Workshop: testing binocular function when changing from spectacles to contact lenses

Prof Bruce Evans
BSc (Hons) PhD FCOptom FAAO FEAO FBCLA DipCLP DipOrth
Director of Research Institute of Optometry
Visiting Professor City, University of London
Visiting Professor London South Bank University
Private practice Cole Martin Tregaskis, Brentwood, Essex
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DISCLOSURE
- Paid lectures & KOL/product feedback programmes:
  - Lecture content always my own
- Author of Pickwell’s Binocular Vision Anomalies, editions 3-5
- i.O.O. Sales Ltd markets IFS orthoptic exercises, which the speaker designed, and for which he receives a small royalty
- Community optometric practice in Brentwood, Essex

PLAN

Cover test – main varieties

- Cover-uncover test
  - Diagnose phoria/tropia
  - Measure deviation
    - Estimation
    - Prism cover test
- Alternating cover test
  - Measure deviation
  - Estimation
  - Prism cover test
- Combined cover-uncover & alternating
  - All the above, and
  - c.f., habitual angle with total angle

Grade 1

Panesar & Evans, in preparation

Grade 3

Panesar & Evans, in preparation
Poor cover test recovery

Cover test dynamics are

Grading system has reasonable repeatability

Cover test dynamics are complex (Barnard & Thomson, 1995)

Grade 5

Year 1

Grade 4 slow/jerky and breaks down with repeat

Grade 3 definitely slow/jerky but not breaking down

Grade 2 slightly slow/jerky

Grade 1 rapid and smooth

Signs of decompensated phoria

Cover testing – main varieties

Cover-uncover test

Diagnose phoria/tropia

Grade recovery movement in phoria

Measure deviation

Estimation

Prism cover test

Alternating cover test

Measure deviation

Estimation

Prism cover test

Combined cover-uncover & alternating

All the above, and

c.f., habitual angle with total angle

More detailed explanation

1.5 is the angle subtended by 1cm at 1m

At 1.5m: 1cm subtends 3.5, 2cm subtends 6.5, etc.

Work in pairs: optom & patient

Optom holds ruler 33cm away from patient

Optom watches patient’s eyes

Patient looks at 0, then at 2: the eyes have moved through 6.5

Patient looks at 0, then at 4: the eyes have moved through 12.5

Practical session: practice estimating version movements, then apply to cover testing

Estimating the movement seen in cover testing

Why estimate instead of measure with prism bar?

Needs minimal patient co-operation

Measures situation under natural viewing conditions

“the first cover is the purest cover”

It is easy for the practitioner to do accurately

Practitioner can “calibrate” their measurements by comparing the movement seen in the cover test with a version movement of a known size

i.e., compare a cover test movement of unknown size with a version movement of known size

PLAN

COVER TEST

MALLET FIXATION DISPARITY TEST

FUSIONAL RESERVES
KEY SIGNS OF DECOMP. PHORIA
- Symptoms
- Poor cover test recovery
- Aligning prism (FD test)
- Low fusional reserve opposing phoria
  - Sheard’s criterion
  - Particularly useful for exophorias
- For esophorias, size and imbalanced fusional reserves are relevant
- For hyperphorias, size matters

ALIGNING PRISM: Mallett Unit
- Aligning prisms/spheres to eliminate FD
- Good foveal and peripheral fusion lock
- Question set is important
  - Ask if a line ever moves
  - Karania & Evans (2006)
  - For symptomatic phoria:
    - Sensitivity 75%
    - Specificity 78%
  - Jenkins, Pickwell, & Yekta (1989)

FUSIONAL RESERVES
Can be measured with:
- Loose prisms
- Prism bar
- Rotary prisms

PLAN
COVER TEST
MALLETT FIXATION DISPARITY TEST
FUSIONAL RESERVES

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Full handout of slides from www.bruce-evans.co.uk
FUSIONAL RESERVES

- Use base out prism to measure convergent reserve
- Use base in prism to measure divergent reserve
- Measure the reserve that opposes the phoria first
  - Rosenfield et al. (1995)
- Often the blur point cannot be measured (Horwood & Toor, 2014)
- Record in Δ as:
  - blur / break / recovery
- Example:
  - Fusional reserves at 33cm with glasses
    - convergent: 20/28/26
    - divergent: -- /16/12