

SUPPLEMENTARY MATERIALS

Supplementary Figures and Tables

Authors and year of article	Sample Size	Mean Age [SD] (Years)	Duration (weeks)	Treatment Comparison	Mean change in VA of amblyopic eye [SD] (logMAR)	95% CI	Setting
Agervi et al., 2009	66	Optical treatment: 4.5 [0.3]; Optical treatment and Bangerter: 4.5 [0.3]	52	Optical treatment (full time) Optical treatment and 0.3 Bangerter (full time)	Optical treatment: median = 0.3 [NR] Optical treatment and Bangerter: median = 0.4 [NR]	NR	Home
Agervi et al., 2010	38	4.3 [NR]	52	Optical treatment and patching (8hrs/day, 6x/week) Optical treatment and patching (8hrs/day, alternate days)	Optical treatment and patching: median = 0.6 [NR] Optical treatment and patching (alternate): median = 0.8 [NR]	NR	Home
Birch et al., 2020	47	Patching: 6.95 [1.77]; Binocular game: 6.71 [1.83]	2	Patching (2hr/day) (crossover); Binocular game (1hr/day, 5x/week)	Patching: 0.07 [0.08] Binocular game: 0.15 [0.08]	0.07 (0.03 - 0.13)	Home
Clarke et al., 2003	168	No treatment: 4.03 [.43]; Optical treatment: 3.93 [.43]; Patching and optical treatment: 3.97 [.38]	54	No treatment; Optical treatment (full time); Patching and optical treatment (full time)	NR	Optical treatment: - 0.085 (0.02 - 0.15); Patching and optical treatment: - 0.11 (0.050 - 0.171)	Home
Cotter 2002	402	Patching: 5.3 [1.1]; Atropine: 5.2[1.1]	26	Patching (6hrs/day); Atropine (1% 1 gt/day)	Patching: 0.32 [0.16] Atropine: 0.28 [0.16]	0.034 (0.005- 0.064)	Home
Dadeya & Dangda, 2016	40	Patching: 5.82 [1.24]; Patching and game: 6.02 [1.01]	12	Patching (full time); Patching (full time) and video game (30 mins/week)	Patching: 0.30 [0.16] Patching and game: 0.43 [0.16]	NR	Clinic
Fresina et al., 2018	61	6.08 [NR]	4	Patching (2hr/day); Non-vision-based therapy	Patching: 0.13 [0.15]	NR	Home

Gambacorta et al., 2018	21	Monocular game: 9.7 [2.2]; Binocular game: 10.5 [4.0]	variable	Monocular game (20hr total); Binocular game (20hr total)	Monocular game: 0.06 [SE 0.03] Binocular game: 0.14 [SE 0.02]	NR	Lab
Gao et al. 2018	45	Placebo: 9.6 [1.6]; Binocular game: 9.4 [1.7]	6	Placebo game (1hr/day); Binocular game (1hr/day)	Placebo: 0.11 [SE = 0.03] Binocular game: 0.05 [SE = 0.03]	-0.06 (-0.14 – 0.02)	Home
Herbison et al., 2016	73	Control game: 5.6 [1.1]; Binocular video: 5.9 [1.2] Binocular game: 6.0 [1.3]	6	Control game (30 min/week), Binocular video (30 min/week), Binocular game (30 min/week)	Control game: 0.03 [0.02] Binocular video: 0.1 [0.02] Binocular game: 0.06 [0.02]	NR	Clinic
Holmes et al., 2003 (PEDIG)	157	Patching (6 hr/day) and near activities: 4.7 [1.1]; Patching (full-time) and near activities: 5.0 [1.0]	16	Patching (6 hr/day) and near activities (1 hr/day); Patching (full-time) and near activities (1 hr/day)	Patching (6hrs/day) and near activities: 0.48 [0.23] Patching (full time) and near activities: 0.47 [0.29]	-0.03 (-0.11 - 0.05)	Home
Holmes et al., 2016 (PEDIG)	363	Patching: 8.6 [2.0]; Binocular game: 8.4 [1.8]	16	Patching (2 hr/day); Binocular game (1hr/day)	Patching: 0.14 [NR] Binocular game: 0.11 [NR]	one-sided 95% CI: 0.031 (upper limit: 0.053)	Home
Lee et al., 2020	25	6.64 [NR]	8	Patching (2hr/day); Monocular perceptual learning (20min/day); Binocular perceptual learning (20min/day)	Patching: 0.054 [NR] Monocular perceptual learning: -0.04 [NR] Binocular perceptual learning: 0.022 [NR]	NR	Home
Manh et al., 2018	95	Patching: 14.3 [1.1]; Binocular game: 14.3 [1.1]	16	Patching (2hr/day); Binocular game (1hr/day)	Patching: 0.074 [NR] Binocular game: 0.126 [NR]	-0.52 (-1.14- 0.06)	Home
Medghalci & Dalili, 2011	120	NR	104	Patching (3hr/day); Atropine (0.5% 1 gt (2x/week)	Patching: 0.38 [NR] Atropine: 0.36 [NR]	NR	Home
Mehboob et al., 2019	52	11.06 [3.3]	8	Patching (6hr/day) and near activities (1-2 hr/day); Patching (12hr/day)	Patching (6hr/day) and near activities: 0.17 [0.13]; Patching (12hr/day): 0.22 [0.14]	NR	Home
Nyman et al., 1983	50	NR	variable	Patching or 0.2 Bangerter (full time); Monocular CAM stimulator (7 mins in 5-10 sessions)	Patching: 0.33 [0.126]; CAM: 0.311 [0.105]	NR	Patching: home; CAM: lab

Pawar et al., 2014	84	Patching: 6.68, [1.89]	variable	Patching (full time, 6 days/week); Non-vision-based treatment	Patching: 0.26 [NR]	NR	Home
PEDIG 2008	398	Patching and near: 5.4 [1.0]; Patching and distance: 5.4 [1.0]	8	Patching (2hr/day) and near activities (1hr/day) ; patching (2hr/day) and distance activities (1hr/day)	Patching and near: 0.25 [0.16]; Patching and distance: 0.26 [0.16]	0 (-0.3 - 0.3)	Home
PEDIG 2009	172	Atropine: 5.2 [1.1]; Atropine and a plano lens: 5.1 [1.0]	18	Atropine (1% 1 gt 2x/week); Atropine (1% 1 gt 2x/week)and a plano lens (6hrs/day)	Atropine: 0.24 [0.14]; Atropine and plano lens: 0.28 [0.18]	-0.03 (-0.02 - 0.08)	Home
PEDIG 2011	54	6.9 [NR]	10	Patching (2 hours/day) or atropine (1% 1gt 1x/week); Patching (6hrs/day) and atropine (1% 1 gt QD)	Patching or atropine: 0.053 [0.15]; patching and atropine: 0.056 [0.096]	0 (-0.07 - 0.07)	Home
PEDIG 2019	136	Optical treatment: 9.6 [1.5] Binocular game: 9.6 [1.6]	4	Optical treatment (full time); Binocular game (1hr, 5x/week) and optical treatment (full time)	Optical treatment: 0.034[NR]; Binocular game: 0.026 [NR]	-0.006 (-0.044 - 0.03)	Home
PEDIG 2010	169	Patching: 6.3 [1.62]; Bangerter: 6.3 [1.67]	24	Patching (2hrs/day); 0.2 or 0.3 Bangerter filter (full time)	Patching: 0.23 [0.13]; Bangerter: 0.19 [0.16]	0.76 (non-inferiority 0.75)	Home
Rajavi et al., 2016	50	Patching: 5.06 [1.62]; Binocular game and patching: 6.28 [1.95]	4	Patching (variable); Binocular game followed by patching (20 min/day, 5x/week x 1 month)	Patching: 0.06 [0.08]; Binocular game followed by patching: 0.17 [0.09]	NR	Home
Rajavi et al., 2019	38	Patching and placebo game: 7.55 [1.55]; Binocular game: 6.5 [2.01]	4	Patching and placebo game (6 hours total); Binocular game (6 hours total)	Patching and placebo game: 0.09 [0.09]; Binocular game: 0.08 [0.09]	NR	Home
Repka et al., 2003	181	Patching (2hrs): 5.1 [1.1]; Patching (6hrs): 5.4 [1.0]	16	Patching (2hrs/day) and near activities (1hr/day); Patching (6hrs/day) and near activities (1hr/day)	Patching (2hrs): 0.24 [0.134]; Patching (6hrs): 0.24 [0.163]	0.001 (-0.04 - 0.042)	Home
Scheiman et al., 2008	172	Patching: 8.9 [1.5]; Atropine: 9.1 [1.6]	17	Patching (at least 1hr/day); Atropine (1% 1 gt 2x/week)	Patching: 0.172 [0.156]; Atropine: 0.152 [0.15]	0.024 (-0.014- 0.062)	Home

Sharda 2019	32	8.68 [1.55]	12	Patching (6hrs/day); Non-vision-based treatment	Patching: 0.37 [NR]	NR	Home
Singh, Sharma & Saxena, 2017	68	Patching: 10 [NR]; Monocular game and patching: 9.9 [2.19]	4	Patching (6hrs/day); Monocular game (1hr/day, FE patched) and patching (6hrs/day)	Patching: 0.05 [NR]; Monocular game and patching: 0.1 [NR]	NR	Home
Stewart et al., 2007	80	Patching (6h): 5.4 [1.7]; Patching (12h): 5.6 [1.4]	18+	Patching (6hr/day); Patching (12hr/day)	Patching 6h: 0.26 [NR], Patching 12h: 0.24 [NR]	0.02 (0 - 0.04)	Home
Tejedor & Ogallar, 2008	63	Optical penalization: 6.11 [2.09]; Atropine: 5.64 [2.16]	26	Optical penalization (full time); Atropine (1% 1gt 2x/week)	Optical penalization: 0.18 [1.4]; Atropine: 0.34 [0.14]	NR	Home
Vagge, Gunton & Schnall, 2018	24	Patching: 4.8 [1.1]	variable	Patching (variable); Non-vision-based treatment	Patching: 0.17 [NR]	NR	Home
Wallace et al., 2006	173	Optical treatment: 5.3 [1.1]; Patching and near activities: 5.4 [1.0]	5	Optical treatment or nothing (full time); Patching (2hr/day) and near activities (1hr/day)	Optical treatment or nothing: 0.05 [0.17]; Patching and near: 0.11 [0.16]	0.07 (0.02 - 0.12)	Home
Wang et al., 2016	34	Patching: 5.9 [0.9]; Intermittent patching: 5.7 [1.5]	12	Patching (2hr/day); Intermittent patching (4 hrs/day, switches on and off every 30 seconds)	Patching: 0.15 [0.11]; Intermittent patching: 0.15 [0.12]	T = -0.14, one- sided P=0.88	Home
Yao, Moon & Qu, 2019	85	Patching: 5.99 [2.33]; Binocular game: 6.5 [2.81]; Patching and binocular game: 6.21 [2.5]	12	Patching (2-6 hours/day); Binocular game (40 mins/day, in 2 sessions); Patching and binocular game (2-6 hours/day)	Patching: 0.28 [NR]; Binocular game: 0.18 [NR]; Patching and binocular game: 0.3 [NR]	NR	Home
Zhao et al., 2010	83	Patching: 9.4 [1.9]	15	Patching (2hrs/day) and near activities (1hr/day); Non- vision-based treatment	Patching: 0.183 [0.099]	0.049 (0.005 - 0.092)	Patching: home; Non- vision- based treatmen t: clinic

Table 1. Studies included in the systematic review.. NR: not reported. mins: minutes. SE = standard error. hr = hour. gt = drop. FE = fellow eye. Where studies included multiple age groups, only the data for 4-17 year old participants are included.

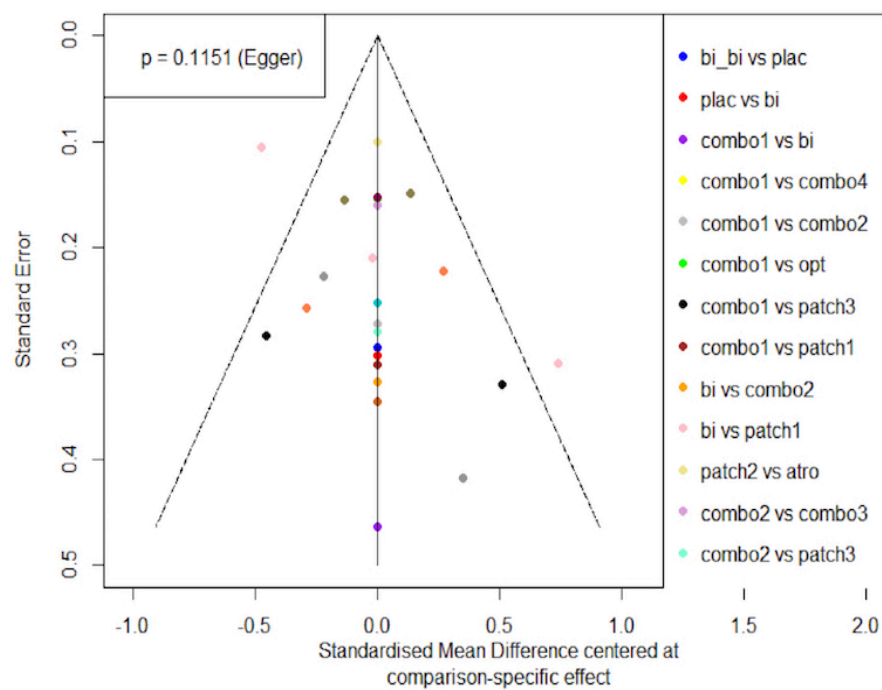




Figure 1. Funnel plot of studies in the NMA. There is no asymmetry indicative of publication bias.

Study name	Randomization process	Adherence	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Agervi et al., 2009	+	?	+	?	+	!
Agervi et al., 2010	-	+	+	?	+	-
Birch et al., 2020	+	+	+	+	+	+
Clarke et al., 2003	+	+	+	+	+	+
Cotter 2002	+	+	+	+	+	+
Dadeya et al., 2016	+	+	+	+	+	+
Fresina et al., 2018	+	+	+	+	+	+
Gambacorta et al., 2018	-	+	+	+	+	!
Gao et al., 2018	+	?	+	+	+	!
Herbison et al., 2016	+	+	+	+	+	+
Holmes et al., 2016	+	?	+	+	+	!
Holmes et al., 2003	+	-	+	+	+	-
Lee et al., 2020	+	?	+	+	+	!
Manh et al., 2018	+	?	+	+	+	!
Medghalci et al., 2011	-	-	+	?	+	-
Mehboob et al., 2019	+	+	+	+	+	+
Nyman et al., 1983	?	+	-	?	+	-
Pawar et al., 2014	?	-	-	+	+	-
PEDIG 2008	+	+	+	+	+	+
PEDIG 2009	+	+	+	+	+	+
PEDIG 2011	+	?	+	+	+	!
PEDIG 2019	+	?	+	+	+	+
PEDIG 2010	+	+	+	+	+	+
Rajavi et al., 2016	+	-	+	-	+	-
Rajavi et al., 2019	+	+	+	-	+	-
Repka et al., 2003	+	-	+	+	+	-
Scheiman et al., 2008	+	-	+	+	+	-
Sharda et al., 2019	+	-	+	?	+	-
Singh et al., 2017	+	+	+	+	+	+
Stewart et al., 2009	+	?	+	-	+	-
Tejedor et al., 2008	+	+	+	+	+	+

 Low risk
 Some concerns
 High risk

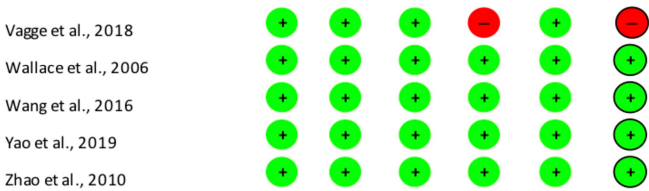


Figure 2. Risk of bias assessment.

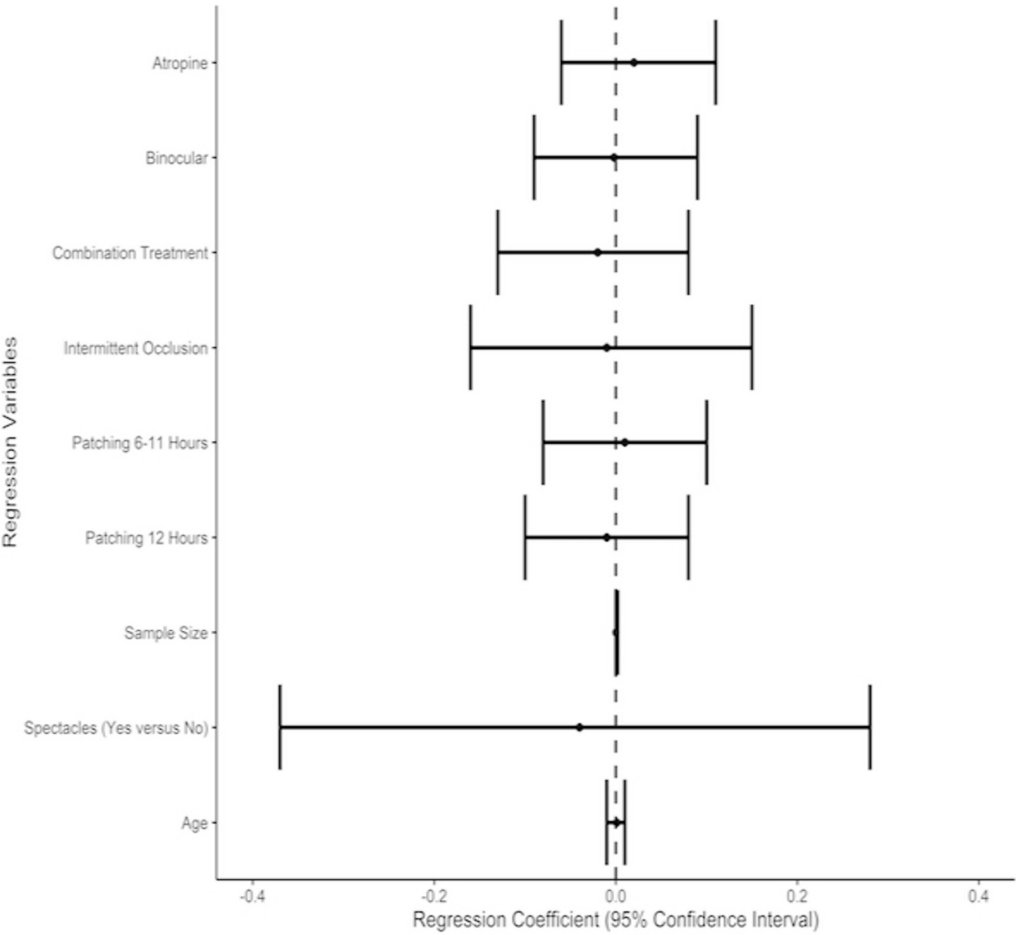


Figure 3. Forest plot of the meta-regression.

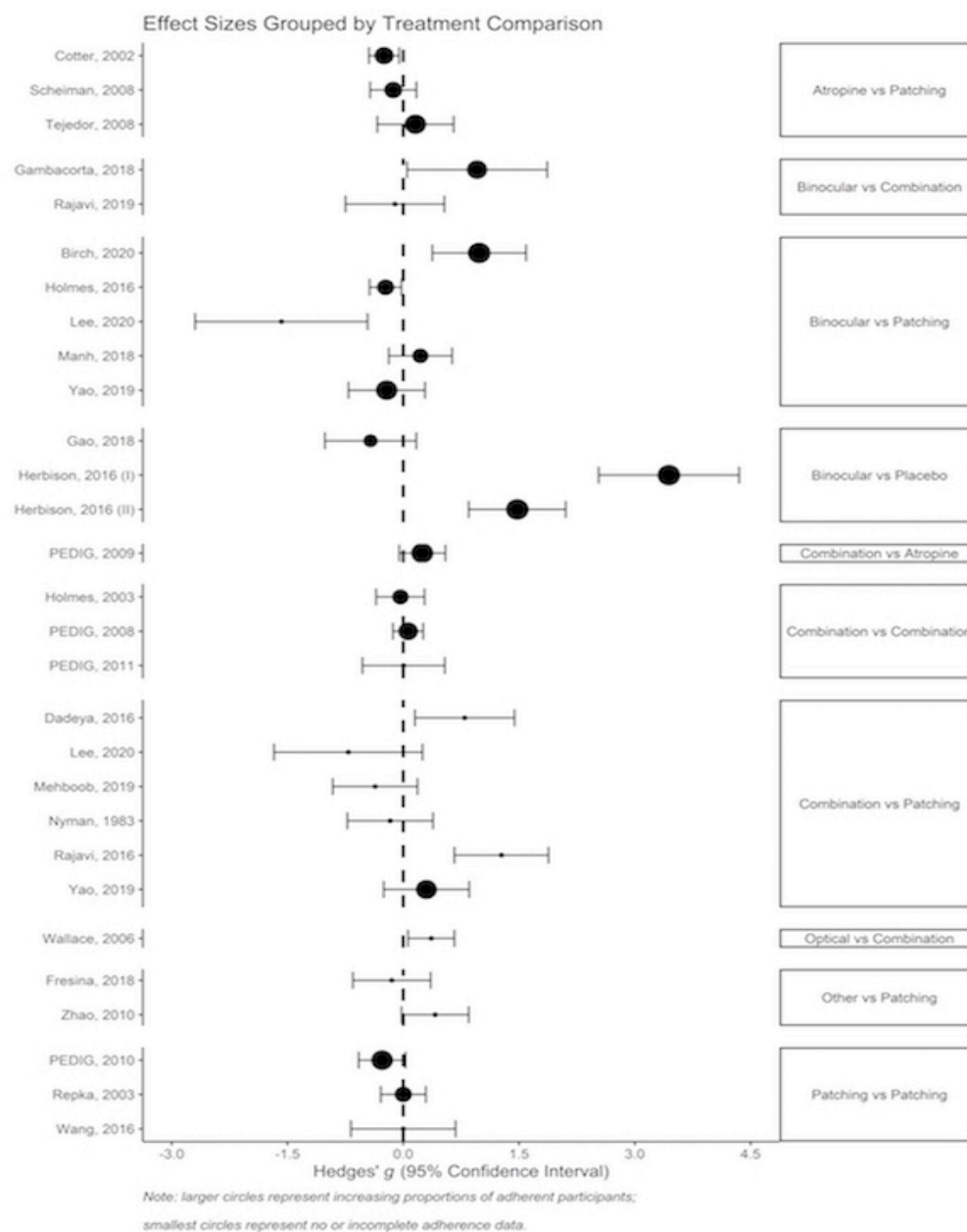


Figure 4. Forest plot of effect sizes, separated by treatment comparison. Larger boxes represent increasing proportions of adherent participants. Smaller boxes represent no or incomplete adherence data.

Members of Research Committee and their affiliations at the time of participation

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PubMed(Medline) Search Strategy

("amblyopia"[MeSH Terms] OR "amblyopia"[All Fields] OR "amblyopias"[All Fields] OR "lazy eye"[All Fields] OR "convergence, ocular"[MeSH Terms] OR "ocular convergence"[All Fields] OR "convergence insufficiency"[All Fields] OR "convergence insufficiencies"[All Fields] OR "convergence excess"[All Fields] OR "accommodative disorders"[All Fields] OR "accommodative dysfunction"[All Fields] OR "accommodative dysfunctions"[All Fields] OR "accommodative insufficiency"[All Fields] OR "accommodative infacility"[All Fields] OR "cyclophoria"[All Fields] OR "cyclophorias"[All Fields] OR "strabismus"[MeSH Terms] OR "strabismus"[All Fields] OR "squint"[All Fields] OR "phoria"[All Fields] OR "phorias"[All Fields] OR "exotropia"[MeSH Terms] OR "exotropia"[All Fields] OR exotropias[All Fields] OR "esotropia"[MeSH Terms] OR "esotropia"[All Fields] OR "esotropias"[All Fields] OR "exophoria"[All Fields] OR exophorias[All Fields] OR "esophoria"[All Fields] OR "esophorias"[All Fields] OR "exodeviation"[All Fields] OR "exodeviations"[All Fields] OR "esodeviation"[All Fields] OR "esodeviations"[All Fields] OR "hypertropia"[All Fields] OR "hypertropias"[All Fields] OR "hypotropia"[All Fields] OR "hypotropias"[All Fields]) **AND** ("vision therapy"[All Fields] OR "vision therapies"[All Fields] OR "vision training"[All Fields] OR "visual training"[All Fields] OR "visual therapy"[All Fields] OR "visual therapies"[All Fields] OR "orthoptics"[MeSH Terms] OR "orthoptics"[All Fields] OR "orthoptic"[All Fields] OR "pleoptic"[All Fields] OR "pleoptics"[All Fields] OR "home-based pencil push-ups"[All Fields] OR "vergence training"[All Fields] OR "vergence therapy"[All Fields] OR "accommodative training"[All Fields] OR "accommodative therapy"[All Fields] OR "eye training"[All Fields] OR "eye patch"[All Fields] OR "eyepatch"[All Fields] OR "eye

patching"[All Fields] OR "eye pad"[All Fields] OR "patch"[All Fields] OR "patching"[All Fields] OR "ocular patches"[All Fields] OR "eye exercise"[All Fields] OR "eye exercises"[All Fields] OR "ocular exercise"[All Fields] OR "optical penalization"[All Fields] OR "optical penalisation"[All Fields] OR "computers, handheld"[MeSH Terms] OR "handheld computer"[All Fields] OR "handheld computers"[All Fields] OR "tablets"[All Fields] OR "tablet"[All Fields] OR "ipad"[All Fields] OR "ipod"[All Fields] OR "mp3-player"[MeSH Terms] OR "smartphone"[All Fields] OR "smartphones"[All Fields] OR "smart phone"[All Fields] OR "smart phones"[All Fields] OR "computer program"[All Fields] OR "computer programs"[All Fields] OR "software"[MeSH Terms] OR filter[All Fields] OR filters[All Fields] OR "prism"[All Fields] OR "prisms"[All Fields] OR "occluder"[All Fields] OR "occluders"[All Fields]) **AND** ("child, preschool"[MeSH Terms] OR "child"[MeSH Terms] OR "child"[All Fields] OR "children"[All Fields] OR "adolescent"[MeSH Terms] OR "adolescent"[All Fields] OR "adolescents"[All Fields] OR "adolescence"[All Fields] OR "teen"[All Fields] OR "teens"[All Fields] OR "teenager"[All Fields] OR "teenagers"[All Fields]) AND English[lang]

PRISMA Checklist

Section/topic	#	Checklist item	page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	1-2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	7-8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Supplemental

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7-8
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	8
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7-8
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	9-10
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2 for each meta-analysis).	10-13
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	10
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	11-13
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Supple mental
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Supple mental

Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Supplemental
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	16-19
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	14-15
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	14-19
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	19-20
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	21-23
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	23-24
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	2