



AMERICAN ACADEMY
of OPTOMETRY

NAS – Focus on Myopia

Fuensanta A. Vera-Diaz, OD, PhD, FAAO

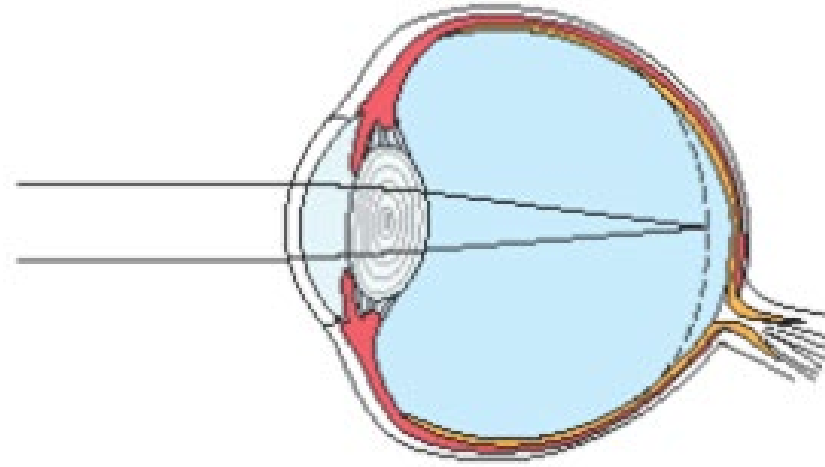
Associate Professor of Optometry,
Director of Research,
New England College of Optometry

aaopt.org

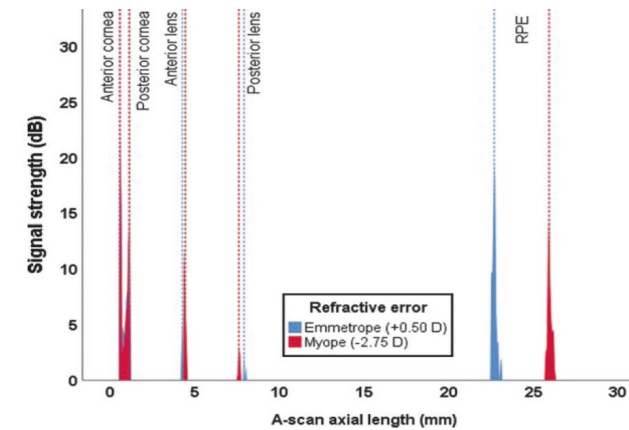
What is Myopia?

- Just a refractive error where distance images focus in front of the retina?
- Failure of emmetropization: mismatch optics / axial length because the **eye grows too long** (specifically posteriorly)

From Vera-Diaz, Encyclopedia of the Eye, 2010.



Uncorrected
myopic eye



Chakraborty et al, 2020.



AMERICAN ACADEMY
of OPTOMETRY

Importance of Myopia

- High (increasing) prevalence
- Impaired spatial and temporal vision (reduced neural sampling), therefore quality of life
- Financial costs
- Risk of **vision-threatening** conditions, with any level of myopia
 - myopic maculopathy, retinal detachment, open angle glaucoma...
 - higher myopia → higher risk, but **no safe level of myopia**
 - earlier onset → higher myopia

Needs

1. PREVENT MYOPIA

2. DELAY THE ONSET OF MYOPIA

3. SLOW THE PROGRESSION OF MYOPIA

Behavioral Modifications

- **Outdoors** time is **protective** against the development and likely the progression of myopia
- **Schooling (near work)** increases **risk** of myopia

Current Evidence	Gaps
Epidemiological studies show that outdoors is protective of myopia and near work is a risk factor for myopia	Association does not imply causation, need experimental studies
	What about outdoors is protective? Sun intensity/spectral composition? Circadian Rhythms? Dioptric range? Temporal vision?
	What aspects of near work contribute? Accommodation? Cognitive effort/deployed central attention?

Optical Treatments

- Specially designed **spectacles** (not approved in USA)
- Specially designed **contact lenses**
- **Orthokeratology** (corneal reshaping treatments)

Current Evidence	Gaps
Clinical trials in specific populations show these treatments slow the progression of myopia (and elongation of the eye) in some children	Which children will benefit?
	How much they will benefit?
	Can trials results be extrapolated to other demographics?
	Can we accurately measure success?
	Mechanism? What visual experience is important?
	More effective designs?

Pharmaceutical Treatments

- Low dose **Atropine** eye drops, Pirenzepine?

Current Evidence	Gaps
Clinical trials in specific populations show these treatments slow the progression of myopia (and elongation of the eye) in some children	Which children will benefit?
	How much they will benefit?
	Can trials results be extrapolated to other demographics?
	Do they control eye growth as well as Dioptric change?
	Which dose is optimal?
	Mechanism?



Red Light therapy

- Low intensity red **laser** therapy

Current Evidence	Gaps
Short duration trials in specific populations show these treatments slow the progression of myopia (and elongation of the eye) in some children	Which children will benefit?
	How much they will benefit?
	Do they control eye growth as well as Dioptric change?
	Can results be extrapolated to other demographics?
	Mechanism?
	Safety?



What Next?

1. Stakeholders (scientists + Industry + organizations), develop studies to:
 - Understand the etiology of myopia, in order to:
 - Develop **more effective treatments to control myopia**
 - Develop **programs to prevent myopia**
 - Develop new and improved treatments:
 - Need to **improve trials design**, e.g., control for behavioral factors, outcomes?
2. Organizations:
 - **Educate** public and clinicians: **robust evidence-based** information
 - Ensure treatments are **accessible** to all patients
3. Clinicians

American Academy of Optometry

Goals/Priorities for the NAS Statement of Task

- To provide independent and objective evidence-based information that clinicians can trust, as well as **easily access and interpret** it
- To promote studies that aim to **understand the etiology of myopia** that will lead to the development of more effective, useful and accessible programs to prevent and treatments to control myopia
- To educate (public and clinicians) that myopia is a significant public health concern and action is needed

Goal: prevent myopia!



AMERICAN ACADEMY
of OPTOMETRY

Thank you!

aaopt.org

References

- Agyekum S, Chan PP, Zhang Y, Huo Z, Yip BHK, Ip P, Tham CC, Chen LJ, Zhang XJ, Pang CP, Yam JC. Cost-effectiveness analysis of myopia management: A systematic review. *Front Public Health*. 2023 Feb 27;11:1093836.
- Bao J, Yang A, Huang Y, Li X, Pan Y, Ding C, Lim EW, Zheng J, Spiegel DP, Drobe B, Lu F, Chen H. One-year myopia control efficacy of spectacle lenses with aspherical lenslets. *Br J Ophthalmol*. 2022 Aug;106(8):1171-1176.
- Bao J, Huang Y, Li X, Yang A, Zhou F, Wu J, Wang C, Li Y, Lim EW, Spiegel DP, Drobe B, Chen H. Spectacle Lenses With Aspherical Lenslets for Myopia Control vs Single-Vision Spectacle Lenses: A Randomized Clinical Trial. *JAMA Ophthalmol*. 2022 May 1;140(5):472-478.
- Bartlett JD, Niemann K, Houde B, Allred T, Edmondson MJ, Crockett RS. A tolerability study of pirenzepine ophthalmic gel in myopic children. *J Ocul Pharmacol Ther*. 2003 Jun;19(3):271-9.
- Brodstein RS, Brodstein DE, Olson RJ, Hunt SC, Williams RR. The treatment of myopia with atropine and bifocals. A long-term prospective study. *Ophthalmology*. 1984 Nov;91(11):1373-9.
- Bullimore MA, Brennan NA. Myopia Control: Why Each Diopter Matters. *Optom Vis Sci*. 2019 Jun;96(6):463-465.
- Bullimore MA, Brennan NA. Efficacy in Myopia Control: The Low-Concentration Atropine for Myopia Progression (LAMP) Study. *Ophthalmology*. 2023 Jul;130(7):771-772.
- Bullimore MA, Brennan NA. Efficacy in Myopia Control: Does Race Matter? *Optom Vis Sci*. 2023 Jan 1;100(1):5-8.

References

- Bullimore MA, Brennan NA. Myopia: An ounce of prevention is worth a pound of cure. *Ophthalmic Physiol Opt.* 2023 Jan;43(1):116-121.;
- Bullimore MA, Brennan NA, Flitcroft DI. The future of clinical trials of myopia control. *Ophthalmic Physiol Opt.* 2023 May;43(3):525-533.
- Bullimore MA, Lee SS, Schmid KL, Rozema JJ, Leveziel N, Mallen EAH, Jacobsen N, Iribarren R, Verkicharla PK, Polling JR, Chamberlain P. IMI-Onset and Progression of Myopia in Young Adults. *Invest Ophthalmol Vis Sci.* 2023 May 1;64(6):2.
- Chakraborty R, Ostrin LA, Benavente-Perez A, Verkicharla PK. Optical mechanisms regulating emmetropisation and refractive errors: evidence from animal models. *Clin Exp Optom.* 2020 Jan;103(1):55-67.
- Chamberlain P, Peixoto-de-Matos SC, Logan NS, Ngo C, Jones D, Young G. A 3-year Randomized Clinical Trial of MiSight Lenses for Myopia Control. *Optom Vis Sci.* 2019 Aug;96(8):556-567.
- Chamberlain P, Bradley A, Arumugam B, Hammond D, McNally J, Logan NS, Jones D, Ngo C, Peixoto-de-Matos SC, Hunt C, Young G. Long-term Effect of Dual-focus Contact Lenses on Myopia Progression in Children: A 6-year Multicenter Clinical Trial. *Optom Vis Sci.* 2022 Mar 1;99(3):204-212.
- Chamberlain P, Lazon de la Jara P, Arumugam B, Bullimore MA. Axial length targets for myopia control. *Ophthalmic Physiol Opt.* 2021 May;41(3):523-531.
- Chen C, Cheung SW, Cho P. Myopia control using toric orthokeratology (TO-SEE study). *Invest Ophthalmol Vis Sci.* 2013 Oct 3;54(10):6510-7.

References

- Chen C, Ma W, Wang J, Yang B, Liu T, Liu L. Higher-Order Aberrations and Visual Performance in Myopic Children Treated With Aspheric Base Curve-Designed Orthokeratology. *Eye Contact Lens*. 2023 Feb 1;49(2):71-76.
- Chen H, Liao Y, Zhou W, Dong L, Wang W, Wang X. The change of myopic prevalence in children and adolescents before and after COVID-19 pandemic in Suqian, China. *PLoS One*. 2022 Mar 21;17(3):e0262166
- Chen J, Liu S, Zhu Z, Bulloch G, Naduvilath T, Wang J, Du L, Yang J, Zhang B, Zou H, Xu X, He X. Axial length changes in progressive and non-progressive myopic children in China. *Graefes Arch Clin Exp Ophthalmol*. 2023 May;261(5):1493-1501.
- Chen J, Zhuo R, Chen J, Yang A, Lim EW, Bao J, Drobe B, Spiegel DP, Chen H, Hou L. Spectacle lenses with slightly aspherical lenslets for myopia control: clinical trial design and baseline data. *BMC Ophthalmol*. 2022 Aug 16;22(1):345.
- Chen M, Liu X, Xie Z, Wang P, Zheng M, Mao X. The Effect of Corneal Refractive Power Area Changes on Myopia Progression during Orthokeratology. *J Ophthalmol*. 2022 Jun 16;2022:5530162.
- Chen M, Xu L, Li H, Cai F, Wang H, Hu C, Wu Y. Myopia Control With Multifocal Lens in School-Aged Children: A Meta-Analysis. *Front Pediatr*. 2022 Jun 20;10:889243.
- Chen Q, He J, Hu G, Xu X, Lv H, Yin Y, Zou H, Zhu J, Fan Y, Xu X. Morphological Characteristics and Risk Factors of Myopic Maculopathy in an Older High Myopia Population-Based on the New Classification System(ATN). *Am J Ophthalmol*. 2019 Dec;208:356-366.

References

- Chen SJ, Lu P, Zhang WF, Lu JH. High myopia as a risk factor in primary open angle glaucoma. *Int J Ophthalmol*. 2012;5(6):750-3.
- Chen X, Xiong Y, Liu F, Wang J, Yang B, Liu L. Factors determining the myopia control effect of an orthokeratology lens: A two-year multi-level model. *Ophthalmic Physiol Opt*. 2022 Jul;42(4):786-796.
- Chen Y, Ding C, Li X, Huang Y, Zhou F, Drobe B, Chen H, Bao J. Comparison of visual performance between peripheral gradient high-addition multifocal soft contact lenses and orthokeratology. *Ophthalmic Physiol Opt*. 2023 Jul;43(4):874-884.
- Chen Z, Huang S, Zhou J, Xiaomei Q, Zhou X, Xue F. Adjunctive effect of orthokeratology and low dose atropine on axial elongation in fast-progressing myopic children-A preliminary retrospective study. *Cont Lens Anterior Eye*. 2019 Aug;42(4):439-442.
- Chen Y, Xiong R, Chen X, Zhang J, Bulloch G, Lin X, Wu X, Li J. Efficacy Comparison of Repeated Low-Level Red Light and Low-Dose Atropine for Myopia Control: A Randomized Controlled Trial. *Transl Vis Sci Technol*. 2022 Oct 3;11(10):33.
- Chen Z, Zhou J, Xue F, Qu X, Zhou X. Two-year add-on effect of using low concentration atropine in poor responders of orthokeratology in myopic children. *Br J Ophthalmol*. 2022 Aug;106(8):1069-1072.
- Chia A, Lu Q-S, Tan D. Five-year clinical trial on atropine for the treatment of myopia 2: myopia control with atropine 0.01% eyedrops. *Ophthalmology*. 2016 Feb;123:391-399.

References

- Chia A, Ngo C, Choudry N, Yamakawa Y, Tan D. Atropine Ophthalmic Solution to Reduce Myopia Progression in Pediatric Subjects: The Randomized, Double-Blind Multicenter Phase II APPLE Study. *Asia Pac J Ophthalmol (Phila)*. 2023 May 10.
- Chiang SY, Weng TH, Lin CM, Lin SM. Ethnic disparity in prevalence and associated risk factors of myopia in adolescents. *J Formos Med Assoc*. 2020 Jan;119(1 Pt 1):134-143.
- Cho P, Cheung SW, Edwards M. The longitudinal orthokeratology research in children (LORIC) in Hong Kong: a pilot study on refractive changes and myopic control. *Curr Eye Res*. 2005 Jan;30(1):71-80.
- Cho P, Cheung SW. Protective Role of Orthokeratology in Reducing Risk of Rapid Axial Elongation: A Reanalysis of Data From the ROMIO and TO-SEE Studies. *Invest Ophthalmol Vis Sci*. 2017 Mar 1;58(3):1411-1416.
- Choo JD, Holden BA. The prevention of myopia with contact lenses. *Eye Contact Lens*. 2007 Nov;33(6 Pt 2):371-2; discussion 382.
- Chou AC, Shih YF, Ho TC, Lin LL. The effectiveness of 0.5% atropine in controlling high myopia in children. *J Ocul Pharmacol Ther*. 1997 Feb;13(1):61-7.
- Chu Z, Ren Q, Chen M, Cheng L, Cheng H, Cui W, Bi W, Wu J. The relationship between axial length/corneal radius of curvature ratio and stress-strain index in myopic eyeballs: Using Corvis ST tonometry. *Front Bioeng Biotechnol*. 2022 Aug 15;10:939129.
- Chua J, Wong TY. Myopia-The Silent Epidemic That Should Not Be Ignored. *JAMA Ophthalmol*. 2016 Dec 1;134(12):1363-1364.

References

- Chua SY, Sabanayagam C, Cheung YB, Chia A, Valenzuela RK, Tan D, Wong TY, Cheng CY, Saw SM. Age of onset of myopia predicts risk of high myopia in later childhood in myopic Singapore children. *Ophthalmic Physiol Opt*. 2016 Jul;36(4):388-94.
- Chua W-H, Balakrishnan V, Chan Y-H, Tong L, Ling Y, Quah BL, Tan D. Atropine for the treatment of childhood myopia. *Ophthalmology*. 2006 Dec;113(12):2285-91.
- Chuang MN, Fang PC, Wu PC. Stepwise low concentration atropine for myopic control: a 10-year cohort study. *Sci Rep*. 2021 Aug 30;11(1):17344.
- COMET Group. Myopia stabilization and associated factors among participants in the Correction of Myopia Evaluation Trial (COMET). *Invest Ophthalmol Vis Sci*. 2013 Dec 3;54(13):7871-84.
- Cui C, Li X, Lyu Y, Wei L, Zhao B, Yu S, Rong J, Bai Y, Fu A. Safety and efficacy of 0.02% and 0.01% atropine on controlling myopia progression: a 2-year clinical trial. *Sci Rep*. 2021 Nov 15;11(1):22267.
- Ding C, Chen Y, Li X, Huang Y, Chen H, Bao J. The associations of accommodation and aberrations in myopia control with orthokeratology. *Ophthalmic Physiol Opt*. 2022 Mar;42(2):327-334.
- Donders FC, Moore WD. On the Anomalies of Accommodation and Refraction of the Eye: With a Preliminary Essay on Physiological Dioptrics. The New Sydenham Society, London. Volume XXII. 1864.
- Dong Y, Jan C, Chen L, Ma T, Liu J, Zhang Y, Ma Q, Zhong P, Song Y, Ma J, Patton GC, Sawyer SM. The Cumulative Effect of Multilevel Factors on Myopia Prevalence, Incidence, and Progression Among Children and Adolescents in China During the COVID-19 Pandemic. *Transl Vis Sci Technol*. 2022 Dec 1;11(12):9.

References

- Dong J, Zhu Z, Xu H, He M. Myopia Control Effect of Repeated Low-Level Red-Light Therapy in Chinese Children: A Randomized, Double-Blind, Controlled Clinical Trial. *Ophthalmology*. 2023 Feb;130(2):198-204.
- Duan F, Yuan Z, Deng J, Yeo AC, Yang A, Drobe B, Wong YL, Chen X. Incidence of myopic shift and related factors in young Chinese adults. *Clin Exp Optom*. 2023 May;106(4):422-426.
- Fang J, Huang Z, Long Y, Zhu M, Wu Q, Chen X, Xv W, Du C. Retardation of Myopia by Multifocal Soft Contact Lens and Orthokeratology: A 1-Year Randomized Clinical Trial. *Eye Contact Lens*. 2022 Aug 1;48(8):328-334.
- Faria-Ribeiro M, Navarro R, González-Méijome JM. Effect of Pupil Size on Wavefront Refraction during Orthokeratology. *Optom Vis Sci*. 2016 Nov;93(11):1399-1408.
- Fern KD, Manny RE, Gwiazda J, Hyman L, Weise K, Marsh-Tootle W; COMET Study Group. Intraocular pressure and central corneal thickness in the COMET cohort. *Optom Vis Sci*. 2012 Aug;89(8):1225-34
- Flitcroft DI. The complex interactions of retinal, optical and environmental factors in myopia aetiology. *Prog Retin Eye Res*. 2012 Nov;31(6):622-60.
- Fricke TR, Jong M, Naidoo KS, Sankaridurg P, Naduvilath TJ, Ho SM, Wong TY, Resnikoff S. Global prevalence of visual impairment associated with myopic macular degeneration and temporal trends from 2000 through 2050: systematic review, meta-analysis and modelling. *Br J Ophthalmol*. 2018 Jul;102(7):855-862. Fricke TR, Tahhan N, Resnikoff S, Papas E, Burnett A, Ho SM, Naduvilath T, Naidoo KS. Global Prevalence of Presbyopia and Vision Impairment from Uncorrected Presbyopia: Systematic Review, Meta-analysis, and Modelling. *Ophthalmology*. 2018 Oct;125(10):1492-1499.

References

- Fu L, Dai Q, Zhu P, Jia X, Bao F, Chen X, Fu Y, Lian H, Yang W, Ye Y. Association between Iris Biological Features and Corneal Biomechanics in Myopic Eyes. *Dis Markers*. 2021 Nov 18;2021:5866267.
- Gan J, Li SM, Wu S, Cao K, Ma D, He X, Hua Z, Kang MT, Wei S, Bai W, Wang N. Varying Dose of Atropine in Slowing Myopia Progression in Children Over Different Follow-Up Periods by Meta-Analysis. *Front Med (Lausanne)*. 2022 Jan 13;8:756398.
- Gao C, Wan S, Zhang Y, Han J. The Efficacy of Atropine Combined With Orthokeratology in Slowing Axial Elongation of Myopia Children: A Meta-Analysis. *Eye Contact Lens*. 2021 Feb 1;47(2):98-103.
- Gao Y, Lim EW, Yang A, Drobe B, Bullimore MA. The impact of spectacle lenses for myopia control on visual functions. *Ophthalmic Physiol Opt*. 2021 Nov;41(6):1320-1331.
- García García M, Breher K, Ohlendorf A, Wahl S. To Correct or Not Correct? Actual Evidence, Controversy and the Questions That Remain Open. *J Clin Med*. 2020 Jun 24;9(6):1975.
- Gawne TJ, Siegwart JT Jr, Ward AH, Norton TT. The wavelength composition and temporal modulation of ambient lighting strongly affect refractive development in young tree shrews. *Exp Eye Res*. 2017 Feb;155:75-84.
- Gawne TJ, Ward AH, Norton TT. Long-wavelength (red) light produces hyperopia in juvenile and adolescent tree shrews. *Vision Res*. 2017 Nov;140:55-65.
- Gimbel HV. The control of myopia with atropine. *Can J Ophthalmol*. 1973 Oct;8(4):527-32.

References

- Guo C, Ye Y, Yuan Y, Wong YL, Li X, Huang Y, Bao J, Mao G, Chen H. Development and validation of a novel nomogram for predicting the occurrence of myopia in schoolchildren: A prospective cohort study. *Am J Ophthalmol*. 2022 Oct;242:96-106.
- Gwiazda J, Marsh-Tootle WL, Hyman L, Hussein M, Norton TT; COMET Study Group. Baseline refractive and ocular component measures of children enrolled in the correction of myopia evaluation trial (COMET). *Invest Ophthalmol Vis Sci*. 2002 Feb;43(2):314-21.
- Gwiazda J, Hyman L, Hussein M, Everett D, Norton TT, Kurtz D, Leske MC, Manny R, Marsh-Tootle W, Scheiman M. A randomized clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children. *Invest Ophthalmol Vis Sci*. 2003 Apr;44(4):1492-500.
- Gwiazda JE, Hyman L, Norton TT, Hussein ME, Marsh-Tootle W, Manny R, Wang Y, Everett D; COMET Group. Accommodation and related risk factors associated with myopia progression and their interaction with treatment in COMET children. *Invest Ophthalmol Vis Sci*. 2004 Jul;45(7):2143-51.
- Gwiazda J, Hyman L, Dong LM, Everett D, Norton T, Kurtz D, Manny R, Marsh-Tootle W, Scheiman M; Comet Group. Factors associated with high myopia after 7 years of follow-up in the Correction of Myopia Evaluation Trial (COMET) Cohort. *Ophthalmic Epidemiol*. 2007 Jul-Aug;14(4):230-7.
- Gwiazda J, Deng L, Dias L, Marsh-Tootle W; COMET Study Group. Association of education and occupation with myopia in COMET parents. *Optom Vis Sci*. 2011 Sep;88(9):1045-53.

References

- Gwiazda J, Deng L, Manny R, Norton TT; COMET Study Group. Seasonal variations in the progression of myopia in children enrolled in the correction of myopia evaluation trial. *Invest Ophthalmol Vis Sci*. 2014 Feb 4;55(2):752-758.
- Gwiazda J, Norton TT, Hou W, Hyman L, Manny R; COMET group. Longitudinal Changes in Lens Thickness in Myopic Children Enrolled in the Correction of Myopia Evaluation Trial (COMET). *Curr Eye Res*. 2016 Apr;41(4):492-500.
- Ha A, Kim SJ, Shim SR, Kim YK, Jung JH. Efficacy and Safety of 8 Atropine Concentrations for Myopia Control in Children: A Network Meta-Analysis. *Ophthalmology*. 2022 Mar;129(3):322-333
- Haarman AEG, Enthoven CA, Tideman JWL, Tedja MS, Verhoeven VJM, Klaver CCW. The Complications of Myopia: A Review and Meta-Analysis. *Invest Ophthalmol Vis Sci*. 2020 Apr 9;61(4):49.
- Hammond D, Chamberlain P, Arumugam B, Bradley A. Eye growth of children undergoing myopia control treatment compared with emmetropic eye growth. *Ophthalmologie*. 2022 Jul;119(Suppl 2):147-148.
- Han X, Xiong R, Jin L, Chen Q, Wang D, Chen S, Chen X, Ha J, Li Y, Qu Y, Lin R, He M, Morgan IG, Zeng Y, Liu Y. Longitudinal Changes in Lens Thickness and Lens Power Among Persistent Non-Myopic and Myopic Children. *Invest Ophthalmol Vis Sci*. 2022 Sep 1;63(10):10.
- Hasebe S, Jun J, Varnas SR. Myopia control with positively aspherized progressive addition lenses: a 2-year, multicenter, randomized, controlled trial. *Invest Ophthalmol Vis Sci*. 2014 Sep 30;55(11):7177-88.
- Hazel CA, Strang NA, Vera-Diaz FA. Open- and Closed-Loop Regressions Compared in Myopic and Emmetropic Subjects. *Ophthalmic & Physiological Optics*. 2003;23:265–70.

References

- He J, Lin YY, Chen J, Sun B, Wang YH, Jiang DD, Liu LJ, Lin SD, Chen YY. Int Association of sleep quality with myopia based on different genetic risk levels. *J Ophthalmol*. 2022 Oct 18;15(10):1657-1664.
- He AQ, Liu SA, He SY, Yao H, Chen P, Li Y, Qiu J, Yu KM, Zhuang J. Investigation of children's habits of smartphone usage and parental awareness of myopia control in underdeveloped areas of China. *Int J Ophthalmol*. 2022 Oct 18;15(10):1691-1698.
- He JC, Gwiazda J, Thorn F, Held R, Vera-Diaz FA. The Association of Wavefront Aberrations and Accommodative Lag in Myopes. *Vision Research*. 2005;45:285-90.
- Hieda O, Hiraoka T, Fujikado T, Ishiko S, Hasebe S, Torii H, Takahashi H, Nakamura Y, Sotozono C, Oshika T, Morimoto T, Nishida K, Nishikawa N, Song YS, Tokutake T, Nishi Y, Shigeno Y, Kurihara T, Negishi K, Tsubota K, Ono M, Nakai T, Tan D, Tanaka S, Kinoshita S; ATOM-J. Study Group. Efficacy and safety of 0.01% atropine for prevention of childhood myopia in a 2-year randomized placebo-controlled study. *Jpn J Ophthalmol*. 2021 May;65(3):315-325.
- Hiraoka T, Kakita T, Okamoto F, Takahashi H, Oshika T. Long-term effect of overnight orthokeratology on axial length elongation in childhood myopia: a 5-year follow-up study. *Invest Ophthalmol Vis Sci*. 2012 Jun 22;53(7):3913-9.
- Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, Wong TY, Naduvilath TJ, Resnikoff S. Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050. *Ophthalmology*. 2016 May;123(5):1036-42.

References

- 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 Jul;44(4):248-259.
- Huang J, Mutti DO, Jones-Jordan LA, Walline JJ. Bifocal & Atropine in Myopia Study: Baseline Data and Methods. *Optom Vis Sci*. 2019 May;96(5):335-344.
- Huang L, Chen X, Lin J, Fan X, Chen T, Yu Y, Chen J, Hu J. Association between sleep duration and myopia among Chinese children during the COVID-19 pandemic: A cross-sectional study. *Front Public Health*. 2023 Jan 9;10:1015138
- Huang L, Kawasaki H, Liu Y, Wang Z. The prevalence of myopia and the factors associated with it among university students in Nanjing: A cross-sectional study. *Medicine (Baltimore)*. 2019 Mar;98(10):e14777.
- Huang PC, Hsiao YC, Tsai CY, Tsai DC, Chen CW, Hsu CC, Huang SC, Lin MH, Liou YM. Protective behaviours of near work and time outdoors in myopia prevalence and progression in myopic children: a 2-year prospective population study. *Br J Ophthalmol*. 2020 Jul;104(7):956-961.
- Huang Y, Chen X, Zhuang J, Yu K. The Role of Retinal Dysfunction in Myopia Development. *Cell Mol Neurobiol*. 2023 Jul;43(5):1905-1930.
- Huang Y, Li X, Ding C, Chen Y, Chen H, Bao J. Orthokeratology reshapes eyes to be less prolate and more symmetric. *Cont Lens Anterior Eye*. 2022 Aug;45(4):101532.

References

- Huang Y, Li X, Wang C, Zhou F, Yang A, Chen H, Bao J. Visual acuity, near phoria and accommodation in myopic children using spectacle lenses with aspherical lenslets: results from a randomized clinical trial. *Eye Vis (Lond)*. 2022 Sep 1;9(1):33.
- Huang Y, Li X, Wu J, Huo J, Zhou F, Zhang J, Yang A, Spiegel DP, Chen H, Bao J. Effect of spectacle lenses with aspherical lenslets on choroidal thickness in myopic children: a 2-year randomised clinical trial. *Br J Ophthalmol*. 2022 Sep 27:bjophthalmol-2022-321815
- Hubel DH, Wiesel TN. Uniformity of monkey striate cortex: a parallel relationship between field size, scatter, and magnification factor. *J Comp Neurol*. 1974 Dec 1;158(3):295-305.
- Hubel DH, Wiesel TN, Stryker MP. Orientation columns in macaque monkey visual cortex demonstrated by the 2-deoxyglucose autoradiographic technique. *Nature*. 1977 Sep 22;269(5626):328-30.
- Hubel DH, Wiesel TN. Ferrier lecture. Functional architecture of macaque monkey visual cortex. *Proc R Soc Lond B Biol Sci*. 1977 Jul 28;198(1130):1-59.
- Hubel DH, Wiesel TN. Brain mechanisms of vision. *Sci Am*. 1979 Sep;241(3):150-62.
- Hyman L, Gwiazda J, Marsh-Tootle WL, Norton TT, Hussein M; COMET Group. The Correction of Myopia Evaluation Trial (COMET): design and general baseline characteristics. *Control Clin Trials*. 2001 Oct;22(5):573-92.
- Hyman L, Gwiazda J; COMET Group. The Correction of Myopia Evaluation Trial: lessons from the study design. *Ann Acad Med Singap*. 2004 Jan;33(1):44-8.

References

- Hyman L, Gwiazda J, Hussein M, Norton TT, Wang Y, Marsh-Tootle W, Everett D. Relationship of age, sex, and ethnicity with myopia progression and axial elongation in the correction of myopia evaluation trial. *Arch Ophthalmol*. 2005 Jul;123(7):977-87.
- Ip JM, Huynh SC, Robaei D, Rose KA, Morgan IG, Smith W, Kifley A, Mitchell P. Ethnic differences in the impact of parental myopia: findings from a population-based study of 12-year-old Australian children. *Invest Ophthalmol Vis Sci*. 2007 Jun;48(6):2520-8.
- Ip JM, Huynh SC, Kifley A, Rose KA, Morgan IG, Varma R, Mitchell P. Variation of the contribution from axial length and other oculometric parameters to refraction by age and ethnicity. *Invest Ophthalmol Vis Sci*. 2007 Oct;48(10):4846-53.
- Jensen H. Myopia progression in young school children. A prospective study of myopia progression and the effect of a trial with bifocal lenses and beta blocker eye drops. *Acta Ophthalmol Suppl* (1985). 1991;(200):1-79.
- Jiang DD, Chen J, Thorn F, Mao GY, Li CC, Lin Z, Vasudevan B, Huang XQ, Chen YY. Elementary school comprehensive intervention and myopia development: the Wenzhou Epidemiology of Refraction Error Study. *Int J Ophthalmol*. 2022 Aug 18;15(8):1363-1369.
- Jiang Y, Zhu Z, Tan X, Kong X, Zhong H, Zhang J, Xiong R, Yuan Y, Zeng J, Morgan IG, He M. Effect of Repeated Low-Level Red-Light Therapy for Myopia Control in Children: A Multicenter Randomized Controlled Trial. *Ophthalmology*. 2022 May;129(5):509-519.

References

- Kuo YS, Yen MY, Lin PY. Short-term effect of atropine on higher-order aberrations in myopic children. *J Chin Med Assoc.* 2021 Apr 1;84(4):441-445.
- Kurtz D, Hyman L, Gwiazda JE, Manny R, Dong LM, Wang Y, Scheiman M; COMET Group. Role of parental myopia in the progression of myopia and its interaction with treatment in COMET children. *Invest Ophthalmol Vis Sci.* 2007 Feb;48(2):562-70.
- Lam CSY, Tang WC, Tse DY, Lee RPK, Chun RKM, Hasegawa K, Qi H, Hatanaka T, To CH. Defocus Incorporated Multiple Segments (DIMS) spectacle lenses slow myopia progression: a 2-year randomised clinical trial. *Br J Ophthalmol.* 2020 Mar;104(3):363-368.
- Lam CSY, Tang WC, Qi H, Radhakrishnan H, Hasegawa K, To CH, Charman WN. Effect of Defocus Incorporated Multiple Segments Spectacle Lens Wear on Visual Function in Myopic Chinese Children. *Transl Vis Sci Technol.* 2020 Aug 5;9(9):11.
- Lam CS, Tang WC, Lee PH, Zhang HY, Qi H, Hasegawa K, To CH. Myopia control effect of defocus incorporated multiple segments (DIMS) spectacle lens in Chinese children: results of a 3-year follow-up study. *Br J Ophthalmol.* 2022 Aug;106(8):1110-1114.
- Lanca C, Yam JC, Jiang WJ, Tham YC, Hassan Emamian M, Tan CS, Guo Y, Liu H, Zhong H, Zhu D, Hu YY, Saxena R, Hashemi H, Chen LJ, Wong TY, Cheng CY, Pang CP, Zhu H, Pan CW, Liang YB, Fotouhi A, Bi HS, Jonas JB, Saw SM; Asian Eye Epidemiology Consortium (AEEC). Near work, screen time, outdoor time and myopia in schoolchildren in the Sunflower Myopia AEEC Consortium. *Acta Ophthalmol.* 2022 May;100(3):302-311.

References

- Li FF, Zhang Y, Zhang X, Yip BHK, Tang SM, Kam KW, Young AL, Chen LJ, Tham CC, Pang CP, Yam JC. Age Effect on Treatment Responses to 0.05%, 0.025%, and 0.01% Atropine: Low-Concentration Atropine for Myopia Progression Study. *Ophthalmology*. 2021 Aug;128(8):1180-1187.
- Li SM, Li SY, Liu LR, Guo JY, Chen W, Wang NL, Millodot M. Full correction and Undercorrection of Myopia Evaluation Trial: design and baseline data of a randomized, controlled, double-blind trial. *Clin Exp Ophthalmol*. 2013 May-Jun;41(4):329-38.
- Li SM, Kang MT, Wu SS, Meng B, Sun YY, Wei SF, Liu L, Peng X, Chen Z, Zhang F, Wang N. Studies using concentric ring bifocal and peripheral add multifocal contact lenses to slow myopia progression in school-aged children: a meta-analysis. *Ophthalmic Physiol Opt*. 2017 Jan;37(1):51-59.
- Li R, Chen Y, Zhao A, Huang L, Long Z, Kang W, Yin Y, Tong S, Li S. Relationships between Sleep Duration, Timing, Consistency, and Chronotype with Myopia among School-Aged Children. *J Ophthalmol*. 2022 Jul 19;2022:7071801.
- Li T, Chen Z, She M, Zhou X. Relative peripheral refraction in myopic children wearing orthokeratology lenses using a novel multispectral refraction topographer. *Clin Exp Optom*. 2022 Sep 20:1-6.
- Li X, Huang Y, Yin Z, Liu C, Zhang S, Yang A, Drobe B, Chen H, Bao J. Myopia Control Efficacy of Spectacle Lenses With Aspherical Lenslets: Results of a 3-Year Follow-Up Study. *Am J Ophthalmol*. 2023 Apr 10;253:160-168.

References

- Li X, Huang Y, Zhang J, Ding C, Chen Y, Chen H, Bao J. Treatment zone decentration promotes retinal reshaping in Chinese myopic children wearing orthokeratology lenses. *Ophthalmic Physiol Opt.* 2022 Sep;42(5):1124-1132.
- Liu S, He X, Wang J, Du L, Xie H, Yang J, Liu K, Zou H, Xu X, Chen J. Association between axial length elongation and spherical equivalent progression in Chinese children and adolescents. *Ophthalmic Physiol Opt.* 2022 Sep;42(5):1133-1140.
- Logan NS, Radhakrishnan H, Cruickshank FE, Allen PM, Bandela PK, Davies LN, Hasebe S, Khanal S, Schmid KL, Vera-Diaz FA, Wolffsohn JS. IMI - Accommodation and Binocular Vision in Myopia Development and Progression. *Investigative Ophthalmology & Visual Science.* 2021;62(5):4.
- Long W, Chen K, Yu S, Liang Z, Zheng B, Zeng J, Cui D. One-year Efficacy of the Defocus Incorporated Multiple Segment Lens in Chinese Myopic Children. *Optom Vis Sci.* 2023 Jan 1;100(1):111-116.
- Lu W, Ning R, Diao K, Ding Y, Chen R, Zhou L, Lian Y, McAlinden C, Sanders FWB, Xia F, Huang J, Jin W. Comparison of Two Main Orthokeratology Lens Designs in Efficacy and Safety for Myopia Control. *Front Med (Lausanne).* 2022 Apr 1;9:798314.
- Ma Y, Wen Y, Zhong H, Lin S, Liang L, Yang Y, Jiang H, Chen J, Huang Y, Ying X, Resnikoff S, Lu L, Zhu J, Xu X, He X, Zou H. Healthcare utilization and economic burden of myopia in urban China: A nationwide cost-of-illness study. *J Glob Health.* 2022 Mar 19;12:11003.
- Maiello G, Walker L, Bex PJ, Vera-Diaz FA. Blur Perception Throughout the Visual Field in Myopia and Emmetropia. *Journal of Vision.* 2017;17(5):3.

References

- Maiello G, Kerber KL, Thorn F, Bex PJ, Vera-Diaz FA. Vergence Driven Accommodation with Simulated Disparity in Myopia and Emmetropia. *Experimental Eye Research*. 2018;166:96-105.
- Manny RE, Hussein M, Scheiman M, Kurtz D, Niemann K, Zinzer K; COMET Study Group. Tropicamide (1%): an effective cycloplegic agent for myopic children. *Invest Ophthalmol Vis Sci*. 2001 Jul;42(8):1728-1735.
- Manny RE, Deng L, Crossnoe C, Gwiazda J. IOP, myopic progression and axial length in a COMET subgroup. *Optom Vis Sci*. 2008 Feb;85(2):97-105.
- Marsh-Tootle WL, Dong LM, Hyman L, Gwiazda J, Weise KK, Dias L, Fernp KD; The COMET Group. Myopia Progression in Children Wearing Spectacles vs. Switching to Contact Lenses. *Optom Vis Sci*. 2009 Jun;86(6):741-747.
- Morgan I, Rose K. How genetic is school myopia? *Prog Retin Eye Res*. 2005 Jan;24(1):1-38.
- Morgan IG, French AN, Ashby RS, Guo X, Ding X, He M, Rose KA. The epidemics of myopia: Aetiology and prevention. *Prog Retin Eye Res*. 2018 Jan;62:134-149.
- Morgan IG, French AN, Rose KA. Intense schooling linked to myopia. *BMJ*. 2018 Jun 6;361:k2248.
- Morgan IG, Rose KA. Myopia: is the nature-nurture debate finally over? *Clin Exp Optom*. 2019 Jan;102(1):3-17
- Morgan RW, Munro M. Refractive problems in Northern natives. *Can J Ophthalmol*. 1973 Apr;8(2):226-8.

References

- Moriche-Carretero M, Revilla-Amores R, Diaz-Valle D, Morales-Fernández L, Gomez-de-Liaño R. Myopia progression and axial elongation in Spanish children: Efficacy of atropine 0.01% eye-drops. *J Fr Ophthalmol*. 2021 Dec;44(10):1499-1504.
- Moriyama M, Ohno-Matsui K, Hayashi K, Shimada N, Yoshida T, Tokoro T, Morita I. Topographic analyses of shape of eyes with pathologic myopia by high-resolution three-dimensional magnetic resonance imaging. *Ophthalmology*. 2011 Aug;118(8):1626-37.
- Mutti DO, Mitchell GL, Moeschberger ML, Jones LA, Zadnik K. Parental myopia, near work, school achievement, and children's refractive error. *Invest Ophthalmol Vis Sci*. 2002 Dec;43(12):3633-40.
- Mutti DO, Semina E, Marazita M, Cooper M, Murray JC, Zadnik K. Genetic loci for pathological myopia are not associated with juvenile myopia. *Am J Med Genet*. 2002 Nov 1;112(4):355-60.
- Mutti DO, Marks AR. Blood levels of vitamin D in teens and young adults with myopia. *Optom Vis Sci*. 2011 Mar;88(3):377-82.
- Mutti DO, Cooper ME, Dragan E, Jones-Jordan LA, Bailey MD, Marazita ML, Murray JC, Zadnik K; CLEERE Study Group. Vitamin D receptor (VDR) and group-specific component (GC, vitamin D-binding protein) polymorphisms in myopia. *Invest Ophthalmol Vis Sci*. 2011 Jun 1;52(6):3818-24.
- Nickla DL, Rucker F, Taylor CP, Sarfare S, Chen W, Elin-Calcadore J, Wang X. Effects of morning and evening exposures to blue light of varying illuminance on ocular growth rates and ocular rhythms in chicks. *Exp Eye Res*. 2022 Apr;217:108963.

References

- Ohno-Matsui K, Kawasaki R, Jonas JB, Cheung CM, Saw SM, Verhoeven VJ, Klaver CC, Moriyama M, Shinohara K, Kawasaki Y, Yamazaki M, Meuer S, Ishibashi T, Yasuda M, Yamashita H, Sugano A, Wang JJ, Mitchell P, Wong TY; META-analysis for Pathologic Myopia (META-PM) Study Group. International photographic classification and grading system for myopic maculopathy. *Am J Ophthalmol*. 2015 May;159(5):877-83.e7.
- Otero C, Aldaba M, Vera-Diaz FA, Pujol J. Effect of Experimental Conditions in the Accommodation Response in Myopia. *Optom Vis Sci*. 2017 Dec;94(12):1120-1128.
- Pollock WBI. The Reduction of Myopia in Children of School Age. *Glasgow Med J*. 1916 Oct;86(4):214-9.
- Qin Z, Peng T, Zhang Z, Lou J, Wang C, Deng R, Xu M, Yu X, Chen W. Myopia progression and stabilization in school-aged children with single-vision lenses. *Acta Ophthalmol*. 2022 Jun;100(4):e950-e956.
- Rappon J, Chung C, Young C, HuntC3, Neitz J, Neitz M, Chalberg T. Control of myopia using diffusion optics spectacle lenses: 12-month results of a randomised controlled, efficacy and safety study (CYPRESS). *Br J Ophthalmol*. 2022 Sep 1;bjophthalmol-2021-321005.
- Rose KA, Morgan IG, Ip J, Kifley A, Huynh S, Smith W, Mitchell P. Outdoor activity reduces the prevalence of myopia in children. *Ophthalmology*. 2008 Aug;115(8):1279-85.
- Saw SM, Matsumura S, Hoang QV. Prevention and Management of Myopia and Myopic Pathology. *Invest Ophthalmol Vis Sci*. 2019 Feb 1;60(2):488-499.

References

- Scheiman M, Gwiazda J, Zhang Q, Deng L, Fern K, Manny RE, Weissberg E, Hyman L; COMET Group. Longitudinal changes in corneal curvature and its relationship to axial length in the Correction of Myopia Evaluation Trial (COMET) cohort. *J Optom.* 2016 Jan-Mar;9(1):13-21.
- Segal NL, Montoya YS, Peña FY, Burgos S, Katz X. Eye Refraction in Doubly Exchanged Monozygotic Twins. *Twin Res Hum Genet.* 2019 Jun;22(3):177-182.
- Shih YF, Chen CH, Chou AC, Ho TC, Lin LL, Hung PT. Effects of different concentrations of atropine on controlling myopia in myopic children. *J Ocul Pharmacol Ther.* 1999 Feb;15(1):85-90.
- Shurygina IP, Khadzhieva MR. [Effect of infrared low-intensity laser therapy on orbital blood circulation in children with progressive short sightedness] [Article in Russian] *Vopr Kurortol Fizioter Lech Fiz Kult.* 2009 Sep-Oct;(5):37-9.
- Siatkowski RM, Cotter S, Miller JM, Scher CA, Crockett RS, Novack GD; US Pirenzepine Study Group. Safety and efficacy of 2% pirenzepine ophthalmic gel in children with myopia: a 1-year, multicenter, double-masked, placebo-controlled parallel study. *Arch Ophthalmol.* 2004 Nov;122(11):1667-74.
- Siatkowski RM, Cotter SA, Crockett RS, Miller JM, Novack GD, Zadnik K; U.S. Pirenzepine Study Group. Two-year multicenter, randomized, double-masked, placebo-controlled, parallel safety and efficacy study of 2% pirenzepine ophthalmic gel in children with myopia. *J AAPOS.* 2008 Aug;12(4):332-9.
- Smith EL 3rd, Ramamirtham R, Qiao-Grider Y, Hung LF, Huang J, Kee CS, Coats D, Paysse E. Effects of foveal ablation on emmetropization and form-deprivation myopia. *Invest Ophthalmol Vis Sci.* 2007 Sep;48(9):3914-22.

References

- Sun L, Li ZX, Chen Y, He ZQ, Song HX. The effect of orthokeratology treatment zone decentration on myopia progression. BMC Ophthalmol. 2022 Feb 15;22(1):76.
- Sun L, Zhu L, Chen S, Li J, Li X, Wang K, Zhao M. Mechanism of Myopic Defocus or Atropine for Myopia Control: Different or Similar Ways? Ophthalmic Res. 2022;65(6):698-711.
- Tan DT, Lam DS, Chua WH, Shu-Ping DF, Crockett RS; Asian Pirenzepine Study Group. One-year multicenter, double-masked, placebo-controlled, parallel safety and efficacy study of 2% pirenzepine ophthalmic gel in children with myopia. Ophthalmology. 2005 Jan;112(1):84-91.
- Tan Q, Ng AL, Cheng GP, Woo VC, Cho P. Combined Atropine with Orthokeratology for Myopia Control: Study Design and Preliminary Results. Curr Eye Res. 2019 Jun;44(6):671-678.
- Tan Q, Ng AL, Choy BN, Cheng GP, Woo VC, Cho P. One-year results of 0.01% atropine with orthokeratology (AOK) study: a randomised clinical trial. Ophthalmic Physiol Opt. 2020 Sep;40(5):557-566.
- Theophanous C, Modjtahedi BS, Batech M, Marlin DS, Luong TQ, Fong DS. Myopia prevalence and risk factors in children. Clin Ophthalmol. 2018 Aug 29;12:1581-1587.
- Tian L, Cao K, Ma DL, Zhao SQ, Lu LX, Li A, Chen CX, Ma CR, Ma ZF, Jie Y. Investigation of the Efficacy and Safety of 650 nm Low-Level Red Light for Myopia Control in Children: A Randomized Controlled Trial. Ophthalmol Ther. 2022 Dec;11(6):2259-2270.
- Trier K, Ribel-Madsen SM, Cui M, Christensen SB. Systemic 7-methylxanthine in retarding axial eye growth and myopia progression: a 36-month pilot study. J Ocul Biol Dis Infor. 2008 Dec;1(2-4):85-93.

References

- Ueda E, Yasuda M, Fujiwara K, Hashimoto S, Ohno-Matsui K, Hata J, Ishibashi T, Ninomiya T, Sonoda KH. Five-Year Incidence of Myopic Maculopathy in a General Japanese Population: The Hisayama Study. *JAMA Ophthalmol*. 2020 Aug 1;138(8):887-893.
- Vera-Diaz FA, Strang NC, Winn B. Nearwork Induced Transient Myopia During Myopia Progression. *Current Eye Research*. 2002;24(4):289-95.
- Vera-Diaz FA, Gwiazda J, Held R, Thorn F. Increased Accommodation Following Adaptation to Image Blur in Myopes. *Journal of Vision*. 2004;4:1111-9.
- Vera-Diaz FA, McGraw PV, Strang NC, Whitaker D. A Psychophysical Investigation of Axial Expansion in Myopic Eyes. *Investigative Ophthalmology & Visual Science*. 2005;46:758-63.
- Vera-Diaz FA. Myopia. In: Darlene A. Dartt, editor. *Encyclopedia of the Eye*, Vol 3. Oxford: Academic Press; 2010.p. 98-105.
- Vera-Diaz, *Encyclopedia of the Eye*, 2010.
- Vera-Diaz FA, Bex PJ, Ferreira A, Kosovicheva A. Binocular temporal visual processing in myopia. *J Vis*. 2018 Jan;18(11):17, 1-12.
- Vera-Diaz FA, Hussey E. Myopia management—how to apply the current scientific evidence to our clinical practice. *Optom Vis Perf*. 2022;10(COVID):30-3.

References

- Walline JJ, Walker MK, Mutti DO, Jones-Jordan LA, Sinnott LT, Giannoni AG, Bickle KM, Schulle KL, Nixon A, Pierce GE, Berntsen DA; BLINK Study Group. Effect of High Add Power, Medium Add Power, or Single-Vision Contact Lenses on Myopia Progression in Children: The BLINK Randomized Clinical Trial. *JAMA*. 2020 Aug 11;324(6):571-580.
- Wan L, Wei CC, Chen CS, Chang CY, Lin CJ, Chen JJ, Tien PT, Lin HJ. The Synergistic Effects of Orthokeratology and Atropine in Slowing the Progression of Myopia. *J Clin Med*. 2018 Sep 7;7(9):259.
- Wan K, Cheung SW, Wolffsohn JS, Orr JB, Cho P. Role of corneal biomechanical properties in predicting of speed of myopic progression in children wearing orthokeratology lenses or single-vision spectacles. *BMJ Open Ophthalmol*. 2018 Dec 27;3(1):e000204.
- Wang A, Yang C, Shen L, Wang J, Zhang Z, Yang W. Axial length shortening after orthokeratology and its relationship with myopic control. *BMC Ophthalmol*. 2022 Jun 3;22(1):243.
- Wang CY, Hsu NW, Yang YC, Chen YL, Shyong MP, Tsai DC. Premyopia at Preschool Age: Population-based Evidence of Prevalence and Risk Factors from a Serial Survey in Taiwan. *Ophthalmology*. 2022 Aug;129(8):880-889.
- Wang H, Li Y, Qiu K, Zhang R, Lu X, Luo L, Lin JW, Lu Y, Zhang D, Guo P, Yang Y, Jing L, Huang Y, Ma Q, Zhou R, Ou Y, Chen Q, Zhou Y, Deng D, Li C, Yam JC, Chen LJ, Pang CP, Zhang M. Prevalence of myopia and uncorrected myopia among 721 032 schoolchildren in a city-wide vision screening in southern China: the Shantou Myopia Study. *Br J Ophthalmol*. 2022 Oct 5:bjophthalmol-2021-320940.

References

- Wang H, Li L, Wang W, Wang H, Zhuang Y, Lu X, Zhang G, Wang S, Lin P, Chen C, Bai Y, Chen Q, Chen H, Qu J, Xu L. Simulations to Assess the Performance of Multifactor Risk Scores for Predicting Myopia Prevalence in Children and Adolescents in China. *Front Genet.* 2022 Apr 11;13:861164.
- Wang J, Xie H, Morgan I, Chen J, Yao C, Zhu J, Zou H, Liu K, Xu X, He X. How to Conduct School Myopia Screening: Comparison Among Myopia Screening Tests and Determination of Associated Cutoffs. *Asia Pac J Ophthalmol (Phila).* 2022 Jan 20;11(1):12-18.
- Wang M, Cui C, Sui Y, Yu SA, Ma JX, Fu AC. Effect of 0.02% and 0.01% atropine on astigmatism: a two-year clinical trial. *BMC Ophthalmol.* 2022 Apr 7;22(1):161.
- Wang Y, Guo Y, Wei S, Yuan Y, Wu T, Zhang Y, Chen Y, Li X. Binocular Dynamic Visual Acuity in Eyeglass-corrected Myopic Patients. *J Vis Exp.* 2022 Mar 29;(181).
- Wang Y, Liu Y, Zhu X, Zhou X, He JC, Qu X. Corneal and lenticular biometry in Chinese children with myopia. *Clin Exp Optom.* 2022 Aug 31:1-9.
- Wang Y, Zhu X, Xuan Y, Wang M, Zhou X, Qu X. Short-Term Effects of Atropine 0.01% on the Structure and Vasculature of the Choroid and Retina in Myopic Chinese Children. *Ophthalmol Ther.* 2022 Apr;11(2):833-856.
- Wang Z, Meng Y, Wang Z, Hao L, Rashidi V, Sun H, Zhang J, Liu X, Duan X, Jiao Z, Qie S, Yan Z. Crystalline lens thickness change is associated with axial length elongation and myopia progression in orthokeratology. *Cont Lens Anterior Eye.* 2022 Aug;45(4):101534.

References

- Xiong R, Zhu Z, Jiang Y, Kong X, Zhang J, Wang W, Kiburg K, Yuan Y, Chen Y, Zhang S, Xuan M, Zeng J, Morgan IG, He M. Sustained and rebound effect of repeated low-level red-light therapy on myopia control: A 2-year post-trial follow-up study. *Clin Exp Ophthalmol*. 2022 Dec;50(9):1013-1024.
- Xu L, Ma Y, Yuan J, Zhang Y, Wang H, Zhang G, Tu C, Lu X, Li J, Xiong Y, Chen F, Liu X, Xue Z, Zhou M, Li WQ, Wu N, Bao J, Chen H, Lu F, Su J, Qu J; Myopic Epidemiology and Intervention Study. COVID-19 Quarantine Reveals That Behavioral Changes Have an Effect on Myopia Progression. *Ophthalmology*. 2021 Nov;128(11):1652-1654.
- Xu L, Zhuang Y, Zhang G, Ma Y, Yuan J, Tu C, Li M, Wang W, Zhang Y, Lu X, Li J, Liu X, Xue Z, Zhou M, Sun J, Bao J, Li M, Lu F, Wang H, Su J, Qu J. Design, methodology, and baseline of whole city-million scale children and adolescents myopia survey (CAMS) in Wenzhou, China. *Eye Vis (Lond)*. 2021 Aug 19;8(1):31.
- Yam JC, Jiang Y, Lee J, Li S, Zhang Y, Sun W, Yuan N, Wang YM, Yip BHK, Kam KW, Chan HN, Zhang XJ, Young AL, Tham CC, Cheung CY, Chu WK, Pang CP, Chen LJ. The Association of Choroidal Thickening by Atropine With Treatment Effects for Myopia: Two-Year Clinical Trial of the Low-concentration Atropine for Myopia Progression (LAMP) Study. *Am J Ophthalmol*. 2022 May;237:130-138.
- Yam JC, Zhang XJ, Zhang Y, Wang YM, Tang SM, Li FF, Kam KW, Ko ST, Yip BHK, Young AL, Tham CC, Chen LJ, Pang CP. Three-Year Clinical Trial of Low Concentration Atropine for Myopia Progression (LAMP) Study: Continued Versus Washout: Phase 3 Report. *Ophthalmology*. 2022 Mar;129(3):308-321.

References

- Yam JC, Zhang XJ, Zhang Y, Wang YM, Tang SM, Li FF, Kam KW, Ko ST, Yip BHK, Young AL, Tham CC, Chen LJ, Pang CP. Three-Year Clinical Trial of Low-Concentration Atropine for Myopia Progression (LAMP) Study: Continued Versus Washout: Phase 3 Report. *Ophthalmology*. 2022 Mar;129(3):308-321.
- Yang X, Fan Q, Zhang Y, Chen X, Jiang Y, Zou H, Li M, Li L, Wang Y. Changes in Refractive Error Under COVID-19: A 3-Year Follow-up Study. *Adv Ther*. 2022 Jun;39(6):2999-3010.
- Yang Z, Wang X, Zhang S, Ye H, Chen Y, Xia Y. Pediatric Myopia Progression During the COVID-19 Pandemic Home Quarantine and the Risk Factors: A Systematic Review and Meta-Analysis. *Front Public Health*. 2022 Jul 22;10:835449.
- Yang Y, Chen W, Xu A, Zhao L, Ding X, Li J, Zhu Y, Chen C, Long E, Liu Z, Wang X, Li X, Zhang X, Jiang Z, He H, Wang G, Jin L, Liao H, Yun D, Yu-Wai-Man P, Yan P, Wang R, Li Z, Xie Y, Liu Y, Wang X, Zhang Q, Wang J, Nie D, Zhang S, Ting DSW, Wong TY, He M, Liu Y, Morgan IG, Lin H. Spatial Technology Assessment of Green Space Exposure and Myopia. *Ophthalmology*. 2022 Jan;129(1):113-117.
- Yen MY, Liu JH, Kao SC, Shiao CH. Comparison of the effect of atropine and cyclopentolate on myopia. *Ann Ophthalmol*. 1989 May;21(5):180-2, 187.
- Zadnik K, Sinnott LT, Cotter SA, Jones-Jordan LA, Kleinstein RN, Manny RE, Twelker JD, Mutti DO; Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) Study Group. Prediction of Juvenile-Onset Myopia. *JAMA Ophthalmol*. 2015 Jun;133(6):683-9.

References

- Zadnik K, Schulman E, Flitcroft I, Fogt JS, Blumenfeld LC, Fong TM, Lang E, Hemmati HD, Chandler SP; CHAMP Trial Group Investigators. Efficacy and Safety of 0.01% and 0.02% Atropine for the Treatment of Pediatric Myopia Progression Over 3 Years: A Randomized Clinical Trial. *JAMA Ophthalmol*. 2023 Jun 1;e232097.
- Zhao Q, Hao Q. Clinical efficacy of 0.01% atropine in retarding the progression of myopia in children. *Int Ophthalmol*. 2021 Mar;41(3):1011-1017.
- Zhao Q, Hao Q. Comparison of the Clinical Efficacies of 0.01% Atropine and Orthokeratology in Controlling the Progression of Myopia in Children. *Ophthalmic Epidemiol*. 2021 Oct;28(5):376-382.
- Zhou H, Zhao G, Li Y. Adjunctive effects of orthokeratology and atropine 0.01% eye drops on slowing the progression of myopia. *Clin Exp Optom*. 2022 Jul;105(5):520-526.
- Zhou L, Xing C, Qiang W, Hua C, Tong L. Low-intensity, long-wavelength red light slows the progression of myopia in children: an Eastern China-based cohort. *Ophthalmic Physiol Opt*. 2022 Mar;42(2):335-344.
- Zhu Q, Tang Y, Guo L, Tighe S, Zhou Y, Zhang X, Zhang J, Zhu Y, Hu M. Efficacy and Safety of 1% Atropine on Retardation of Moderate Myopia Progression in Chinese School Children. *Int J Med Sci*. 2020 Jan 1;17(2):176-181.
- Zhu MJ, Ding L, Du LL, Chen J, He XG, Li SS, Zou HD. Photopic pupil size change in myopic orthokeratology and its influence on axial length elongation. *Int J Ophthalmol*. 2022 Aug 18;15(8):1322-30.
- Zylbermann R, Landau D, Berson D. The influence of study habits on myopia in Jewish teenagers. *J Pediatr Ophthalmol Strabismus*. 1993 Sep-Oct;30(5):319-22.