Initial Evaluation of the Eyetronix Flicker Glass
A Novel Amblyopia Therapy

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Purpose

Amblyopia is a neurological development disorder that presents with deficits in spatiotemporal vision processing resulting from an active suppression process. The current standard of care for amblyopia involves visual penalization (using patching, often for several hours a day, or atropine) of the "good", non-amblyopic, eye. We propose and evaluate an alternative treatment method that does not penalize the patient's ability to see while being treated and promotes normal binocular vision: the Eyetronix Flicker Glasses (EFG).

PLEASE NOTE: Data from this study will be presented as efficacy of the novel EFG Therapy for amblyopia.

The objective of this study is to evaluate the feasibility and normal binocular vision: the patient's ability to see while being treated and promotes alternative treatment method that does not penalize the standard of care for amblyopia involves visual penalization (using patching, often for several hours a day, or atropine) of the "good", non-amblyopic, eye. (Hussey unpubl).

Methods

Study Design:
• Open-label
• Multi-center (x4) study
• 12 weeks treatment

Subjects: 24 children (10.8 ± 3.9 years; range 5 to 17); anisometropic amblyopia; unsuccessfully treated in the past

Inclusion criteria: 1. Mild/moderate anisometropic amblyopia:
• BCVA 0.2 logMAR or better in non-amblyopic eye
• Amblyopic eye BCVA <0.2 or 0.7 logMAR
• Anisometropia >1.25D or >1.50DC

2. Full-time best-correction >8 weeks prior to EFG

1. No amblyopia treatment 1 month prior
• Spectacle frame with LCD lenses
• Electronic shutter
• Accurate/rapid alternating occlusion rate

EFG pre-programmed (for this study): 1. 7Hz (ref)
• 50% cycle

EFG regime:
• Daily (6-7 days/week)
• 1-2 hours/day
• Near vision tasks (open):
• Reading
• Homework
• Computer
• Video games

Outcome measures:
1. LogMAR VA (ETDRS procedure)
2. Stereopsis (Random Dot 2)
3. Fusion (Worth-4 dot with Bangerter filters)

Results

NO Adverse Events

22 (/24) subjects improved either global or local stereopsis

Conclusions

• Promising benefit of EFG Therapy as a treatment for amblyopia in (older) children
• Results comparable to previous studies using patching or atropine
• Improvement stereopsis/daily activities suggest EFG Therapy promotes binocular vision

Hypotheses

Affecting Suppression? How do we measure?
Changing Masking at the Cortex (Schor)?
Affecting Motion Detection at LGN (Hussey)?
Affecting Motion Detection at LGN (Hussey)?

References

8. PEDIG, Ophthalmology, 2008