

Table 1. Objectives, Participants, Interventions, Outcomes and Conclusions of the Reliable Systematic Reviews on Interventions for Refractive Error and Refractive Surgery (N=10).

Study ID	Objective(s)	Condition(s)	Intervention Comparisons	Outcome	Number of Studies; Participants; Eyes	Conclusion(s) from the abstract
Pharmaceuticals						
Li 2014 ¹⁷	“To conduct a meta-analysis on the effects of atropine in slowing myopia progression and to compare Asian and white children and randomized controlled trials (RCTs) and observational studies.”	Myopia (children)	Atropine compared with placebo or non-atropine treatment	Refractive error	11; 1815; Not reported	“Atropine could significantly slow myopia progression in children, with greater effects in Asian than in white children. Randomized controlled trials and cohort studies provided comparable effects.”
Spectacles						
Li 2011 ²²	“Multifocal lenses (MLs) are advocated as a substitute for single vision lenses (SVLs) to slow myopia progression in children, but results vary greatly across studies.”	Myopia (children)	Multifocal lenses compared with single vision lenses	Visual acuity, axial length	9; 1464; Not reported	“A meta-analysis of nine of these trials showed that MLs with powers ranging from ≤ 1.50 to ≤ 2.00 D were associated with a statistically significant decrease in myopia progression in school-aged children compared with SVLs. The benefit was greater in children with a higher level of myopia at baseline and sustained for a minimum of 24 months. Asian children appeared to have greater benefit from intervention with MLs than white children.”
Surgery						
*Barsam 2014 ¹⁵	“To compare excimer laser refractive surgery and phakic IOLs for the correction of moderate to high myopia by evaluating postoperative uncorrected visual acuity, refractive outcome, potential loss of best spectacle corrected visual acuity (BSCVA) and the incidence of adverse outcomes.”	Myopia	Phakic intraocular lenses compared with excimer laser surgical	Visual acuity (UCVA); Need for correction; Patient satisfaction; Quality of life; Cost	3; 132; 228	“The results of this review suggest that, at one year post surgery, phakic IOLs are safer than excimer laser surgical correction for moderate to high myopia in the range of -6.0 to -20.0 D and phakic IOLs are preferred by patients. While phakic IOLs might be accepted clinical practice for higher levels of myopia (greater than or equal to 7.0 D of myopic spherical equivalent with or without astigmatism), it may be worth considering phakic IOL treatment over excimer laser correction for more moderate levels of myopia (less than or equal to 7.0 D of myopic

						spherical equivalent with or without astigmatism). Further RCTs adequately powered for subgroup analysis are necessary to further elucidate the ideal range of myopia for phakic IOLs. This data should be considered alongside comparative data addressing long-term safety as it emerges.”
*Li 2016 ¹⁶	“The objective of this review is to compare LASEK versus PRK for correction of myopia by evaluating their efficacy and safety in terms of postoperative uncorrected visual acuity, residual refractive error, and associated complications.”	Myopia; Astigmatism	LASEK compared with PRK	Visual acuity (UCVA, BCVA); Refractive error; Adverse events	11; 428; 866	“Uncertainty surrounds differences in efficacy, accuracy, safety, and adverse effects between LASEK and PRK for eyes with low to moderate myopia. Future trials comparing LASEK versus PRK should follow reporting standards and follow correct analysis. Trial investigators should expand enrollment criteria to include participants with high myopia and should evaluate visual acuity, refraction, epithelial healing time, pain scores, and adverse events.”
*Settas 2012 ¹⁹	“The objectives of this review were to determine whether PRK or LASIK leads to more reliable, stable and safe results when correcting a hyperopic refractive error.”	Hyperopia; Astigmatism	LASIK compared with PRK	Visual acuity (UCVA, BCVA); Refractive error; Adverse events	0; 0; 0	“No robust, reliable conclusions could be reached, but the non-randomised trials reviewed appear to be in agreement that hyperopic-PRK and hyperopic-LASIK are of comparable efficacy. High quality, well-planned open RCTs are needed in order to obtain a robust clinical evidence base.”
Shortt 2006 ²³	“The aim of this review was to compare the effectiveness and safety of PRK and LASIK for correction of myopia.”	Myopia; Astigmatism	LASIK compared with PRK	Visual acuity (UCVA); Refractive error; Quality of life; Adverse events	6; 666; 417	“LASIK gives a faster visual recovery than PRK but the effectiveness of these two procedures is comparable. Further trials using contemporary techniques are required to determine whether LASIK and PRK are equally safe.”
*Shortt 2013 ¹⁸	“To compare the effectiveness and safety of LASIK and PRK for correction of myopia by examining post-treatment uncorrected visual acuity, refractive outcome, loss of best spectacle-corrected visual acuity, pain scores, flap complications in LASIK, subepithelial haze, adverse events, quality of life indices and higher order aberrations.”	Myopia; Astigmatism	LASIK compared with PRK	Visual acuity (UCVA, BCVA); Refractive error; Quality of life; Adverse events	13; 1135; 1923	“LASIK gives a faster visual recovery and is a less painful technique than PRK. The two techniques appear to give similar outcomes one year after surgery. Further trials using contemporary techniques are required to determine whether LASIK and PRK as currently practised are equally safe. Randomising eyes to treatment is an efficient design, but only if analysed properly. In future trials, more efforts could be made to mask the assessment of outcome.”

Multiple interventions

Saw 2002 ²⁵	"To evaluate the efficacy of interventions such as eyedrops, bifocal lenses, or contact lenses in retarding the progression of myopia in myopic children."	Myopia (children)	"Interventions to retard the progression of myopia"	Adverse events	10; 1612; Not reported	"The latest evidence from randomized clinical trials does not provide sufficient information to support interventions to prevent the progression of myopia. Long-term large-scale double-masked randomized clinical trials, including cycloplegic refraction, are needed before any recommendations about interventions in clinical practice to prevent high myopia in myopic children are considered."
*Walline 2011 ²⁰	"To assess the effects of several types of interventions, including eye drops, undercorrection of nearsightedness, multifocal spectacles and contact lenses, on the progression of nearsightedness in myopic children younger than 18 years. We compared the interventions of interest with each other, to single vision lenses (SVLs) (spectacles), placebo or no treatment."	Myopia (children)	Bifocal soft contact lenses (BSCLs), rigid gas permeable contact lenses (RGPCLs) and corneal reshaping (orthokeratology) contact lenses; Bifocal lenses (spectacles), progressive addition lenses (PALs) and undercorrection of myopia; Pharmaceutical agents	Refractive error; Quality of life; Adverse events; Cost	23; 4696; Not reported	"The most likely effective treatment to slow myopia progression thus far is anti-muscarinic topical medication. However, side effects of these medications include light sensitivity and near blur. Also, they are not yet commercially available, so their use is limited and not practical. Further information is required for other methods of myopia control, such as the use of corneal reshaping contact lenses or bifocal soft contact lenses (BSCLs) with a distance center are promising, but currently no published randomized clinical trials exist."

Other interventions

*Wei 2011 ²¹	“To assess the effectiveness and safety of acupuncture in slowing the progression of myopia in children and adolescents.”	Myopia (children and adolescents)	Acupuncture	Refractive error; Adverse events; Cost; Axial length; Corneal radius	2; 131; Not reported	“Two trials are included in this review but no conclusions can be drawn for the benefit of acupuncture for slowing progress of myopia in children. Further evidence in the form of RCTs are needed before any recommendations can be made for the use of acupuncture treatment in clinical use. These trials should compare acupuncture to placebo and have large sample sizes. Other types of acupuncture (such as auricular acupuncture) should be explored further as well as compliance with treatment for at least six months or longer. Axial length elongation of the eye should be investigated for at least one year. The potential to reduce/eliminate pain from acupuncture experienced by children should also be reviewed.”
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*Cochrane review

Mayo-Wilson E, Ng SM, Li T, Chuck RS, Li T (2017). The quality of systematic reviews about interventions for refractive error can be improved: A review of systematic reviews. *BMC Ophthalmology* 17:164. DOI: 10.1186/s12886-017-0561-9