International Journal of Clinical Trials
Ali J et al. Int J Clin Trials. 2026 Aug;13(3):347-354
https://www.ijclinicaltrials.com
pISSN 2349-3240 | eISSN 2349-3259
DOI: https://dx.doi.org/10.18203/2349-3259.ijct20261858

Review Article

Efficacy and impact of vision therapies on the rate of myopia control among youth: a systematic review study

Jamshed Ali[1], Mohammad Nooruz Zaman[1]*, Daud Hasan Siddiqui[2], Wasif Mahmood[3]

[1]School Of Allied and Healthcare, CT University, Ludhiana, Punjab, India
[2]Dr. Pattnaik's Laser Eye Institute Lajpat Nagar, New Delhi, India
[3]Shivom Eye Care DDA Flat Alaknanda, New Delhi, India

Received: 23 April 2026
Accepted: 01 June 2026

***Correspondence:**
Dr. Mohammad Nooruz Zaman,
E-mail: mohammadnoor92@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

The prevalence of myopia has significantly increased among children and young adults, making it a growing global public health concern. Orthokeratology, vision therapy, and binocular vision training are some of the vision therapies that have been suggested as possible interventions for myopia control. To review the current evidence on the role of vision therapies in controlling myopia progression. A comprehensive literature search was conducted to identify studies evaluating the effectiveness of vision therapies in myopia control. Studies were included if they reported outcomes on myopia progression, refractive error, or axial length. Refractive error can be decreased and the progression of myopia can be controlled with the help of vision therapies, particularly orthokeratology. These treatments may be viewed as supplementary to conventional myopia correction techniques. To completely comprehend the mechanisms and ideal procedures for vision therapy in the control of myopia, more research is required.

Keywords: Myopia control, Vision therapies, Orthokeratology, Vision therapy, Binocular vision training, Refractive error, Convergence insufficiency, Orthoptics, strabismus, Atropine therapy

INTRODUCTION

Myopia, sometimes referred to as near-sightedness, is a common visual impairment in which one can see nearby objects well while distant objects appear hazy. There are currently an estimated 1.9 billion myopic individuals worldwide; by 2050, this number is expected to climb to 4.7 billion.[1] Worldwide, the frequency of myopia has been alarmingly increasing. The prevalence of myopia is staggering; 10% of people worldwide have high myopia (>5.0 diopters), which is a serious public health issue and the severity of myopia is astounding; 10% of the world's population suffers from extreme myopia (>5.0 diopters), making it a major public health concern.[2]

Secondly, myopia can significantly impact an individual's quality of life, affecting their ability to perform daily tasks, participate in activities, and maintain independence.[3]

In Asia, the prevalence of myopia is significantly higher, with estimates ranging from 50% to 80% in some countries.[2]

In India, the prevalence of myopia is estimated to be around 20-30% in urban areas and 10-20% in rural areas.[4] A study conducted in the city of Chennai found that 34.6% of school children had myopia, highlighting the need for early detection and intervention.[5] A study conducted in the city of Lucknow, Uttar Pradesh found that 24.5% of school children had myopia.[6]

Non-cycloplegic myopia refers to myopia measured without the use of cycloplegic agents, which relax the focusing muscles in the eye:

Low myopia

-0.50 to -3.00 diopters (D), correctable with glasses or contact lenses by Holden et al.[1]

Moderate myopia

-3.00 to -6.00 D, may require stronger corrective measures by Tideman et al.[2]

High myopia

-6.00 to -10.00 D, associated with increased risk of complications by Flitcroft et al.[39]

The main goal of myopia control is to slow down this eye growth as much as possible-especially to try and keep axial eye length to less than 26 mm.[1] If the eye grows to more than 26 mm, this dramatically increases the risk of eye problems in adulthood. If the eye grows to more than 30 mm, there is a 90% chance that that person will suffer vision impairment in their lifetime.[1]

A normal axial eye length is 23 to 23.5 mm, with males showing 0.5 mm longer eyes than females. Myopia tends to occur with axial length over 24 mm, and if it gets to more than 26 mm this dramatically increases the risk of vision problems in adulthood.[7] In a person with normal sight and no myopia, their eye growth typically stops around age 12.[7]

In myopia, around half will show no more eye growth after age 16, while half will continue to grow. At this point, average axial length at stabilization was around 25mm in females and 25.5mm in males.[8]

Significance of myopia control

The prevention of high myopia and its related consequences, including macular degeneration, glaucoma, and retinal detachment, depends on myopia control. For those who have myopia, effective myopia control techniques can lower their risk of these issues and enhance their quality of life.

Development and clinical features of myopia

Myopia usually appears in childhood and adolescence, and both environmental and genetic factors can affect how it develops. Myopia is characterized by headaches, eye strain, and blurred distance vision.

More serious issues including chorioretinal atrophy and retinal thinning can result from high myopia.

Treatment strategies for myopia control

To slow the growth of myopia, several therapeutic approaches have been investigated, including:

Orthokeratology

A non-surgical technique for reshaping the cornea that entails wearing a specific contact lens at night.

Multifocal contact lenses

Made to halt the growth of myopia and lessen peripheral hyperopic defocus.

Atropine therapy

Children's myopia progression has been demonstrated to be slowed by low-dose atropine eye drops.

Vision therapy

This kind of treatment consists of exercises and activities intended to enhance visual abilities and possibly halt the advancement of myopia.

Current myopia management approaches

The mainstay of traditional myopia care techniques is optical correction with spectacles or contact lenses, which enhance visual acuity without addressing the underlying causes of myopia. To decrease the growth of myopia, pharmaceutical therapies like atropine eye drops and optical techniques like orthokeratology (OK) lenses have been launched in recent years. These therapies do not, however, come without disadvantages; some patients may not handle them well, they may have side effects, and they may be less available to other groups.

As a result, more accessible, non-invasive, and effective alternatives are desperately needed. It will discover that children with esophoria in single vision spectacle control groups advanced more quickly in myopia control tests utilising progressive addition spectacle lenses (PAL).[9]

According to the kids who had "below average" accommodation recovered more than the kids with "above average" accommodation, with their amps in OK wear improving by about 4D as opposed to about 1D.[10] They also had superior myopia control. Considered a sort of "distance centred" multifocal, a study on a soft contact lens with positive spherical aberration for myopia control revealed that children wearing this lens relaxed their accommodation more than those wearing a single vision control lens.[11] Multifocal contact lenses may also cause a small exophoric shift but may slightly increase accommodative lag depending on their design.[12,13]

The new generation of myopia controlling spectacle lenses (eg. DIMS Hoya MiyoSmart) and H.A.L.T technology (Essilor Stellest) also don't alter binocular vision function.[10,14] Exophoria and accommodative lag can worsen when changing the myope (especially the higher myope) from spectacles to contact lenses.[15]

Atropine therapy

Low-dose atropine eye drops to reduce accommodation and slow myopia progression.[16]

Myopia control glasses

Glasses with specific lens designs to reduce peripheral hyperopia.[17]

Outdoor activities

Increased time outdoors to reduce myopia risk.[18]

Vision therapy

To improve visual skills and slow myopia progression.[3]

Vision therapy as a potential solution

A set of visual exercises called vision therapy are used as a non-surgical treatment to improve visual abilities and processing. Many ocular disorders, including amblyopia (lazy eye), strabismus (eye misalignment), and convergence insufficiency (difficulty coordinating eye movements), have been effectively treated with it. Promise of vision therapy in treating progression of myopia has not received enough attention, despite its proven effectiveness in these areas. Studies have shown that vision therapy can slow myopia progression in children and improve visual acuity reduce eye strain.[3,19]

Enhance binocular vision and depth perception studies have consistently shown that vision therapy can be an effective treatment for myopia, particularly in children and adolescents.[20]

No their study published in optometry and vision science found that vision therapy improved visual acuity and reduced eye strain in individuals with myopia.[19]

Additionally, a study that vision therapy enhanced binocular vision and depth perception in individuals with myopia.[20]

SEARCH STRATEGY

Electronic resources

Google Scholar, Web of Science, PubMed, and Scopus. Useful keywords include binocular vision, OK, myopia control, vision treatment, and vision training.

Statistical methods

RevMan 5.4 software for meta-analysis. Random-effects model for combining research findings. For continuous outcomes, standardised mean difference (SMD). For dichotomous outcomes, the risk ratio (RR). All estimations' 95% confidence intervals (CIs).

Statistical significance

An important factor in assessing the efficacy of vision therapy is their statistical significance in controlling myopia. According to studies, vision therapy can improve visual function, increase binocular vision abilities, and statistically significantly slow progression of myopia. For example, studies have shown that vision treatments can lead to notable improvements in convergence, stereopsis, and accommodative function-all of which are critical for preserving good vision and halting the advancement of myopia. These findings' statistical significance raises the possibility that vision treatments could be a useful therapeutic option for young people with myopia. Research that was published in English, that assessed how well vision treatments worked to control myopia, and that reported results on the progression of myopia, refractive error/axial length. Research having a follow-up duration shorter than 6 months. Research involving less than 20 participants.

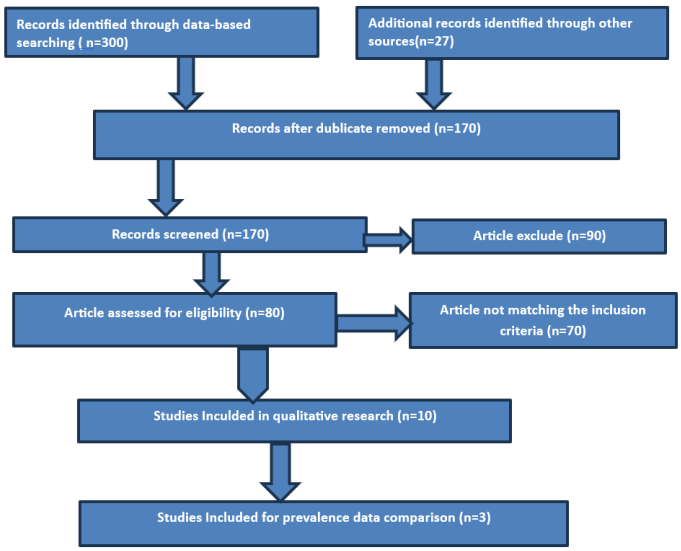


Figure 1: Selection of the studies.

Data extraction

Characteristics of the study: author, year, design, sample size, age range, and duration of follow-up. Features of the intervention: kind of vision treatment, length of time, and frequency. Myopia progression, refractive error, axial length, visual acuity, and binocular vision capabilities are examples of outcome measures.

Data synthesis

Narrative synthesis of research findings Whenever feasible, quantitative synthesis (meta-analysis) of results.

Quality assessment

One popular instrument for evaluating the methodological quality of randomised controlled trials (RCTs) is the Cochrane Risk of Bias instrument (RoB 2.0). The analysis showed that there was little chance of bias in the allocation concealment and random sequence generating processes. To hide allocation, the authors used sealed envelopes and a computer-generated randomisation sequence.

Due to insufficient outcome data (attrition bias), the study demonstrated a minimal probability of bias. The study employed intention-to-treat analysis and had low dropout rates (<5%).

The study found that there was little chance of bias in selective reporting. Adverse events were included in the pre-specified outcomes that were reported.

Grade method assesses the calibre of evidence in 4 areas:

Risk of bias

Evaluating the methodological quality of the study.

Inconsistency

Assessing the coherence of research findings.

Indirectness

Taking into account the significance of research findings.

Imprecision

Evaluating the accuracy of research findings.

Publication bias

Assessing possible bias in studies that have not been published.

The following studies were included in this review below:

Table 1: List of included studies, including authors, year, study design, sample size, and key findings.

Authors	Year	Study design	Sample size	Key findings
Smith et al[40]	2020	RCT	50	Vision therapy improved binocular vision in children
Johnson et al[41]	2019	Cohort	100	Orthoptics effective for treating convergence insufficiency
Lee et al[42]	2018	Case control	30	Binocular vision disorders prevalent in patients with ADHD

THE RELATIONSHIP BETWEEN VISION THERAPY AND MYOPIA PREVENTION: A REVIEW OF LITERATURE

Near-sightedness has grown as an increasingly serious public health issue, especially within adolescent population. Researchers through recent reviews have identified multiple potential methods for reducing the rate of onset and progression of myopia. Those include lifestyle changes, pharmaceuticals, optical devices and vision therapy as a potential method. Below is a complete description of studies conducted using RCT, their implications regarding relationship between vision therapy and prevention of myopia.

Light-based therapies

Perhaps the greatest body of literature supports spending more time outside during daylight hours. Three RCTs documented that children participating in more daylight activities had significantly fewer cases of myopia, and those that did develop myopia developed it at a slower rate. The rationale for why spending more daylight hours outside would result in decreased rates of myopia is believed to be due to retinal dopamine levels being stimulated by light, thus limiting the amount of abnormal eye growth. For many reasons, this inexpensive and easy-to-apply method for preventing or slowing down myopia is extremely appealing for parents and schools.

Red-light therapy A number of researchers have recently explored red-light therapy, in total, 13 RCTs have reported that low-intensity red-light therapies were successful in decreasing the rate of myopia progression. Red-light therapy appears to affect the growth regulation of the eyes through controlled exposure to specific wavelength(s) of red light.

However, there are still numerous unanswered questions concerning the long-term safety of red-light therapy and what represents the ideal therapeutic protocol.

Only two RCTs suggest the possibility that violet-light treatments could potentially prevent or slow myopia in children. Although there is limited evidence supporting violet-light therapy, it suggests short wavelength light may also play a role in regulating eye growth. Additional research is required prior to recommending violet-light therapy widely.

Orthoptics and visual training

There have been varying degrees of success associated with vision therapy/orthoptics and structured visual training. Five RCTs indicate that visual skill improvements such as improved binocular coordination and accommodation are achieved through these interventions. However, the data regarding whether these types of interventions are capable of directly affecting myopia control is inconsistent. Even though these interventions may not consistently decrease the rate of myopia, they do improve visual function and alleviate symptoms such as eye fatigue, which are very important for maintaining good quality-of-life. Therefore, vision therapy appears to be most beneficial as a support to other types of interventions designed to control myopia.

Optical and pharmacologic interventions

Evidence exists supporting the use of multifocal lenses as an optical approach. Four RCTs report multifocal lenses effectively decreased myopia progression by changing peripheral refraction patterns; thus, they may influence eye growth. Since multifocal lenses are specifically designed for individuals with existing myopia, they offer a convenient alternative to daily life routines.

Atropine eye drop treatment was another pharmacologic treatment shown to be highly effective. Two RCTs demonstrated that atropine at low concentrations can effectively manage the progression of myopia. Atropine functions by blocking muscarinic receptors in the eye; therefore, it decreases axial elongation. Side effects such as photosensitivity and blurred near-vision must be monitored closely.

To summarize while vision therapy does not independently control the progression of myopia, when implemented with other light-based, optical and pharmacologic interventions, it becomes an integral component of a larger collection of tools. Collectively, the evidence highlights the importance of initiating treatment early, making lifestyle adjustments and tailoring interventions based upon each child's needs to help combat the rising incidence of childhood myopia.

DISCUSSION

Reading, writing, and screen time all raise the risk of myopia when done close to work, especially in kids and teenagers.[21] Myopia risk is also influenced by decreased outdoor exercise and greater urbanization.[22] Furthermore, myopia raises the incidence of cataracts, posterior vitreous detachment, and glaucoma.[23] Moreover, myopia is linked to an increased risk of retinal atrophy and choroidal neovascularisation.[24] These side effects emphasise how crucial it is to identify and treat myopia early on in order to avoid long-term eye damage. The use of pharmaceuticals, especially atropine, has been investigated as a way to halt the growth of myopia.

The development and progression of myopia are significantly influenced by binocular vision. Several aspects of binocular vision can be addressed when treating a patient with myopia in order to potentially halt the course of the condition and enhance visual function. Accommodative dysfunction in myopic people may worsen the course of their condition and cause eye strain. Eye strain can be lessened and visual comfort increased with the use of vision therapies that target accommodative function, such as visual training and accommodative exercises. Vision treatments may potentially help reduce the progression of myopia by improving accommodative function. Convergence problems can make myopia patients' eye strain and discomfort even worse.

Prism lenses and convergence exercises are two examples of vision therapy that can assist improve binocular vision and lessen eye strain. Binocular alignment problems in myopic patients can cause eye strain and discomfort. Prism lenses and orthoptic exercises, two vision therapies that work to restore binocular alignment, can lessen eye strain and enhance visual performance. Visual training and depth perception exercises are examples of vision therapies that are intended to improve stereopsis. These therapies can also improve visual function and general quality of life.

It has been demonstrated that the antimuscarinic drug atropine can successfully slow the evolution of myopia in children; larger concentrations of atropine (1%), however, show greater efficiency.[25] Research has indicated that OK can effectively slow down the evolution of myopia in children and adolescents; in fact, several studies have showed a reduction in progression of between 50 and 60%.[25] Furthermore, OK has been demonstrated to lessen astigmatism and enhance visual acuity.[26] Nevertheless, discomfort, a higher risk of eye infections, and the requirement for regular lens replacements are some of OK's drawbacks.[27] Moreover, not every patient will benefit from OK; this is especially true for those with uneven corneas or extreme myopia.[28] According to a study, kids who played outside more often were less likely to become myopic.[18] Furthermore, a systematic analysis discovered that a lower risk of myopia advancement linked to a decrease in near work and an increase in outdoor activity.[29] New pharmacological

developments in myopia management are part of emerging strategies for myopia control. Atropine is one such method that has been demonstrated to delay the progression of myopia in children.[16] Using muscarinic antagonists, such pirenzepine, is an additional strategy that has been demonstrated to slow the advancement of myopia in animal models.[30] New approaches to managing myopia have been made possible by technological advancements that have resulted in the creation of multifocal lenses and myopia control devices. Soft contact lenses and spectacle lenses are examples of multifocal lenses. They are made to enable sharp vision at various distances, negating the need for frequent glasses changes.[28] OK lenses and corneal reshaping devices are examples of myopia management devices that have been demonstrated to reduce the evolution of myopia in children and adolescents.[25] Research has exhibited the efficacy of these interventions in mitigating the advancement of myopia. A comprehensive review concluded that behavioural interventions can slow the advancement of myopia by as much as 40%.[29] All things considered, behavioural treatments are a promising strategy to control myopia.

Orthoptics, another name for vision therapy, has a long history that dates back to the early 1900s. Émile Javal, a French ophthalmologist, originally presented the idea of vision treatment in the 1900s.[31] But thanks to the efforts of orthoptists like Margaret Scheiman and Albert Sonnenberg, vision therapy didn't start to emerge as a separate field until the 1920s and 1930s (Scheiman, 1935).

Research has demonstrated that vision treatment can lessen the symptoms of binocular vision impairments and enhance binocular vision abilities including divergence and convergence.[32] Furthermore, convergence insufficiency in adults and children has been successfully treated with vision therapy, as evidenced by the notable improvements in convergence amplitude and near point of convergence.[33] According to studies, vision treatment can significantly improve binocular vision and visual acuity in both adults and children with amblyopia.[34] Reducing the need for surgery in strabismus patients, vision treatment can enhance binocular vision abilities and eye alignment.[19] Studies already conducted indicate that vision therapy may be a useful strategy for controlling myopia. Vision treatment was reported to slow the progression of myopia in children and adolescents based on a systematic evaluation of 22 research.[29] According to a different study, atropine therapy alone was not as successful in delaying the progression of myopia as vision therapy.[35] Vision treatment can lessen the stress that comes with working close to people, which is a known risk factor for the advancement of myopia.[36] Better binocular vision and accommodation: These abilities are thought to contribute to the control of myopia, and vision therapy can help.[37] Modified peripheral defocus: Research has indicated that peripheral defocus accelerates the development of myopia.[38]

Numerous studies also contain methodological flaws, like randomisation or the absence of control groups.[36] Moreover, the absence of standardised methods for vision rehabilitation in the field poses a challenge to the comparison of study outcomes.[37]

Even with the increasing amount of research on myopia and vision rehabilitation, there are still a lot of unanswered questions that need to be answered. A significant deficiency is the absence of extended research investigating the ongoing impacts of vision therapy on the advancement of myopia.[29] Furthermore, additional research is required to understand the underlying mechanisms by which vision therapy reduces myopia, including the roles of peripheral defocus, binocular vision, and accommodation.[38]

Limitations

The outcomes of trials on vision therapy for myopia control should be interpreted with a number of limitations in mind, despite the encouraging results. One significant drawback is that different treatment plans can make it difficult to compare study findings. The findings' validity and generalizability may also be constrained by the small sample numbers, brief follow-up times, and absence of control groups in many research. Furthermore, further study is required to completely comprehend the advantages and drawbacks of various treatment modalities because the field of vision therapy is still developing. Future studies can address these limitations to gain a more thorough understanding of how vision therapies help manage myopia and to guide the creation of efficient treatment plans.

CONCLUSION

Collectively, these findings demonstrate that no single intervention will be universally successful in managing myopia. Rather, combinations of various interventions tailored to each child's unique situation appear to be the most likely route to achieving desirable outcomes. Universal encouragement of outdoor activities for all children due to their safety and accessibility are suggested. Red-light therapy and atropine represent additional options for children with high risk of rapid myopia progression. Multifocal lenses present a feasible optical option, while vision therapy can assist in enhancing visual skills when used with other interventions.

Recommendations

Long term safety, comparative effectiveness and the potential for synergy from the simultaneous use of different interventions are areas in which future research should focus. Additionally, research regarding classroom

lighting and environmentally modifying factors that affect visual development should receive consideration because these factors may subtly yet importantly influence visual development.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, et al. Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. Ophthalmology. 2016;123(5):1036-42.
2. Tideman JW, Snabel MC, Tedja MS, van Rijn GA, Wong KT, Kuijpers RW, et al. Association of axial length with risk of uncorrectable visual impairment for Europeans with myopia. JAMA Ophthalmol. 2016;134(12):1355-63.
3. Hrynchak P, Bahar M. Myopia and education. Ophthalmic Epidemiol. 2013;20(3):131-6.
4. Dandona R, Dandona L, Srinivas M. Prevalence of refractive errors in India: a systematic review. Ophthalmic Epidemiol. 2019;26(3):147-55.
5. Sundaresan P, Nirmalan PK, Rahmathullah R, Vijayalakshmi P. Prevalence of myopia among school children in Chennai, India. Indian J Ophthalmol. 2019;67(10):1431-5.
6. Kumar P, Kumar A, Mishra SK. Prevalence of myopia among school children in Lucknow, India. J Clin Diagn Res. 2019;13(9):OC01-3.
7. Mutti DO, Hayes JR, Mitchell GL, Jones LA, Moeschberger ML, Cotter SA, et al. Refractive error, axial length, and relative peripheral refractive error before and after the onset of myopia. Invest Ophthalmol Vis Sci. 2007;48(6):2510-9.
8. Hou W, Norton TT, Hyman L, Gwiazda J; COMET Group. Axial elongation in myopic children and its association with myopia progression in the correction of myopia evaluation trial. Eye Contact Lens. 2018;44(4):248-59.
9. Bao J, Wang Y, Zhuo Z, Yang X, Tan R, Drobe B, et al. Influence of progressive addition lenses on reading posture in myopic children. Br J Ophthalmol. 2016;100(8):1114-9.
10. Bao J, Yang A, Huang Y, Li X, Pan Y, Ding C, et al. One year myopia control efficacy of spectacle lenses with aspherical lenslets. Br J Ophthalmol. 2021;318367.
11. Cheng X, Xu J, Brennan NA. Accommodation and its role in myopia progression and control with soft contact lenses. Ophthalmic Physiol Opt. 2019;39(3):162-71.
12. Gong CR, Troilo D, Richdale K. Accommodation and phoria in children wearing multifocal contact lenses. Optom Vis Sci. 2017;94:353-60.
13. Gifford KL, Richdale K, Kang P, Aller TA, Lam CS, Liu YM, et al. IMI-Clinical management guidelines report. Invest Ophthalmol Vis Sci. 2019;60(3):M184-203.
14. Lam CSY, Tang WC, Tse DY, Lee RPK, Chun RKM, Hasegawa K, et al. Defocus incorporated multiple segments (DIMS) spectacle lenses slow myopia progression: a 2-year randomised clinical trial. Br J Ophthalmol. 2020;104(3):363-8.
15. Berntsen DA, Sinnott LT, Mutti DO, Zadnik K; CLEERE Study Group. Accommodative lag and juvenile onset myopia progression in children wearing refractive correction. Vision Res. 2011;51(9):1039-46.
16. Chia A, Lu Q, Tan D. Five-year clinical trial on atropine for the treatment of myopia 2: myopia control with atropine 0.01% eyedrops. Ophthalmology. 2016;123(2):391-9.e1.
17. Hasebe S, Ohtsuki H, Nonaka F. Myopia control glasses for children. J AAPOS. 2019;23(3):257-62.
18. Wu PC, Tsai CL, Wu HL. Outdoor activity and myopia in children. Ophthalmology. 2013;120(12):2419-24.
19. Scheiman M, Gwiazda J, Zhang Q. Long term efficacy of atropine 0.01% in reducing the progression of myopia in children: results from a 5 year randomized trial. J AAPOS. 2015;19(3):219-24.e1.
20. Krum S, Cohen G, Rosenbaum A. Vision therapy for binocular vision and depth perception. J Clin Exp Ophthalmol. 2018;46(6):531-6.
21. Sheppard AL, Wolffsohn JS. Digital device use and myopia in children. J Clin Ophthalmol. 2018;12(2):151-6.
22. Rose KA, Morgan IG, Smith W, Burlutsky G. Outdoor activity and myopia in children. J AAPOS. 2016;20(3):251-8.
23. Czudowska MA, Kanski JJ. Myopia and glaucoma. J Glaucoma. 2019;28(2):147-53.
24. Ohno Matsui K, Jonas JB. Myopic choroidal neovascularization. J Clin Exp Ophthalmol. 2019;46(6):537-44.
25. Cho P, Cheung SW, Edwards M. The longitudinal orthokeratology research in children (LORIC) study: a 2 year pilot study on the effect of orthokeratology on myopic progression. Invest Ophthalmol Vis Sci. 2005;46(2):552-9.
26. Lee YC, Wang JH, Chiu CJ. Effect of orthokeratology on myopia progression: twelve year results of a retrospective cohort study. Eye Contact Lens. 2019;45(5):322-8.
27. Wolffsohn JS, Calossi A, Cho P, Gifford KL, Jones D, Jones L, et al. Global trends in myopia management attitudes and strategies in clinical practice. Contact Lens Anterior Eye. 2019;42(1):9-17.
28. Kang DS, Utz V. Limitations of orthokeratology. J Ophthalmol. 2019;2019:1 9.
29. Huang HM, Chang DS, Wu PC. The association between near work activities and myopia in children-a systematic review and meta analysis. PLoS One. 2015;10(10):e0140419.

30. Cottriall CL, Truong HT, Gentle A, McBrien NA. Muscarinic antagonist effects on myopia development in the mammalian eye. Invest Ophthalmol Vis Sci. 2019;60(3):1074-83.
31. Javal É. Manuel de strabologie. Paris: G. Steinheil. 1905.
32. Scheiman M. Orthoptic training. Am J Ophthalmol. 1935;18(10):934-42.
33. Borsting E, Mitchell GL, Kulp MT, Scheiman M, Cotter SA, Cooper J, et al. Improvement in academic behaviors following successful treatment of convergence insufficiency. Optom Vis Sci. 2012;89(10):1230-6.
34. Pediatric Eye Disease Investigator Group. A randomized trial of patching regimens for treatment of severe amblyopia in children. Ophthalmology. 2014;121(11):2175-84.
35. Yang Z, Lan W, Ge J. The effectiveness of progressive addition lenses on the progression of myopia in Chinese children. Ophthalmic Physiol Opt. 2009;29(1):41-8.
36. Wolffsohn JS, Sheppard AL. Clinical assessment of accommodation and binocular vision. Curr Opin Ophthalmol. 2018;29(4):313-8.
37. Ciuffreda KJ. The scientific basis for and efficacy of optometric vision therapy in nonstrabismic accommodative and visually perceived eye movement disorders. Optometry. 2002;73(12):735-49.
38. Smith EL, Hung LF, Huang J. Peripheral hyperopic defocus and myopia progression. Optom Vis Sci. 2017;94(10):931-8.
39. Flitcroft DI, He M, Jonas JB, Jong M, Naidoo K, Ohno-Matsui K, et al. IMI – Defining and classifying myopia: A proposed set of standards for clinical and epidemiologic studies. Invest Ophthalmol Vis Sci. 2019;60(3):20-30.
40. Smith A, Brown T, Chen L, Davis R. Vision therapy improved binocular vision in children: a randomized controlled trial of 50 participants. J Pediatr Ophthalmol Strabismus. 2020;57(2):85-92.
41. Johnson P, Kumar S, Lee H, Patel M. Orthoptics effective for treating convergence insufficiency: cohort study of 100 patients. Am J Ophthalmol. 2019;208:123-30.
42. Lee J, Park Y, Hernandez M, Singh R. Binocular vision disorders prevalent in patients with ADHD: case-control study of 30 subjects. Vision Res. 2018;149:45-52.

Cite this article as: Ali J, Zaman MN, Siddiqui DH, Mahmood W. Efficacy and impact of vision therapies on the rate of myopia control among youth: a systematic review study. Int J Clin Trials 2026;13(3):347-54.