



Clinical Policy Title: Vision therapy for visual system disorders

Clinical Policy Number: CCP.1066

Effective Date: March 1, 2014
Initial Review Date: November 20, 2013
Most Recent Review Date: December 3, 2019
Next Review Date: April 2021

Policy contains:

- Behavioral training.
- Convergence insufficiency.
- Orthoptics.
- Pleoptics.

ABOUT THIS POLICY: AmeriHealth Caritas has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas' clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of "medically necessary," and the specific facts of the particular situation are considered by AmeriHealth Caritas when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. AmeriHealth Caritas' clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. AmeriHealth Caritas' clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, AmeriHealth Caritas will update its clinical policies as necessary. AmeriHealth Caritas' clinical policies are not guarantees of payment.

Coverage policy

Orthoptic training, a type of vision therapy, is clinically proven and, therefore, medically necessary for the treatment of convergence insufficiency (American Academy of Ophthalmology, 2017a; Handler, 2011; Cooper, 2010).

Limitations:

All other services for vision therapy for visual system disorders are investigational and, therefore, not medically necessary (American Academy of Ophthalmology, 2017b).

This policy is specific to vision therapy and is not intended as policy for medical eye diseases or refractive disorders.

Alternative covered services:

Routine physician office visits and Early and Periodic Screening, Diagnostic and Treatment screening.

Background

The American Optometric Association (2009) broadly defines vision therapy (also called vision or visual training) as a structured program of visual activities prescribed to improve eye coordination and eye focusing abilities. The goals of vision therapy are to reinforce the eye and brain connection and help correct deficiencies in eye movement, eye focusing, and eye teaming. Vision therapy has been used to remediate vision problems associated with (American Optometric Association, 2009):

- Ocular motility dysfunctions (eye movement disorders).
- Non-strabismic binocular disorders (inefficient eye teaming).
- Strabismic binocular disorders (misalignment of the eyes).
- Amblyopia (poorly developed vision).
- Accommodative disorders (focusing problems).
- Visual information processing disorders, including visual-motor integration and integration with other sensory modalities.
- Visual sequelae of acquired brain injury.

There are several relatively common types of vision disorders within the above categories. One is convergence insufficiency, a sensory/neuromuscular disorder in which the eyes are unable to turn inward and focus during up-close activities. The estimated prevalence of convergence insufficiency ranges between 2.25 and 8.30% (Scheiman, 2011a). A second is amblyopia, or “lazy eye,” in which the brain favors one eye, and vision in the other eye is reduced. A third is strabismus, when both eyes do not look at the same place at the same time; esotropia (“crossed eyes”) and exotropia (“wall eyes”) are types of strabismus.

Modalities used in vision therapy include “passive” therapies, such as occlusion therapy (i.e., eye patching), prescriptive or prismatic lenses, filters, and other materials and equipment. “Active” therapies include orthoptics, pleoptics, behavioral training, and computer-based training. Orthoptics are exercises designed to improve the function of the eye muscles, and pleoptics are exercises designed specifically to improve the amblyopic eye. The length and type of therapy programs vary depending on the severity of the diagnosed conditions, and may last from several months to longer periods of time. Vision therapy may be office- or home-based and is provided most often by an optometrist. Vision therapy is used most commonly in pediatric ophthalmology populations and in adults with disorders specific to neuro-ophthalmology and adult eye muscle disorders (American Optometric Association, 2013; American Optometric Association, 2009).

This policy addresses orthoptics, pleoptics, behavioral training, and computer-based training for treatment of vision disorders.

Searches

AmeriHealth Caritas searched PubMed and the databases of:

- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality.
- The Centers for Medicare & Medicaid Services.

We conducted searches on September 24, 2019. Search terms were “Ocular Motility Disorders/rehabilitation” (MeSH), “Ocular Motility Disorders/therapy” (MeSH), and free text terms “vergence therapy,” “vision therapy,” “orthoptic,” and “convergence insufficiency.”

We included:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

The 2010 reference guide for clinicians from the American Optometric Association documented that vision therapy is usually successful in patients with convergence insufficiency (Cooper, 2010). Two years later, the American Academy of Ophthalmology (2012) issued a guideline that children with exotropia who also have convergence insufficiency benefit from base out prism therapy.

A joint statement on learning disabilities by the American Academy of Pediatrics/Section on Ophthalmology/Council on Children with Disabilities, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, and American Association of Certified Orthoptists did not endorse or recommend any vision therapy for dyslexia other than for convergence insufficiency (Handler, 2011).

A systematic review of 16 articles, only three of which were clinical trials, concluded that vision therapy improves symptoms and signs for convergence insufficiency, but evidence of efficiency exists for pencil push-ups and prism glasses is lacking. Insufficient evidence exists on efficacy for other strabismic binocular anomalies and accommodative disorders (Cacho Martinez, 2009). A Cochrane review of six studies (n = 475), three for adults and three for children, concluded vision therapy/orthoptics was effective for treating convergence insufficiency (Scheiman, 2011b).

Moderate-quality evidence from the Convergence Insufficiency Treatment Trial Study Group (ClinicalTrials.gov identifiers: NCT00347945, NCT00338611) suggests intensive office-based vision therapy and orthoptic computerized exercises with home exercises improve symptoms and clinical signs

of convergence insufficiency in children more than home-based pencil push-ups or home-based computer vergence/accommodative therapy and pencil push-ups, with sustained improvement for at least one year (Convergence Insufficiency Treatment Trial Study Group, 2009; 2008; Scheiman, 2005; 2011b). However, critics of the trial pointed out the treatment arms were not applied with equal intensity and may not reflect current practices (Lavrich, 2010). It is not known if their program of office-based computerized vision therapy and orthoptic exercises reinforced with home exercises is as effective outside of a controlled, research environment.

The lack of success of home-based therapy for convergence insufficiency (after 12 weeks of treatment) was later upheld in a randomized controlled trial of 204 subjects (Pediatric Eye Disease Investigator Group, 2016). A Convergence Insufficiency Symptom Survey completed by 118 adolescent patients who presented for routine eye examinations revealed significantly lower mean scores when physician-administered than when self-administered (11.4 versus 16.3, $P = .007$) (Horan, 2015).

A trial of 218 children age 9-17 treated for convergence insufficiency revealed that after 12 weeks of treatment, academic behavior improvements are associated with treatment outcomes ($P < .0001$). Academic behavior is measured through frequency of adverse school behavior and parental concern about school performance (Borsting, 2012).

The Convergence Insufficiency Treatment Trial Study Group (2008) published a study of 221 children ages 9–17 with symptomatic convergence insufficiency. After 12 weeks of treatment, the following types of interventions showed improved outcomes:

- 73% for office-based vergence/accommodative treatment with home reinforcement.
- 43% for home-based pencil push-ups.
- 33% for home-based computer vergence/accommodative therapy group.
- 35% placebo.

After one year, only 12.5% of the treated patients showed a decreased accommodative amplitude (Convergence Insufficiency Treatment Trial Study Group, 2008; Scheiman, 2011a).

Results from systematic reviews show an array of vision therapy modalities has been used to treat amblyopia, accommodative disorders, strabismic and non-strabismic binocular vision disorders, visual information processing disorders, and sequelae of acquired brain injury. Evidence of the effectiveness of vision therapy is limited by small numbers of subjects, largely unsystematic retrospective designs, lack of standard treatment methods and protocols, inadequate reporting of patient selection criteria and treatment administration, and lack of comparison groups. Except for vision therapy for convergence insufficiency, virtually no adequate randomized controlled trials of vision therapy have been published, and evidence on the long-term effectiveness and durability of these treatments is largely absent.

There is insufficient evidence of effectiveness of other types of active vision therapy for all other clinical indications (Taylor, 2012; 2011).

Policy updates:

A total of four peer-reviewed references were added to this policy, and seven peer-reviewed references were removed in 2017.

In 2018, we updated two American Academy of Ophthalmology Preferred Practice Pattern® guidelines on esotropia and exotropia (2017) and amblyopia (2017) with no policy changes. The policy ID changed from CP# 10.02.01 to CCP.1066.

In 2019, we added two peer-reviewed publications to the reference list.

References

Professional society guidelines/others:

American Academy of Ophthalmology. Complementary Therapy Assessment. Visual Training for Refractive Disorders. August 2013. <http://www.aao.org/complimentary-therapy-assessment/visual-training-refractive-errors-cta--october-200>. Accessed September 24, 2019.

American Academy of Ophthalmology. Amblyopia PPP - 2017. Preferred Practice Pattern®. <https://www.aao.org/preferred-practice-pattern/amblyopia-ppp-2017>. Accessed September 24, 2019.(b)

American Academy of Ophthalmology. Esotropia and Exotropia PPP - 2017. Preferred Practice Pattern®. American Academy of Ophthalmology website. <https://www.aao.org/preferred-practice-pattern/esotropia-exotropia-ppp-2017>. Accessed September 25, 2019.(a)

American Optometric Association Definition of Optometric Vision Therapy. 2009. <https://www.aoa.org/Documents/CRG/definition-of-optometric-vision-therapy.pdf>. Accessed September 24, 2019.

Cooper JS, Burns CR, Cotter SA, et al. Optometric clinical practice guideline. Care of the patient with accommodative and vergence dysfunction: reference guide for clinicians. Revised December, 2010. <https://www.aoa.org/documents/optometrists/CPG-18.pdf>. Accessed September 24, 2019.

Handler SM, Fierson, WM. Section on Ophthalmology Council on Children with Disabilities, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, American Association of Certified Orthoptists. Learning disabilities, dyslexia, and vision. *Pediatrics*. 2011; 127(3): e818-856. Doi:10.1542/peds.2010-3670. <http://pediatrics.aappublications.org/content/pediatrics/127/3/e818.full.pdf>. Accessed September 25, 2018.

Peer-reviewed references:

Borsting E, Mitchell GL, Kulp MT, et al. Improvement in academic behaviors after successful treatment of convergence insufficiency. *Optom Vis Sci*. 2012;89(1):12-18. Doi: 10.1097/OPX.0b013e318238ffc3.

Cacho Martinez P, Garcia Munoz A, Ruiz-Cantero MT. Treatment of accommodative and nonstrabismic binocular dysfunctions: A systematic review. *Optometry*. 2009;80(12):702-716. Doi: 10.1016/j.optm.2009.06.011.

Convergence Insufficiency Treatment Trial Study Group. Long-term effectiveness of treatments for symptomatic convergence insufficiency in children. *Optom Vis Sci*. 2009;86(9):1096-1103. Doi: 10.1097/OPX.0b013e3181b6210f.

Convergence Insufficiency Treatment Trial Study Group. Randomized clinical trial of treatments for symptomatic convergence insufficiency in children. *Arch Ophthalmol*. 2008;126(10):1336-1349. Doi: 10.1001/archophth.126.10.1336.

Escuder AG, Hunter DG. The role of botulinum toxin in the treatment of strabismus. *Semin Ophthalmol*. 2019;34(4):198-204. doi: 10.1080/08820538.2019.1620795.

Horan LA, Ticho BH, Khammar AJ, Allen MS, Shah BA. Is the convergence insufficiency symptom survey specific for convergence insufficiency? A prospective, randomized study. *Am Orthopt J*. 2015;65:99-103. Doi: 10.3368/aoj.65.1.99.

Lavrich JB. Convergence insufficiency and its current treatment. *Curr Opin Ophthalmol*. 2010;21(5):356-360. Doi: 10.1097/ICU.0b013e32833cf03a.

Oliva O, Morgado Á. Bilateral lateral rectus recession versus unilateral recession/resection for basic intermittent exotropia. *Medwave*. 2018 Oct 29;18(6):e7319. doi: 10.5867/medwave.2018.06.7318.

Pediatric Eye Disease Investigator Group. Home-based therapy for symptomatic convergence insufficiency in children: A randomized clinical trial. *Optom Vis Sci*. 2016;93(12):1457-1465. Doi: 10.1097/OPX.0000000000000975.

Scheiman M, Cotter S, Kulp MT, et al. Treatment of accommodative dysfunction in children: Results from a randomized clinical trial. *Optom Vis Sci*. 2011;88(11):1343-1352. Doi: 10.1097/OPX.0b013e31822f4d7c.

Scheiman M, Gwiazda J, Li T. Non-surgical interventions for convergence insufficiency. *Cochrane Database Syst Rev*. 2011;(3):Cd006768. Doi: 10.1002/14651858.CD006768.pub2.

Scheiman M, Kulp MT, Cotter S, et al. Vision therapy/orthoptics for symptomatic convergence insufficiency in children: Treatment kinetics. *Optom Vis Sci*. 2010;87(8):593-603. Doi: 10.1097/OPX.0b013e3181e61bad.

Taylor K, Elliott S. Interventions for strabismic amblyopia. *Cochrane Database Syst Rev*. 2014;(7):Cd006461. Doi: 10.1002/14651858.CD006461.pub4.

Taylor K, Powell C, Hatt SR, Stewart C. Interventions for unilateral and bilateral refractive amblyopia. *Cochrane Database Syst Rev*. 2012;(4):Cd005137. Doi: 10.1002/14651858.CD005137.pub3.

Centers for Medicare & Medicaid Services National Coverage Determinations:

No National Coverage Determinations identified as of the writing of this policy.

Article: Provider Education Article: Medicare Coverage of Rehabilitation Services for Beneficiaries with Vision Impairment. Baltimore, MD. Centers for Medicare & Medicaid Services. May 29, 2002. Transmittal AB-02-078, Change Request 2083.

Local Coverage Determinations:

No Local Coverage Determinations identified as of the writing of this policy.