

TYPES OF ACCOMMODATIVE DYSFUNCTIONS: DIAGNOSIS AND TREATMENT METHODS

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Introduction/Background

- Accommodative anomalies affect the visual performance of an individual during or after the near work
- There is a need for a complete analysis of not only the accommodative system, but all presentations of dysfunction
- Prevalence of these anomalies varies widely, but can have a vast impact on the lives of learners, both young and old alike
- As primary care optometrists, and often the first health care practitioners to correlate ocular findings with school difficulties, we must make the proper diagnosis and find an appropriate treatment

Methods

- An examination of current and historical literature was performed using the Ferris State University Flite Library database and the National Institute of Health
- Appropriate articles from the last 15 years as well as current textbooks were searched for information pertaining to accommodative excess, accommodative insufficiency, ill sustained accommodation, and accommodative infacility
- Sources were excluded if they were found to be outdated

Test	Expected finding
NRA	+2.00D (±0.50D)
PRA	-2.37D (±1.00D)
Push-up, pull-away, minus lens to blur	On average = 18.5-0.30(age)
MEM and Nott Retinoscopy	+0.25D to +0.50D
Bell Retinoscopy	17-14in to achieve against motion; 15-18in for with motion
Binocular crossed cylinder	+0.50D
Accommodative facility (N/F or +/-2.00)	Age 8-12: 5cpm binocularly or 7cpm monocularly Age 13+: 10cpm binocularly or 11cpm monocularly



Results

Accommodative insufficiency

- Symptoms: blurred VA at near, fatigue, discomfort, strain, difficulty with attention, and concentration when reading
- Signs: reduced amplitude of accommodation, high accommodative lag, and reduced ability to clear vision when accommodation is stimulated
- Treatment: VT or plus lenses

Accommodative Excess

- Symptoms: asthenopia and/or headaches associated with near tasks and intermittent blurred vision
- Signs: low MEM or NRA, failing positive lenses on facility testing, variable static, and subjective findings
- Treatment: vision therapy or plus lenses, with visual hygiene, proper working distances, and lighting support

Accommodative infacility

- Signs: low MAF and BAF, slow/reduced NRA/PRA
- Symptoms: difficulty focusing from distance to near and vice versa, asthenopia, and trouble with attention and concentration when reading
- Treatment: vision therapy and plus lenses to a lesser extent

Ill-sustained accommodation

- Signs: normal accommodative amplitude, fail +/-2.00D flipper test, and decreased PRA
- Symptoms: fatigue and/or blur with prolonged near tasks and asthenopia
- Treatment: plus lenses or vision therapy

Conclusions

- A cycloplegic refraction is required to most definitively diagnose any of these accommodative anomalies
- The first step of treatment should always be to give the patient corrective lenses for their refractive error
- Both vision therapy and plus lenses can be extremely valuable for these types of patients
- More research is required to find a conclusive etiology for accommodative dysfunction in order to prevent an increase in prevalence, especially with the drastic increase in near work

References

1. Carlson, N. and Kurtz, D., 2016. Clinical procedures for ocular examination. 4th ed. McGraw-Hill Education.
2. Scheiman, M., Wick, B. and Steinman, B., 2014. Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders. Lippincott, Williams & Wilkins.
3. Cooper, J. S., MS, OD, Burns, C. R., OD, Cotter, S. A., OD, Daum, K. M., OD, Ph D, Griffin, J. R., OD, & Scheiman, M. M., OD. (2010). Care of The Patient with Accommodative and Vergence Dysfunction. St. Louis, MO: American Optometric Association.
4. Hoffman L, Cohen AH, Feuer G. Effectiveness of optometric vision therapy/orthoptics in a private practice. Am J Optom 1973; 50:813-6.
5. Cooper J, Feldman JM, Selenow A, et al. Reduction of asthenopia following accommodative facility training. Am J Optom Physiol Opt 1987; 64:430-6.

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