

# Vision Therapy/Orthoptic Training



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This Medical Policy document describes the status of medical technology at the time the document was developed. Since that time, new technology may have emerged, or new medical literature may have been published. This Medical Policy will be reviewed regularly and be updated as scientific and medical literature becomes available; therefore, policies are subject to change without notice.

## DESCRIPTION

Orthoptics training refers to techniques designed to correct accommodative and convergence insufficiency (or convergence dysfunction). Orthoptic training may also be referred to as vision training or vision therapy.

Orthoptic training has been investigated in individuals with the following conditions that can cause convergence insufficiency:

- Accommodative dysfunction
- Amblyopia
- Concussion
- General binocular dysfunction
- Strabismus
- Stroke
- Traumatic brain injury (TBI)

Convergence insufficiency is the inability to maintain binocular function (keeping the two eyes working together) while working at a near distance. Typically, one eye will turn outward (intermittent exotropia) when focusing on a word or object at near. Symptoms of convergence insufficiency include diplopia (double vision), eyestrain, eye fatigue, tension in and around the eyes, headaches when reading, and squinting or closing of one eye. Many patients will complain that they have difficulty concentrating on near work (computer, reading, etc.) and that the written words blur after prolonged periods of reading or if reading when tired. Not all symptoms are present in every patient with convergence weakness.

Convergence insufficiency is diagnosed by an ophthalmologist, optometrist or orthoptist after obtaining a history of the patient's symptoms and measuring convergence ability. The examination includes determining the distance from the eyes that the patient can hold the eyes together without double vision (near point of convergence) and the amount of prism that can be placed in front of the eyes at a particular distance before double vision is seen (fusional vergence amplitude). Presence of any refractive errors, eye muscle dysfunction, or weaknesses in accommodation (near focusing) should also be determined.

During a routine eye examination, convergence weakness may be diagnosed even without the above-mentioned symptoms. Some patients test in the office as having poor convergence; however, they are asymptomatic. This may be the result of true convergence weakness, but is often found when the patient is distracted, shy, overly excited or does not understand the directions given. These patients should either be retested at another time or simply watched for symptoms of diplopia or headaches with near work. A patient who is not having difficulty with near tasks but tests positive for convergence insufficiency does not require any treatment but should be followed.

Convergence insufficiency and stereoacuity is documented by:

- Exodeviation at near at least 4 prism diopters greater than at far; **AND**
- Insufficient positive fusional vergence at near (positive fusional vergence (PFV) less than 15 prism diopters blur or break) on PFV testing using a prism bar; **AND**
- Near point convergence (NPC) break of more than 6 cm; **AND**
- Appreciation by the patient of at least 500 seconds of arc on stereoacuity testing.

For convergence insufficiency the vision therapy usually incorporates specific treatments e.g. push-up exercises using accommodative target of letters, numbers or pictures; push-up exercises with additional base-out prisms; jump-to-near convergence exercises; stereogram convergence exercises; recession from a target; and/or computer programs, as well as behavioral therapies in order to achieve the following:

- Normalize the near-point of convergence
- Normalize fusional vergence ranges and facility
- Minimize suppression
- Normalize associated deficiencies in ocular motor control and accommodation
- Normalize accommodative/convergence relationship
- Normalize depth judgement and/or stereopsis

- Integrate binocular function with information processing

Convergence insufficiency can be complicated by:

- Restricted fusional ranges
- Suppression
- An accommodative element
- Other diagnosed vision anomalies such as ocular motor dysfunction and accommodative disorder
- Associated conditions such as stroke, head trauma or other systemic diseases

## **Orthoptic Training for Convergence Insufficiency**

### **Clinical Context and Therapy Purpose**

Convergence insufficiency is a binocular vision disorder associated with defects in the eyes' ability to turn inward toward each other (eg, when looking at near objects). The diagnosis of convergence insufficiency is made when patients have a remote near point of convergence or difficulty in sustaining convergence in conjunction with sensations of visual or ocular discomfort at near vision. Symptoms of this common condition may include eyestrain, headaches, blurred vision, diplopia, sleepiness, difficulty concentrating, movement of print, and loss of comprehension after short periods of reading or performing close activities. Prism reading glasses, home therapy with pencil push-ups, and office-based vision therapy and orthoptics have been evaluated for the treatment of convergence insufficiency.

The purpose of orthoptic training in patients who have convergence insufficiency is to provide a treatment option that is an alternative to or an improvement on existing therapies.

### **Populations**

The relevant population of interest is patients with convergence insufficiency.

### **Interventions**

The treatment being considered is in-office orthoptic training to develop an at-home vision training exercise program. Orthoptic training refers to techniques designed to correct accommodative and convergence insufficiency (or convergence dysfunction).

In-office orthoptic training is administered by ophthalmologists, optometrists, or orthoptists in an outpatient clinical setting.

### **Comparators**

The comparator of interest is standard management of convergence insufficiency with 12 visits for in-office training to develop an at-home vision training exercise program.

The comparator described is prescribed by ophthalmologists, optometrists, or orthoptists to be conducted at home.

## **Outcomes**

The general outcomes of interest are symptoms and functional outcomes.

Timing of intervention is approximately 12 visits of in-office training, followed by 6 months of at-home training. Follow-up at 1 year or more is preferable.

## **Review of Evidence**

### **Randomized Controlled Trials**

Singh et. al. (2021) published results of a randomized controlled trial (RCT) in 176 children and young adults (aged 9 to 30 years, mean 19 years) with symptomatic convergence insufficiency. Patients were randomized to 6 weeks of office-based orthoptic therapy (3 times per week) or home-based pencil push-up exercises (15 minutes per day). At study end, there was no difference between groups in near point of convergence or Convergence Insufficiency Symptom Survey scores, but there was a significantly greater improvement in positive fusional vergence with office-based therapy compared to home-based exercises ( $p < 0.001$ ). Limitations of this study include lack of blinding, a wide range of patient ages, short duration compared to other studies, 20% to 30% loss to follow-up leading to a lack of power, and the study was conducted at a single center in India.

In 2020, Alvarez et. al., conducted the Convergence Insufficiency Neuro-mechanism in Adult Population Study, a small RCT (N=50) that compared 6 weeks of twice weekly office-based vergence/accommodation therapy and office-based placebo therapy in young adults (aged 18 to 35 years) with symptomatic convergence insufficiency.<sup>13</sup> All patients performed home-based computer exercises 10 minutes per day, 3 days per week. Outcomes included change in near point of convergence, positive fusional vergence, and Convergence Insufficiency Symptom Survey scores. Both near point of convergence ( $p < 0.01$ ) and positive fusional vergence ( $p < 0.001$ ) were significantly improved with office-based therapy compared to placebo, but there was no difference between groups in symptom scores (2.3 points; 95% CI, -8.3 to 4.6;  $p = 0.6$ ).

In 2019, results of the Convergence Insufficiency Treatment Trial - Attention & Reading Trial (CITT-ART) were published. Children with convergence insufficiency were randomized to 16 weeks of weekly office-based vergence/accommodative therapy or office-based placebo therapy. Both groups performed home exercises 15 minutes per day, 5 days per week. The study outcomes for convergence ability and symptoms were the same as the outcomes in the Convergence Insufficiency Treatment Trial. After 16 weeks, mean Convergence Insufficiency Symptom Survey scores had decreased from baseline by -11.8 (95% CI, -13.4 to -10.3) and -10.4 (95% CI, -12.4 to -8.4) in the therapy and placebo groups, respectively, which was statistically similar between groups. There was no difference in the proportion of patients in each group that achieved normal or improved symptoms. Significantly more patients in the therapy group versus the placebo group met the criteria for normal or improved near point of convergence ( $p < 0.001$ ) and positive fusional vergence ( $p < 0.001$ ). Several composite outcomes for treatment success

found significant improvements with therapy versus placebo. Interpretation of the symptom comparisons in this trial may be limited by the clinically relevant improvement in symptoms in the placebo group. Results for accommodation were published separately by Chen et al (2020). Among the 288 children in the CITT-ART study with decreased accommodative amplitude or facility, normal amplitude (69% vs. 32%;  $p < 0.0001$ ) and facility (85% vs. 49%;  $p < 0.0001$ ) were achieved by significantly more patients in the therapy group.

### **Section Summary**

Based on the available medical literature several randomized controlled clinical trials and nonrandomized comparative studies have demonstrated that orthoptic training improves symptoms of convergence insufficiency and that most children aged 9 to 17 years were asymptomatic after a 12-week treatment program, 15 minutes per day five or more days per week. The most direct evidence comes from a 2008 RCT that demonstrated office-based vision/orthoptic training improves symptoms of convergence insufficiency in a greater percentage of patients than a home-based vision exercise program consisting of pencil push-ups or home computer vision exercises. Sub analysis of this RCT demonstrated improvements in accommodative vision, parental perception of academic behavior, and specific convergence insufficiency related symptoms. The published clinical studies show that a limited number of office visits are required for resolution of convergence insufficiency. The average number of office visits for convergence insufficiency is usually less than twelve and can typically be prescribed on a 1-2 session per week basis in conjunction with a home program.

Home based therapy to reinforce the developing visual skills should include push-up exercises using accommodative target of letters, numbers, or pictures; push-up exercises with additional base-out prisms; jump to near convergence exercises; stereogram and convergence card exercises; recession from a target; and maintaining convergence for 30 to 40 seconds. There is also a computer based orthoptic program known as Computer Vergence System (CVS). The program uses random dot stereograms to form pictures that require bi-foveal fixation to stimulate the vergence system. The program gradually increases the amount of vergence required to appreciate the stereogram picture and can monitor progression on-line. This may be used as part of the home therapy program and the results of the computer program are often followed by an eye care professional with print outs that can be brought into the office visit.

At the conclusion of the active treatment regimen, periodic follow up evaluation should be provided. Therapeutic lenses may be prescribed in conjunction with the vision therapy

A maintenance program consists of activities that preserve the patient's present level of function and/or prevent regression of that function. Maintenance begins when the therapeutic goals of a treatment plan have been achieved, or when no additional functional progress is apparent or expected to occur.

## **Summary of Evidence**

Patients with convergence insufficiency can be treated by various strategies, depending on the severity of symptoms. Studies have shown that vision therapy – orthoptic training is the treatment of choice for convergence insufficiency. The recommended treatment includes an office- based therapy program with supplemental home-based therapy.

Based on the available medical literature randomized controlled clinical trials and nonrandomized comparative studies have demonstrated that orthoptic training improves symptoms of convergence insufficiency and that the majority of children aged 9 to 17 years were asymptomatic after a 12-week treatment program. The published clinical studies show that a limited number of office visits are required for resolution of convergence insufficiency. The average number of office visits for convergence insufficiency is usually less than twelve and can typically be prescribed on a 1-2 session per week basis in conjunction with a home program. Office visits are only necessary to help establish or support a home program.

## **Orthoptic Training for Learning Disabilities and Miscellaneous Indications**

### **Clinical Context and Therapy Purpose**

Some learning disabilities, particularly those in which reading is impaired, have been associated with deficits in eye movements and/or visual tracking. For example, many dyslexic persons may have an unstable binocular vision and report that letters appear to move around, causing visual confusion.

The purpose of orthoptic training in patients who have learning disabilities is to provide a treatment option that is an alternative to or an improvement on existing therapies.

### **Populations**

The relevant population of interest is patients with learning disabilities, including attention deficit disorders, dyslexia, dysphasia, and reading disorders. Diagnosis of learning disabilities should be conducted by a qualified, licensed professional. Attention deficit disorder can be diagnosed by professionals qualified and licensed to do so, as well as by psychiatrists and physicians, although only medical doctors can prescribe medication.

### **Interventions**

The treatment being considered is office-based orthoptic training to develop an at-home vision training exercise program for learning disabilities. Orthoptic training for learning disabilities is administered by orthoptists, optometrists, or ophthalmologists.

### **Comparators**

The comparator of interest is standard management of learning disabilities. The practices currently being used to treat learning disabilities vary depending on the type of disability, but they could include receiving special services at school such as individualized education programs and accommodations.

Standard management of learning disabilities may be administered by special educators or other learning disability specialists in a school-based setting.

### **Outcomes**

The general outcome of interest is functional outcomes.

The limited available literature showed that approximately 12 sessions over 5 weeks are needed to assess results. Longer-term follow-up was not indicated.

### **Review of Evidence**

The therapeutic goal of orthoptic training (vision therapy) is to correct or improve visual dysfunction. Visual dysfunctions that purportedly are treatable by vision therapy include accommodative disorders – focusing problems, amblyopia, strabismus, ocular motility dysfunction – eye movement disorders, visual rehabilitation after traumatic brain injury or stroke, and treatment of learning disabilities including ADD/ADHD, dyslexia and other reading disabilities.

Most studies evaluating the efficacy of vision therapy for visual disorders are small. In general, these studies are poorly designed and significant methodological flaws, and the data derived from them are relatively weak and inconclusive. There is some evidence to support the use of vision therapy that involves occlusion as a treatment for amblyopia and vision therapy that involves prism adaptation prior to surgery administered as a treatment for acquired esotropia. However, large well-designed studies comparing vision therapy with other treatment modalities, standardization of outcome measurements and the criteria for defining patient selection criteria are needed to evaluate vision therapy for visual dysfunctions adequately. The evidence is insufficient to determine the effects of the technology on net health outcomes.

Learning disabilities constitute a diverse group of disorders in which children generally possess at least average intelligence have problems processing information or generating output. Their etiologies are multifactorial and reflect genetic influences and dysfunction or brain systems. Reading disability, or dyslexia, is the most common learning disability. It is a receptive language-based learning disability that is characterized by difficulties with decoding, fluent word recognition, rapid automatic naming, and/or reading comprehension skills. These difficulties typically result from a deficit in the phonologic component of language that makes it difficult to use the alphabetic code to decode the written word. Early recognition and referral to qualified professionals for evidence-based evaluations and treatment are necessary to achieve the best possible outcome. Because dyslexia is a language based disorder, treatment should be directed at this etiology. Remedial programs should include specific instruction in decoding, fluency training, vocabulary, and comprehension. Most programs include daily intensive individualized instruction that explicitly teaches phonemic awareness and the application of phonics. Vision problems can interfere with the process of reading, but children with dyslexia or related learning disabilities have the same visual function and ocular health as children without such conditions. Currently, there is inadequate scientific evidence to support the

view that subtle eye or visual problems cause or increase the severity of learning disabilities. Scientific evidence does not support the claims that visual training, muscle exercises, ocular pursuit- and- tracking exercises, behavioral /perceptual vision therapy, “training” glasses, prisms, and colored lenses and filters are effective direct or indirect treatments for learning disabilities. There is no valid evidence that children who participate in vision therapy are more responsive to educational instruction than children who do not participate. Per the American Academy of Ophthalmology policy statement regarding learning disabilities, dyslexia and vision one of the recommendation states: diagnostic and treatment approaches for dyslexia and other learning disabilities that lack scientific evidence of efficacy such as behavioral vision therapy, eye muscle exercises, or colored filters and lenses are not endorsed or recommended.

Based on review of the medical literature there is lack of quality data on the efficacy of orthoptic training (vision therapy) for treating dyslexia and other reading and learning disabilities. Most of the study results were found to be inconsistent and the studies themselves are flawed by serious design limitations e.g., small sample sizes and poorly defined patient criteria. In addition, the use of vision therapies – orthoptic training is not supported by current specialty society guidelines. The evidence is insufficient to determine the effects of the technology on net health outcomes.

## **Practice Guidelines and Position Statements**

### **American Academy of Ophthalmology**

#### **Convergence Insufficiency**

Orthoptic training (vision therapy) is the primary treatment modality used by most eye care professionals for the treatment of convergence insufficiency (CI). The plasticity of the fusional convergence reflex system allows patients to improve their convergence amplitudes with simple exercises. There are numerous different types of eye exercises; however, the primary treatment modalities for CI include home-based exercise, in-office exercises, computer vergence exercises or a combination of these. Some studies have suggested that performing both the home-based exercises and the computer program is more effective than either modality performed on its own.

Eye care professionals will sometimes prescribe both in-office and home-based CI exercises. Occasionally patients will require additional treatment strategies such as anti-suppression or extra time and assistance with the exercises and will require in-office treatment.

#### **Conventional Convergence Exercises:**

- Gradual convergence exercises
- Convergence cards
- Stereograms
- Vergence facility exercises
- Base out prism exercises
- Computer based convergence exercises



Idiopathic convergence insufficiency responds very well to convergence exercises and has a very high reported success rate. Published success rates vary between 70 to 80% depending on the patient population and study size. (*Accessed March 2022*)

### **American Optometric Association**

In 2010, the American Optometric Association issued an optometric clinical practice guideline for the care of the patient with accommodative and vergence dysfunction that stated: Patients with convergence insufficiency (CI) can be treated by various strategies, depending on the severity of symptoms. Numerous studies have shown that vision therapy is the treatment of choice for CI. The recommended treatment includes in-office therapy and supplemental home therapy. Home therapy alone, which is less effective, may be prescribed when in-office therapy is not possible. To ensure its success, home therapy should be closely monitored for patient compliance and make adjustment when needed. For the patient who cannot participate in vision therapy, prescribed prisms may reduce the load on the vergence system, however, prisms do not always alleviate the patient's symptoms.

### **American Academy of Pediatrics (AAP), American Academy of Ophthalmology (AAO), American Association for Pediatric Ophthalmology and Strabismus (AAPOS), and American Association of Certified Orthoptists (AACO):**

In 2011 (reaffirmed in 2014), The AAP, AAO, AAPOS and AACO issued a joint statement concerning pediatric learning disabilities, dyslexia and vision. For vision therapy, the statement concluded:

“Currently, there is no adequate scientific evidence to support the view that subtle eye or visual problems cause learning disabilities. Furthermore, the evidence does not support the concept that vision therapy or tinted lenses or filters are effective, directly or indirectly, in the treatment of learning disabilities. Thus, the claim that vision therapy improves visual efficiency cannot be substantiated. Diagnostic and treatment approaches that lack scientific evidence of efficacy are not endorsed or recommended.”

## **PRIOR APPROVAL**

Not applicable.

## **POLICY**

*Note: See also Wellmark Provider Guide to Billing for Eye Care: Chapter 4: Noncovered Eye Care Services - Vision Therapies.*

### **Convergence Insufficiency**

Office based orthoptic training/vision therapy to establish a home program may be considered **medically necessary** for the treatment of symptomatic convergence insufficiency up to 12 visits regardless of age.

Office based orthoptics training/vision therapy for the treatment of convergence insufficiency regardless of age exceeding 12 visits will be considered **not medically necessary**. Published clinical studies show that a limited number of office visits, usually less than twelve, are required for resolution of convergence insufficiency. Office visits are only necessary to help establish or support a home program.

### **Visual Disorders other than Convergence Insufficiency**

Orthoptics training (vision therapy) is considered **investigational** for all other conditions, including but not limited to the following:

- Visual disorders other than convergence insufficiency
- Dyslexia
- Learning disabilities
- Reading disabilities

Based on review of the peer reviewed literature the available data supporting the use of orthoptics training (vision therapy) for indications other than convergence insufficiency is weak and inconclusive and derived primarily from uncontrolled studies with significant methodologic flaws. Large well-designed studies comparing orthoptics training/vision therapy with other treatment modalities, standardization of outcome measurements and the criteria for defining patient selection criteria are needed to evaluate orthoptics training/vision therapy for visual dysfunctions adequately. Other than convergence insufficiency treatment, the optometric claims that orthoptic training (vision therapy) improves visual efficiency cannot be substantiated. The evidence is insufficient to determine the effects of the technology on net health outcomes for visual disorders other than convergence insufficiency.

Based on review of the peer reviewed medical literature there is lack of quality data on the efficacy of orthoptics training (vision therapy) for treating dyslexia and other learning and reading disabilities. Several small randomized controlled trials of vision therapy have been published, but these study results were found to be inconsistent and the studies themselves are flawed by serious design limitations e.g., small sample sizes and poorly defined patient criteria. In addition, the use of vision therapy is not supported by current specialty society guidelines. The American Academy of Pediatrics issued a joint statement that concludes vision therapy is ineffective in the treatment of learning disabilities and the claim that vision therapy improves visual efficiency cannot be substantiated. They go on to state diagnostic treatment approaches that lack scientific evidence of efficacy are not endorsed or recommended. Therefore, the evidence is insufficient to determine the effects of the technology on net health outcomes.

## **PROCEDURE CODES AND BILLING GUIDELINES**

To report provider services, use appropriate CPT\* codes, Alpha Numeric (HCPCS level 2) codes, Revenue codes, and/or ICD diagnosis codes.

- 92065 Orthoptic training; performed by a physician or other qualified health care professional
- 92066 Orthoptic training; under supervision of a physician or other qualified health care professional

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<b>POLICY HISTORY</b>		
<b>Date</b>	<b>Reason</b>	<b>Action</b>
March 2022	Annual Review	Policy Renewed
March 2021	Annual Review	Policy Renewed
March 2020	Annual Review	Policy Renewed
March 2019	Annual Review	Policy Renewed
March 2018	Annual Review	Policy Revised
March 2017	Annual Review	Policy Revised
October 2016	Interim Review	Policy Revised
March 2016	Annual Review	Policy Revised
March 2015	Annual Review	Policy Renewed
April 2014	Annual Review	Policy Revised
June 2013	Annual Review	Policy Renewed
July 2012	Annual Review	Policy Renewed
August 2011	Annual Review	Policy Renewed

New information or technology that would be relevant for Wellmark to consider when this policy is next reviewed may be submitted to:

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