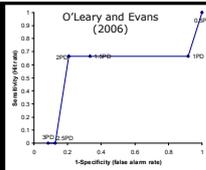
MOTOR DEVIATION: PRISMATIC CORRECTION: SPECIFICS

- determine prism that
 - eliminates strabismus (no diplopia)
 - eliminates FD on Mallett Unit
- unlikely to adapt to prism if abnormal BV (North & Henson, 1985)
- But can check (2 mins) don't adapt (North & Henson, 1985)



MOTOR DEVIATION: PRISMATIC CORRECTION: EVIDENCE

- Small RCT (mostly esophoria) shows Mallett prism preferred to no prism "Based on our results, one would not expect to find a significant preference for prism prescribed according to Sheard's criterion." Payne et al., 1974
- Mallett prism improves stereoacuity Abd Manan et al., 2001
- Prism prescribed using Sheard's criterion is no better than placebo for children with CI Scheiman et al., 2005
- RCT: Mallett prism improves reading speed O'Leary & Evans, 2006
- Presbyopes with CI have fewer symptoms with BI prism Teitelbaum et al., 2009
- Prismatic glasses (8BI) as effective as computer orthoptics at improving reading Dusek et al., 2011
- Vertical prism improves postural stability, especially if chronic lower back pain Matheron & Kapoula, 2008, 2014



MOTOR DEVIATION: PRISMATIC CORRECTION: MYTH

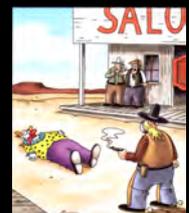
- patient might "eat up prisms"
 - prism adaptation usually abnormal in orthoptic anomalies (North & Henson, 1981)
- exceptions can occur
 - e.g., myopes with decompensated esophoria
 - MKH Polatest method criticized for leading to "excessive amounts of prisms" (Lang, 1994)

MOTOR DEVIATION: PRISMATIC CORRECTION: CASE STUDY: F6123

- 8/4/97, male, age 6y, ? dyslexia
 - symptoms: words move, sore and tired eyes
 - motility full, +0.50DS BE, cover test ortho., D=N, NPC=nose
 - Dissoc. tests: D: 3Δ SOP, 2Δ L/R N: 3Δ XOP, 3Δ L/R
 - Align. prism: D: LE supp. N: 1Δ in, 1Δ up R
 - Rx: plano, 1Δ up R
- 5/7/97
 - symptoms: with Rx no eyes hurting, D & N clearer
 - no slip with glasses, other findings as above

MOTOR DEVIATION: FUSIONAL RESERVE EXERCISES: OVERVIEW

- preferred treatment in small/moderate horizontal deviations, if px co-operative
 - Work well in those aged 11-19y, even if strabismic (Pickwell & Jenkins, 1982)
- in exo-deviations improve ability to converge
- in eso-deviations improve ability to diverge
- try to assess progress using a method different to the treatment technique
- there is some supporting evidence from RCTs
 - Ciuffreda & Tannen (1995)
 - Scheiman & Gwiazda (2011)



It was over. But the way the townfolk called it, neither man was a winner.

Exercises v refractive management v prisms

Exercises	Spheres	Prisms
Treatment	Treatment	Crutch
Lots of effort	Minimal effort	No effort
Lots of patient time	No patient time	No patient time
Likely to make symptoms worse	Likely to make symptoms better	V likely to make symptoms better
If regression to the mean, waste of time	If regression to the mean, waste of money	If regression to the mean, waste of money
Costs practitioner, patient, parent time	Costs specs every 3-6 months	Costs specs every 6-12 months

- **Conclusions:** patient & parent should pick the management taking account of their priorities

FUSIONAL RESERVE EXERCISES:

EVIDENCE IN THE LAST 10 YEARS - RCTs

- In-office VT better than placebo or home pencil push-ups (Scheiman et al., 2005; CITT, 2008)
 - [15min a day + 60min weekly > 15min a day]
- Systematic review supports VT for CI; lack of evidence for other disorders (Cacho Martinez et al., 2009)
- Treatment for 12+ weeks may be optimal (Scheiman et al., 2010)
 - But did not control for treatment dose
- Systematic review suggests in-office VT better than at home (Scheiman & Gwiazda., 2011)
 - But don't seem to have controlled for treatment dose



Follow @BruceJWEvans

Handout from www.bruce-evans.co.uk for regular tweets on optometric research