

ORIGINAL ARTICLE

Long-Term Effectiveness of Treatments for Symptomatic Convergence Insufficiency in Children

Convergence Insufficiency Treatment Trial Study Group

ABSTRACT

Purpose. To assess the long-term stability of improvements in symptoms and signs in 9- to 17-year-old children enrolled in the Convergence Insufficiency Treatment Trial who were asymptomatic after treatment for convergence insufficiency.

Methods. Seventy-nine patients who were asymptomatic after a 12-week therapy program for convergence insufficiency were followed for 1 year [33/60 in office-based vergence/accommodative therapy (OBVAT), 18/54 in home-based pencil push-ups (HBPP), 12/57 in home-based computer vergence/accommodative therapy and pencil push-ups (HBCVAT+), and 16/54 in office-based placebo therapy (OBPT)]. Symptoms and clinical signs were measured 6 months and 1 year after completion of the 12-week therapy program. The primary outcome measure was the mean change on the Convergence Insufficiency Symptom Survey (CISS). Secondary outcome measures were near point of convergence, positive fusional vergence at near, and proportions of patients who remained asymptomatic or who were classified as successful or improved based on a composite measure of CISS, near point of convergence, and positive fusional vergence.

Results. One-year follow-up visit completion rate was 89% with no significant differences between groups ($p = 0.26$). There were no significant changes in the CISS in any treatment group during the 1-year follow-up. The percentage who remained asymptomatic in each group was 84.4% (27/32) for OBVAT, 66.7% (10/15) for HBPP, 80% (8/10) for HBCVAT+, and 76.9% (10/13) for OBPT. The percentage who remained either successful or improved 1-year posttreatment was 87.5% (28/32) for OBVAT, 66.6% (10/15) for HBPP, 80% (8/10) for HBCVAT+, and 69.3% (9/13) for OBPT.

Conclusions. Most children aged 9 to 17 years who were asymptomatic after a 12-week treatment program of OBVAT for convergence insufficiency maintained their improvements in symptoms and signs for at least 1 year after discontinuing treatment. Although the sample sizes for the home-based and placebo groups were small, our data suggest that a similar outcome can be expected for children who were asymptomatic after treatment with HBPP or HBCVAT+.

(Optom Vis Sci 2009;86:1096-1103)

Key Words: convergence insufficiency, asthenopia, vision therapy, orthoptics, vergence/accommodative therapy, pencil push-ups, computer vergence/accommodative therapy, placebo therapy, exophoria, eyestrain, symptom survey

Recently, completed randomized clinical trials have demonstrated that 12 weeks of office-based vergence/accommodative therapy with home reinforcement (OBVAT) is more effective than home-based pencil push-ups therapy (HBPP), home-based computer vergence/accommodative therapy and pencil push-ups (HBCVAT+), or office-based placebo therapy (OBPT) in improving both the symptoms and clinical signs associated with symptomatic convergence insufficiency in children 9- to 17-years old.^{1,2} These data are important because they represent the first results from randomized clinical trials comparing the effectiveness of the three most commonly prescribed forms of vision therapy/orthoptics for convergence insufficiency.

However, these previously reported findings only provided information about results immediately after treatment completion. They did not indicate whether the treatment effect is sustained over time.

The literature on the long-term effectiveness of vision therapy/orthoptics for convergence insufficiency consists of a small number of studies with significant design limitations including retrospective design, small sample size, variable lengths of follow-up, unmasked examiners, and adult patient populations.³⁻⁶ In addition, previous research has only addressed home-based vision therapy/orthoptics. Thus, there are no well-controlled prospective studies on the long-term effectiveness of vision therapy/orthoptics for successfully treated children with symptomatic convergence insufficiency.

The Convergence Insufficiency Treatment Trial Investigator Group members are listed in the Acknowledgments.