

Ein Vergleich klinischer Studien verschiedener Möglichkeiten der Myopiekontrolle

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BREYER • KAYMAK • KLABE



INTERNATIONALE
INNOVATIVE
OPHTHALMOCHIRURGIE



UKS
Universitätsklinikum
des Saarlandes



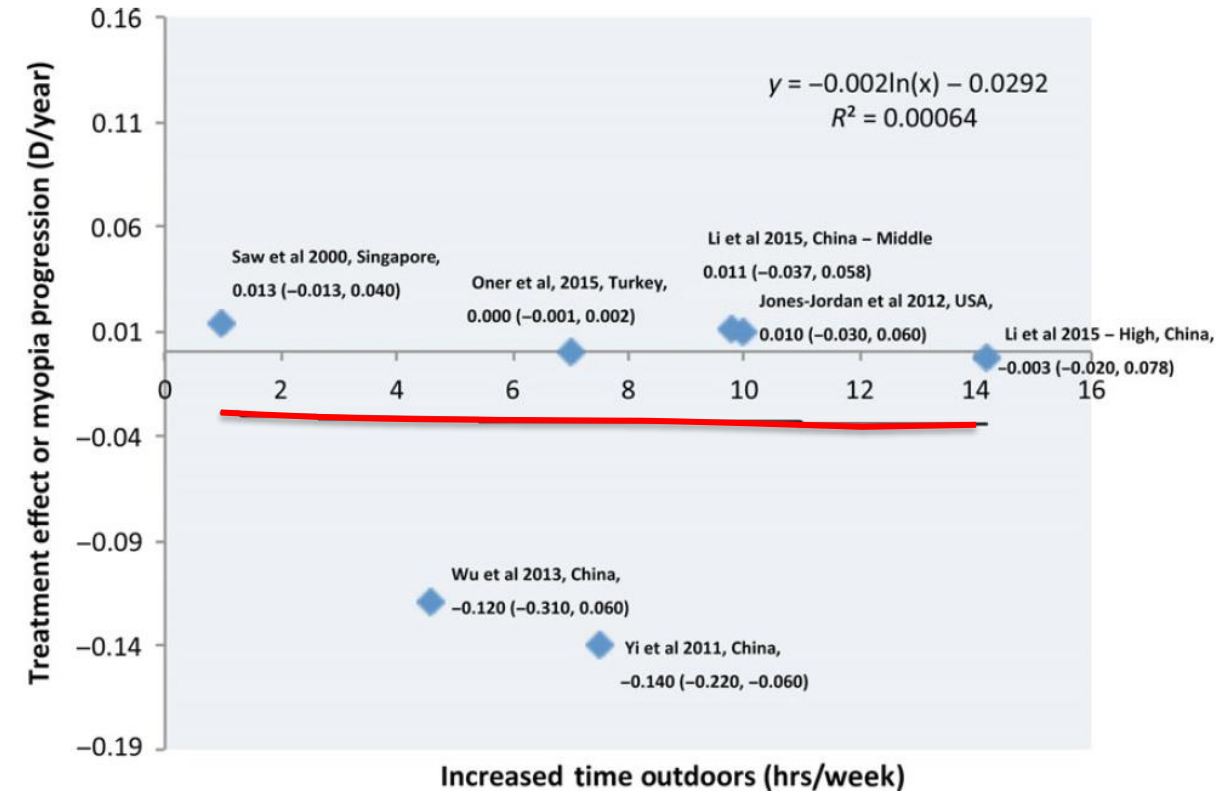
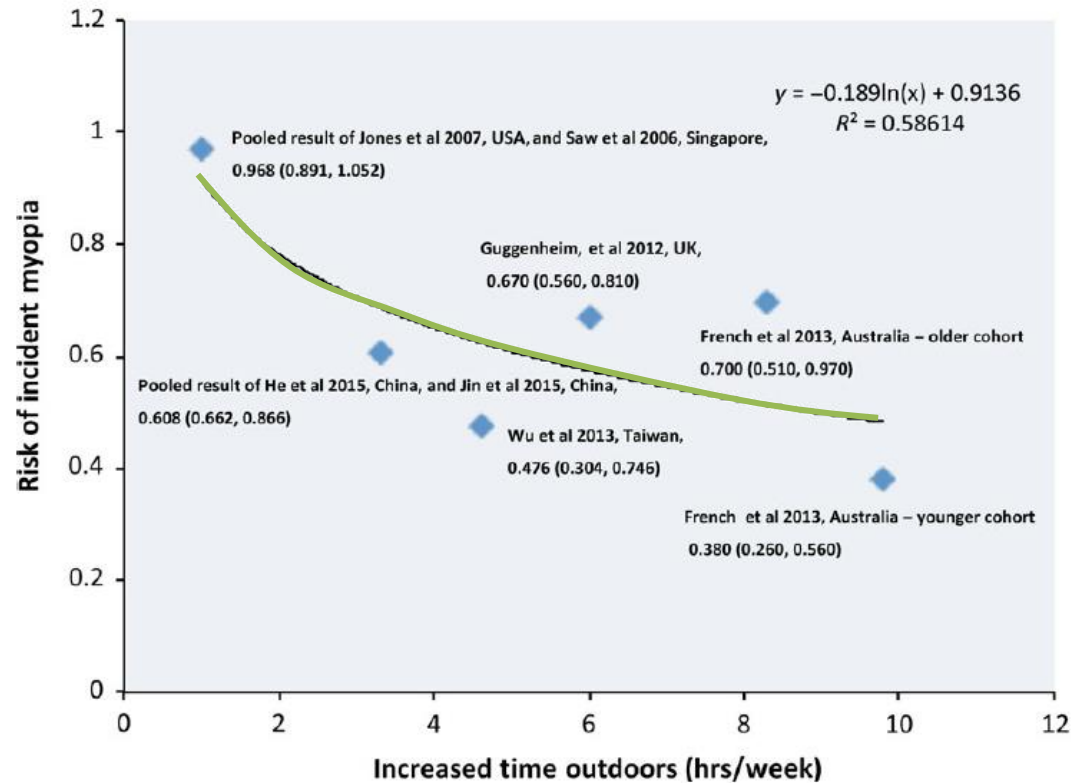
Was bedeutet Myopietherapie?

- 
- Verlangsamung des Fortschreitens der Myopie (möglicherweise Stoppen)
 - Verlangsamung des Augenlängenwachstums
 - Vermeidung von hoher oder pathologischer Myopie

- 
- Myopie geht zurück
 - Das Auge “schrumpft” wieder auf eine normale Augenlänge
 - 100%iger Schutz vor Myopie bedingten Krankheiten im Erwachsenenalter

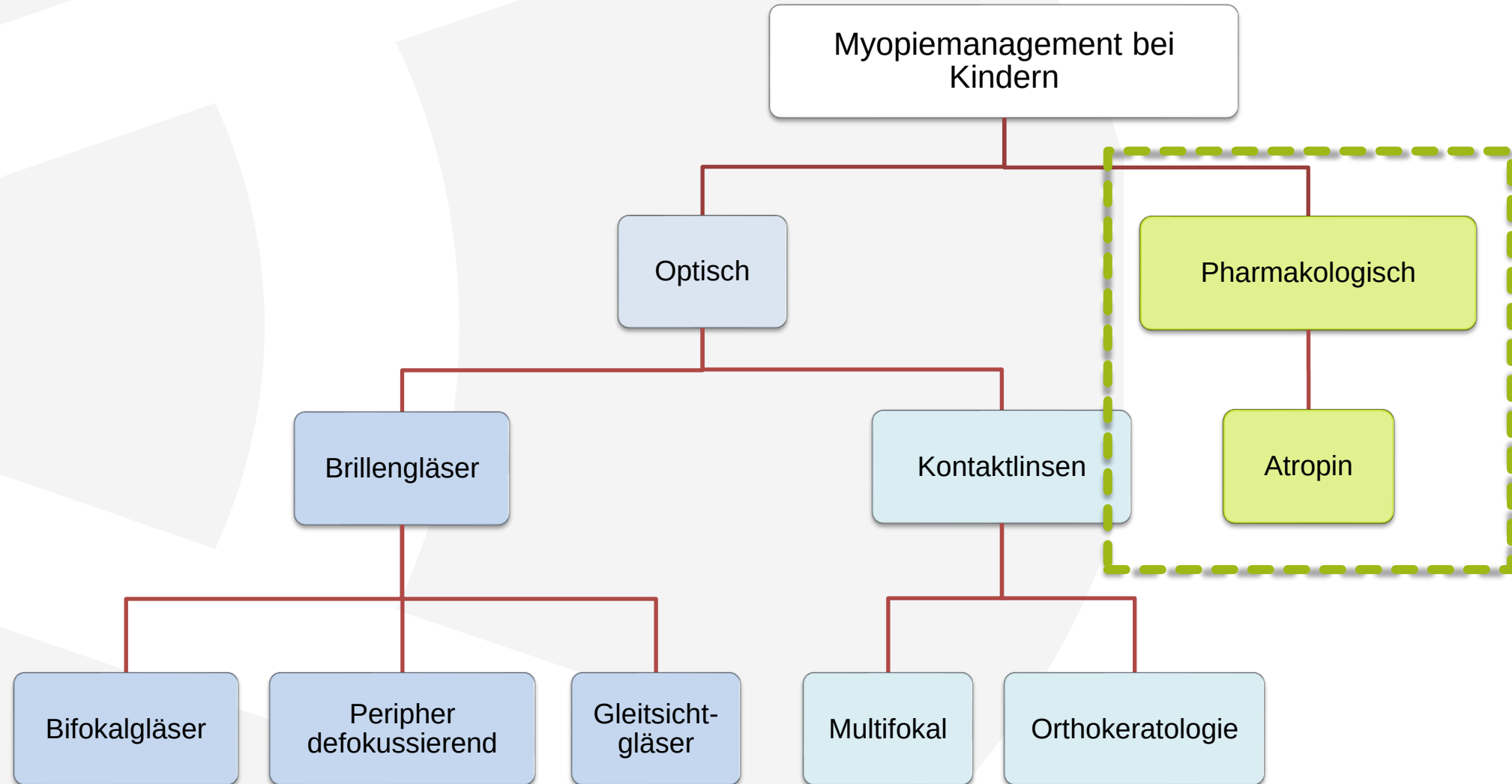


Einfluss von Zeit der Outdoor-Aktivität



➔ **Mehr draußen verbrachte Zeit hat keinen Einfluss auf Myopieprogression!**

Therapiemöglichkeiten

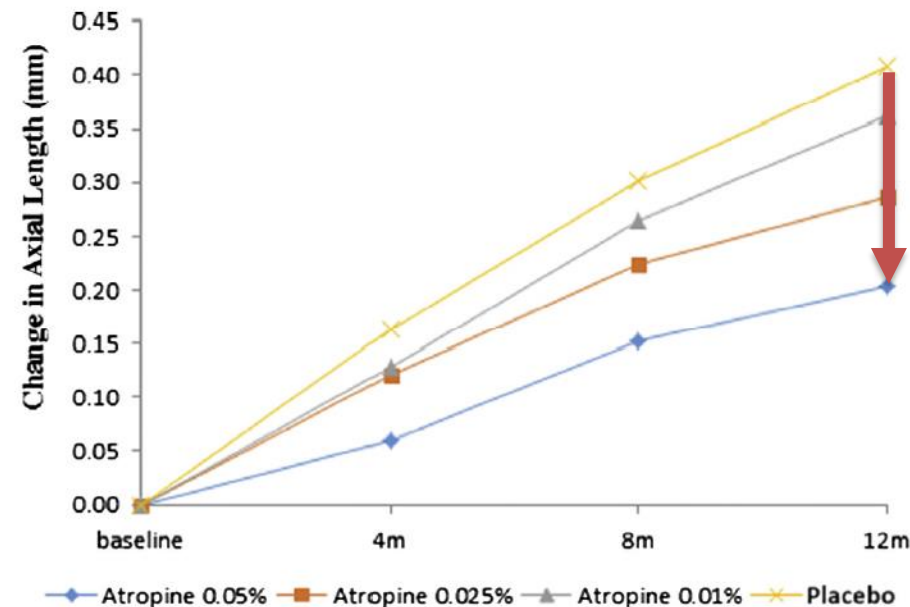
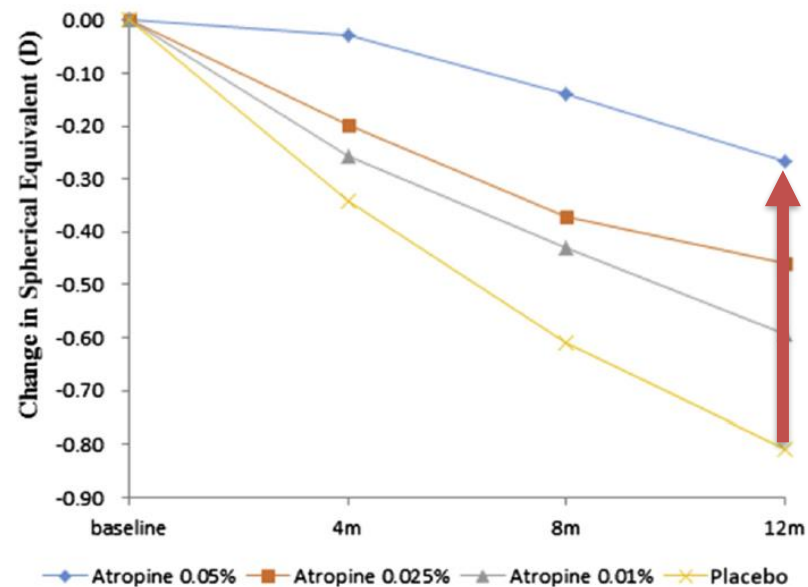


Effektivität von Myopietherapien

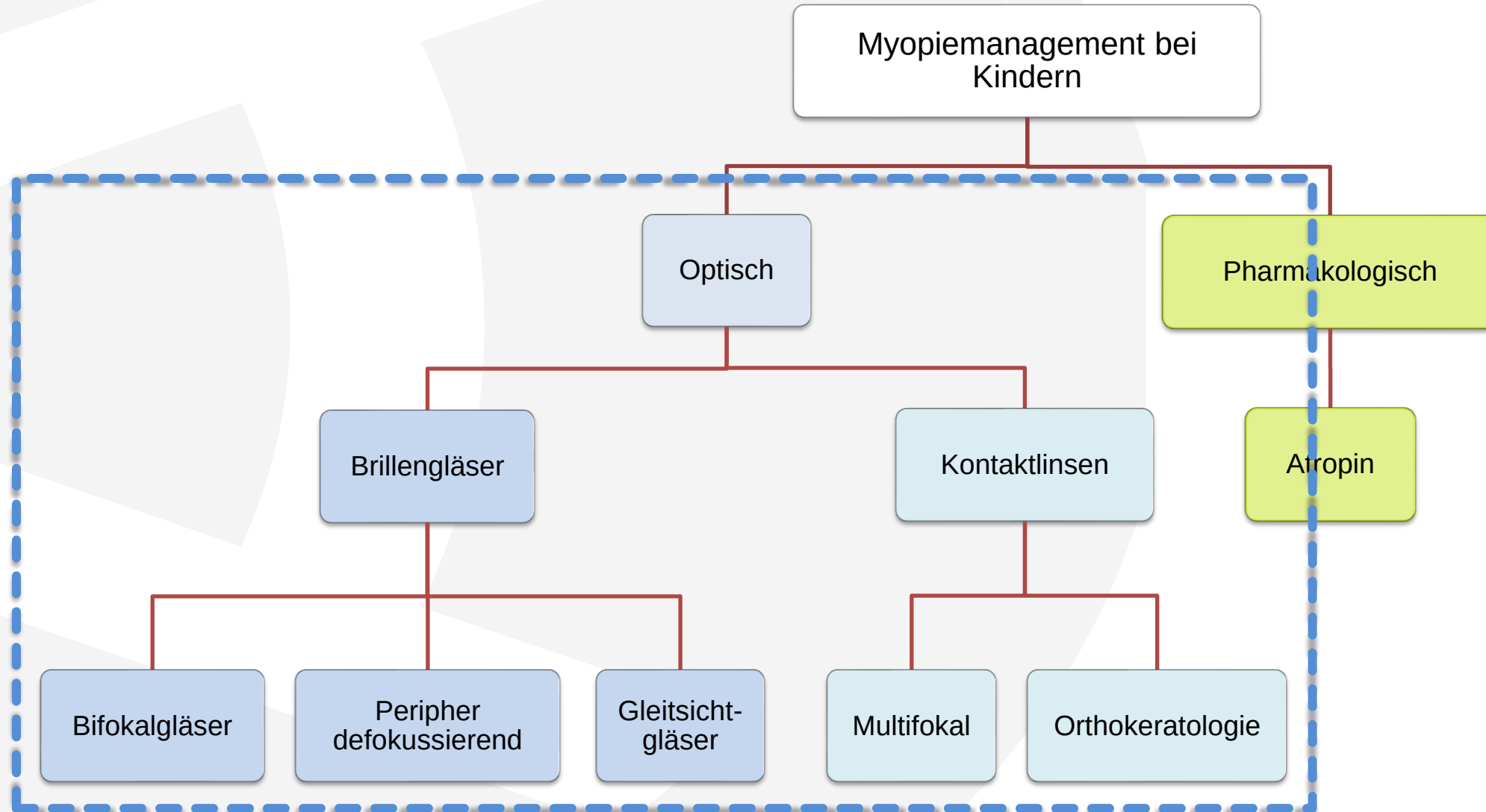
Atropin – The LAMP-Study

- 3 verschiedene Dosierungen vs. Placebo:
 - 0,05%
 - 0,025%
 - 0,01%
 - Placebo

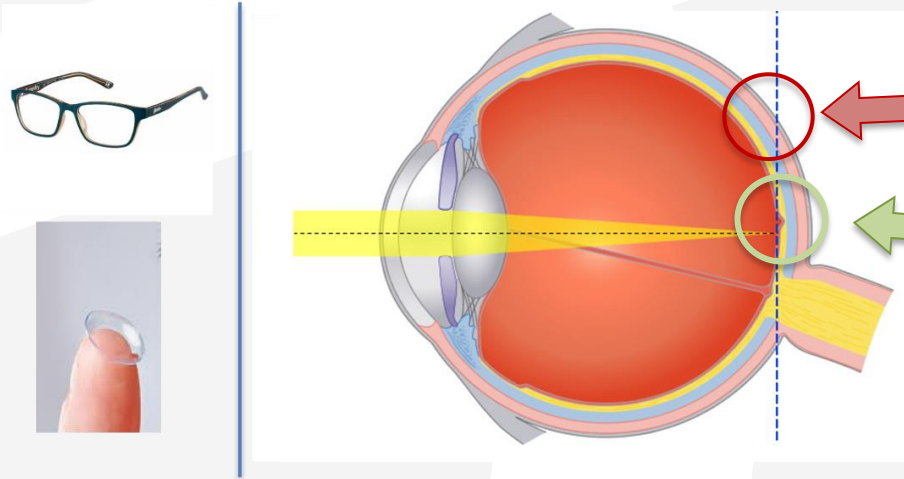
→ Je höher die Dosierung, desto besser Effekt



Therapiemöglichkeiten



Stimulation der peripheren Netzhaut



Einstärkenbrille

Brennlinie des Fernpunkts
auf die Netzhautmitte

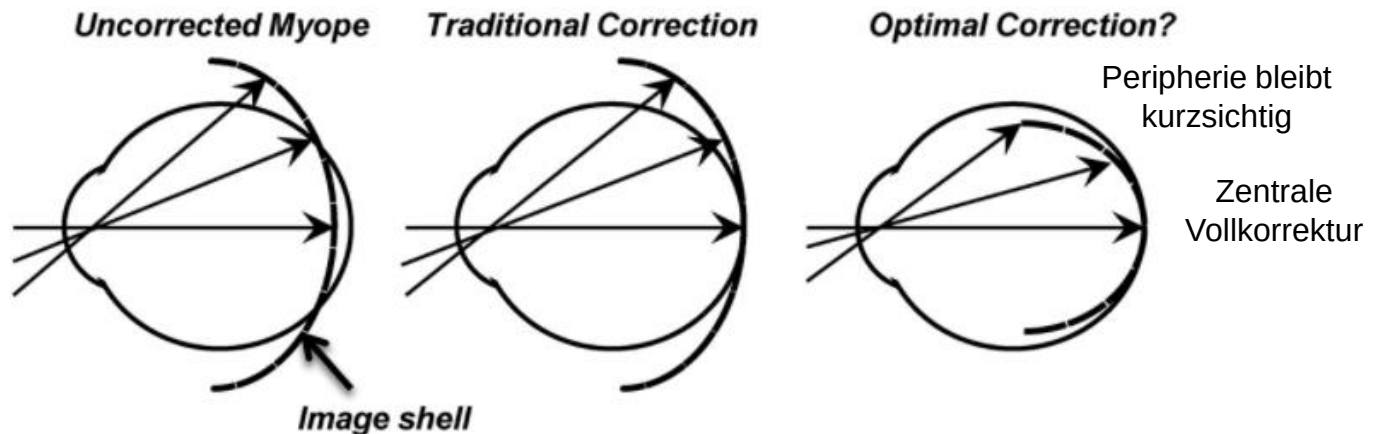
ABER:

Hyperoper Defokus in der Peripherie = **Wachstumsanreiz**

Scharfe Abbildung auf der Makula



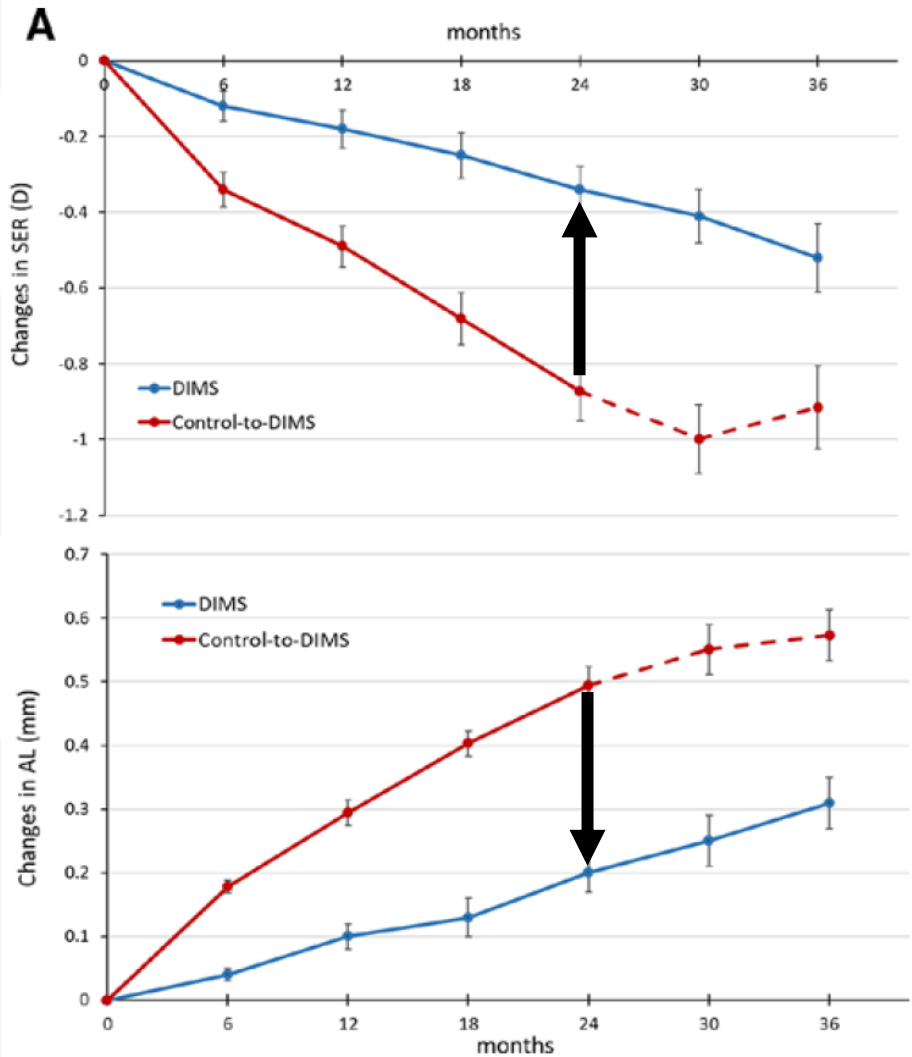
→ **Lösung: Myoper Defokus in der Peripherie ?!**





Vergleich verschiedener optischer Therapieoptionen für Myopie

Effektivität von Myopietherapien

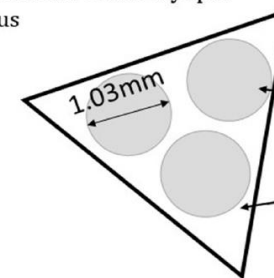


MiYOSMART Brillengläser mit D.I.M.S.-Technologie

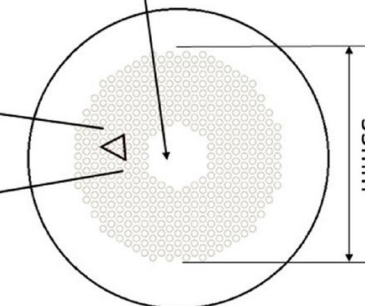
- 2 verschiedene Brillengläser:
 - DIMS
 - Einstärkenglas



Schematic array of multiple segments; each 1.03mm in diameter and +3.5D myopic defocus



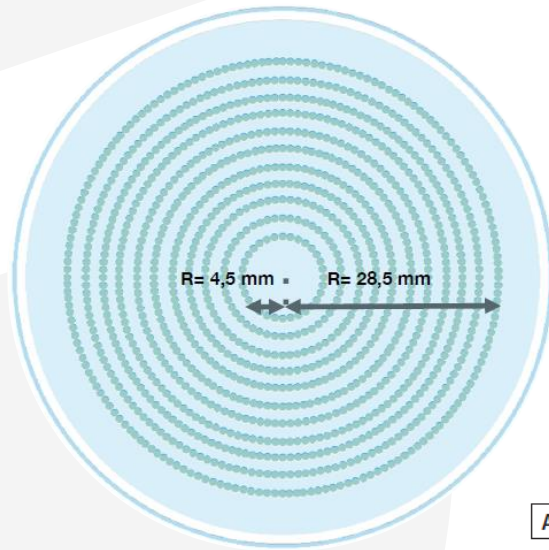
Central zone (9 mm in diameter) for distance refractive correction



About 400 multiple defocus segments (33 mm in diameter) surrounding the central zone

Figure 1 The design of the Defocus Incorporated Multiple Segments (DIMS) spectacle lens.

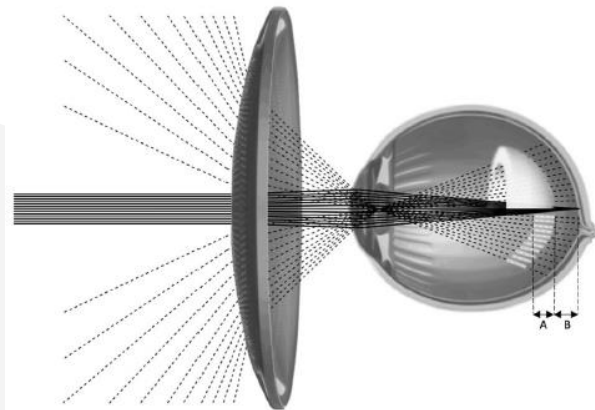
Effektivität von Myopietherapien



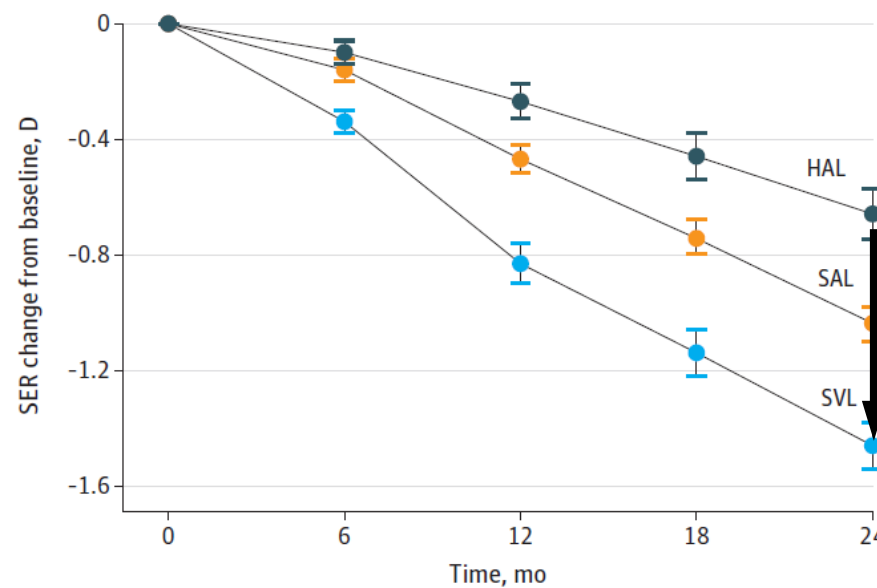
Stellest Brillengläser mit SAL und HAL-Technologie

- 3 verschiedene Brillengläser:
 - Slightly Aspheric Lenslets (SAL)
 - Highly Aspheric Lenslets (HAL)
 - Einstärkenglas

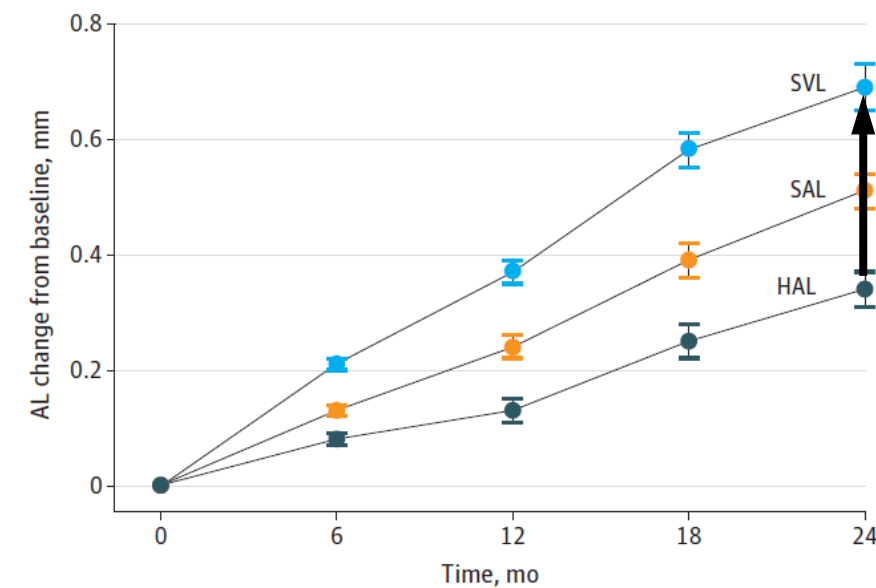
→ Weniger Myopiezunahme bei „HAL“-Gläsern



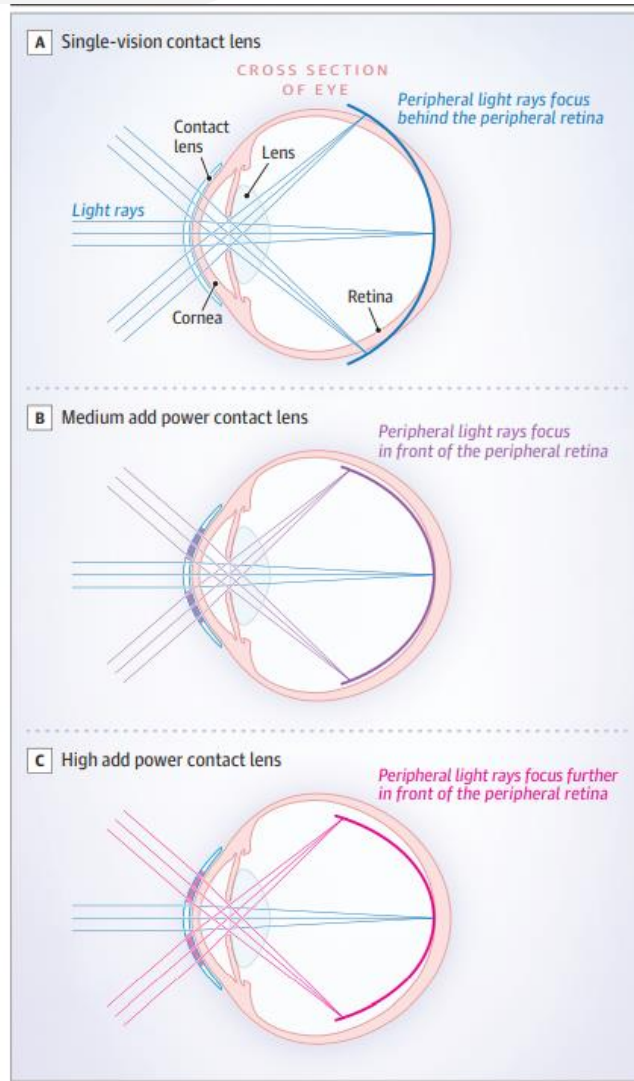
A Change in unadjusted SER



B Change in unadjusted AL



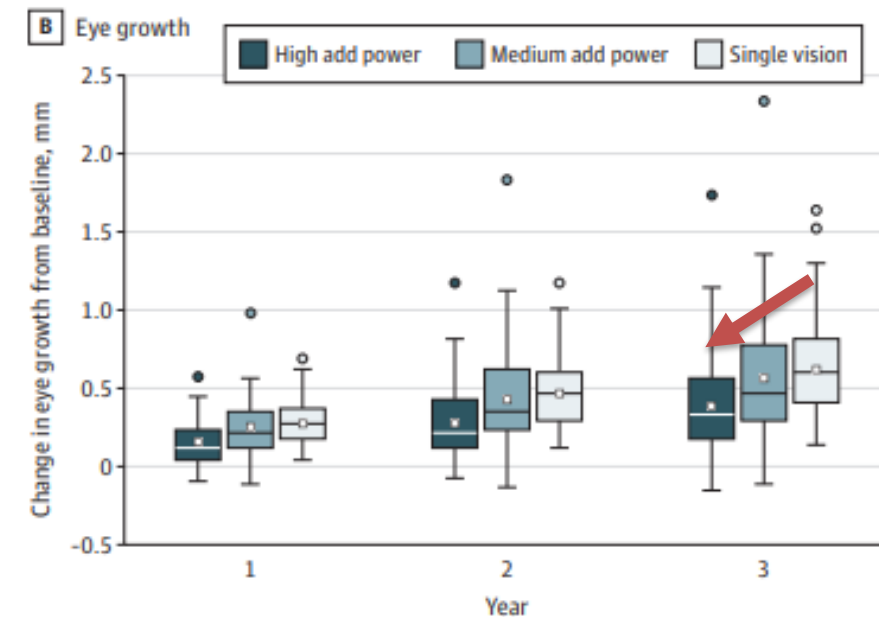
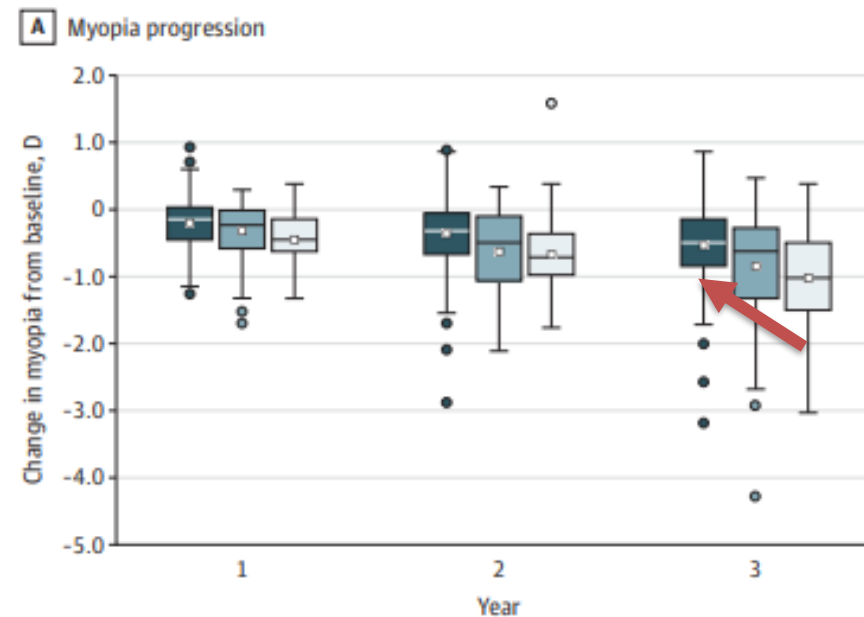
Effektivität von Myopietherapien



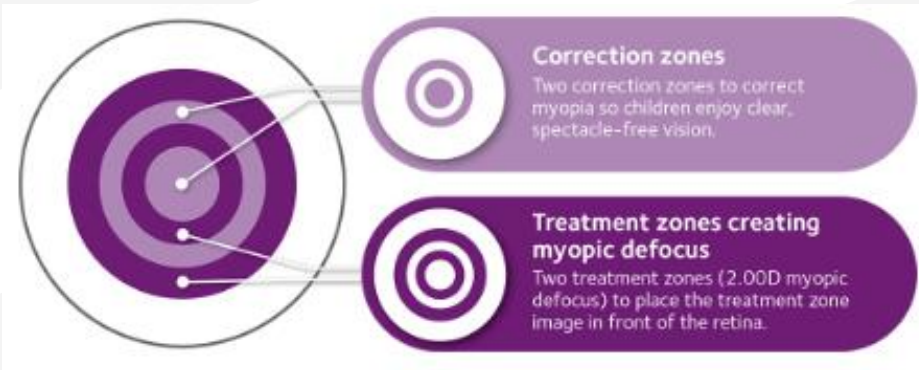
Multifokale Kontaktlinsen - The BLINK Randomized Clinical Trial:

- 3 verschiedene Kontaktlinsen:
 - Multifokal D High Add (+2,50 dpt)
 - Multifokal D Medium Add (+1,50 dpt)
 - Monofokale Kontaktlinsen

→ Je höher die Addition, desto besserer Effekt

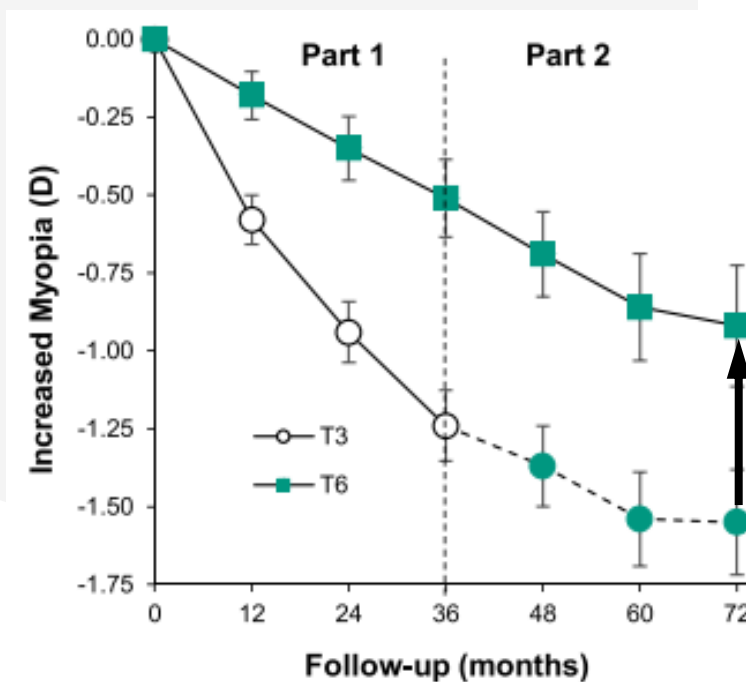
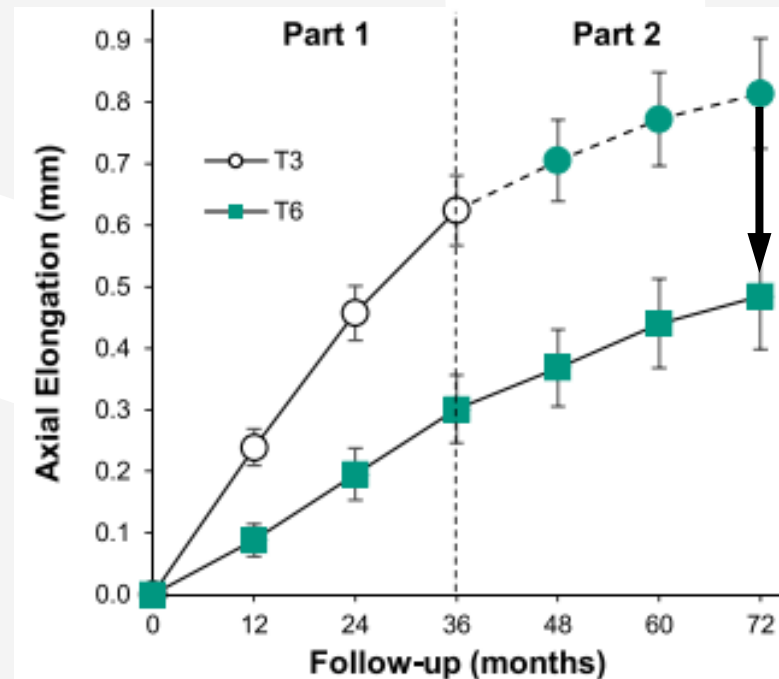


Effektivität von Myopietherapien

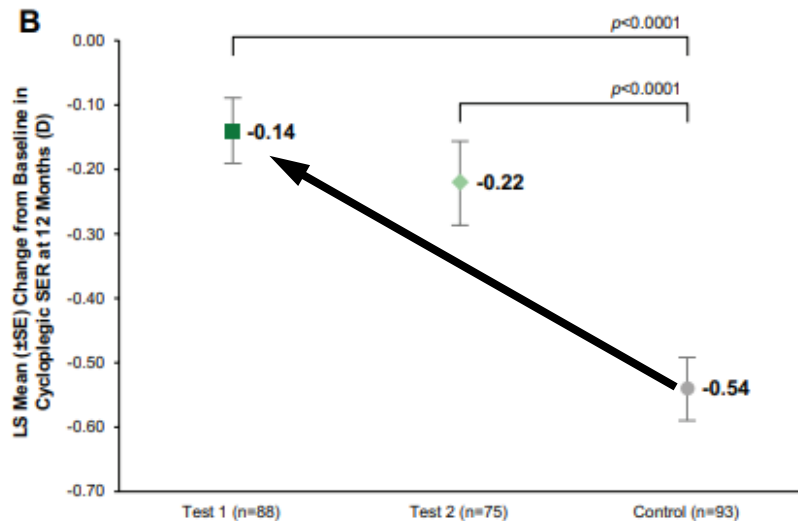
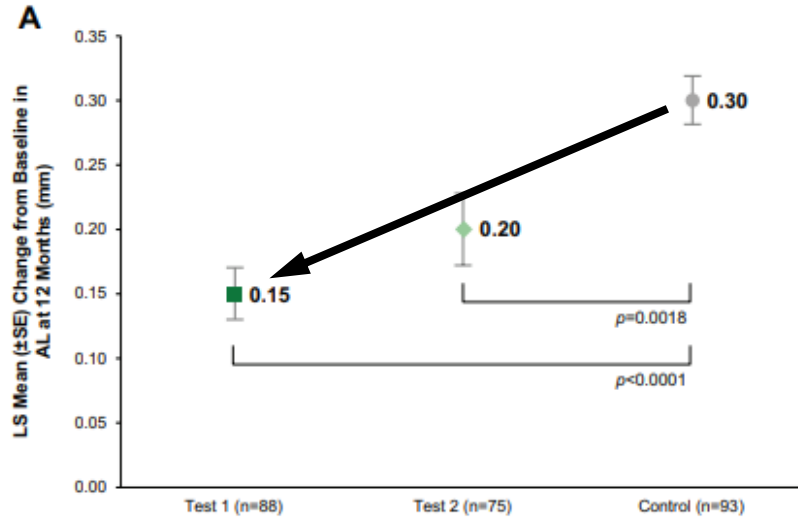


Misight Kontaktlinsen

- 2 verschiedene Kontaktlinsen:
 - MiSight
 - Monofokale Kontaktlinsen

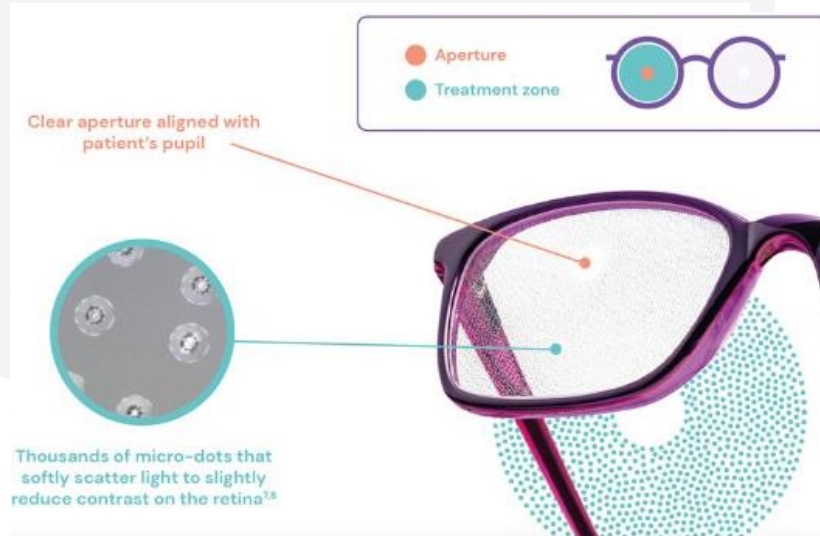


Effektivität von Myopietherapien



SightGlass Vision mit DOT-Technologie

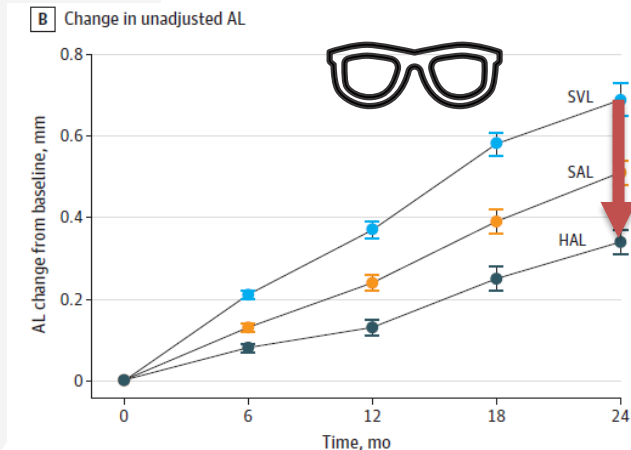
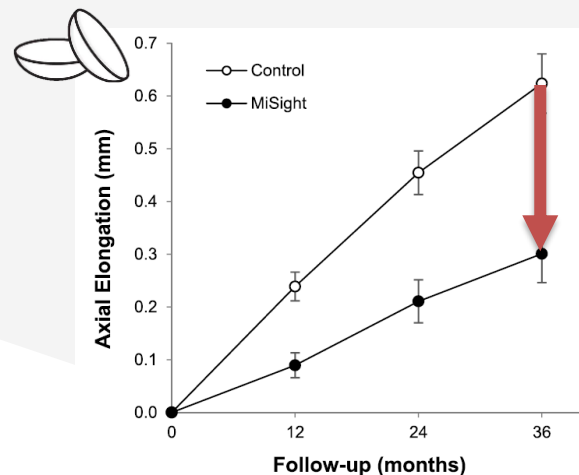
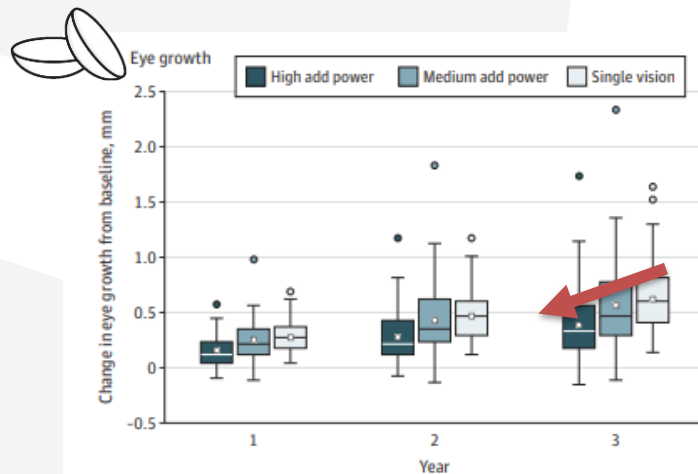
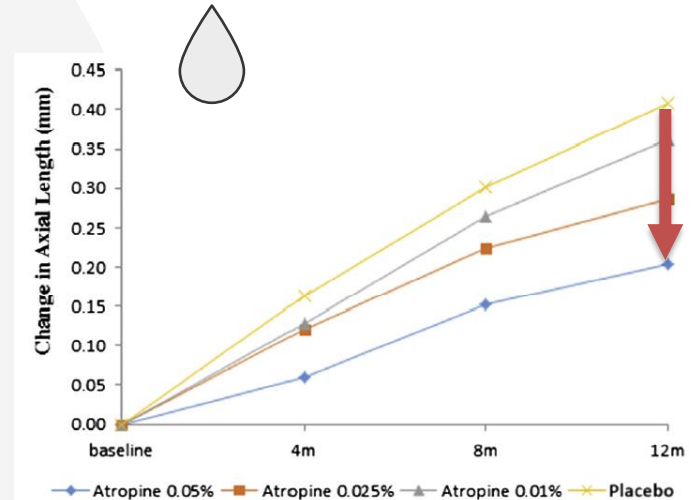
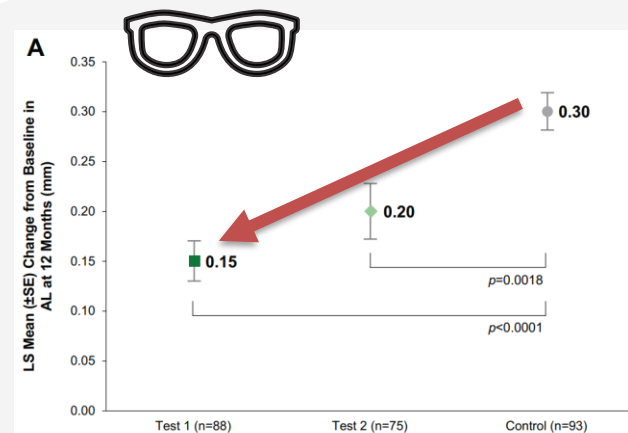
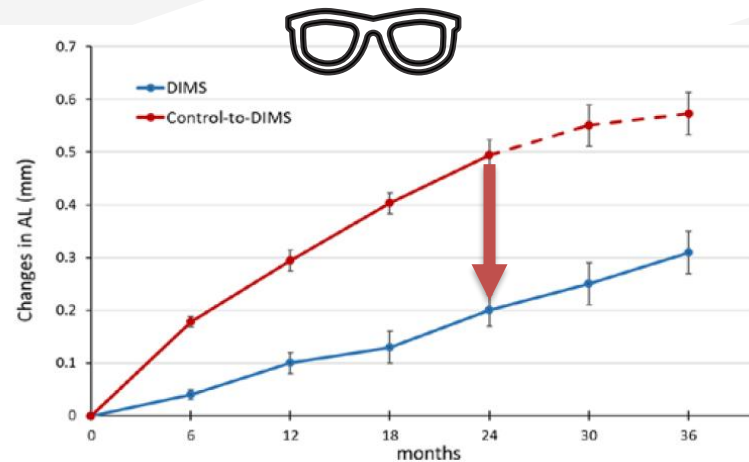
- 3 verschiedene Brillengläser:
 - DOT 1 (0,365mm spacing)
 - DOT 2 (0,240mm spacing)
 - Einstärkenglas



Therapiezone



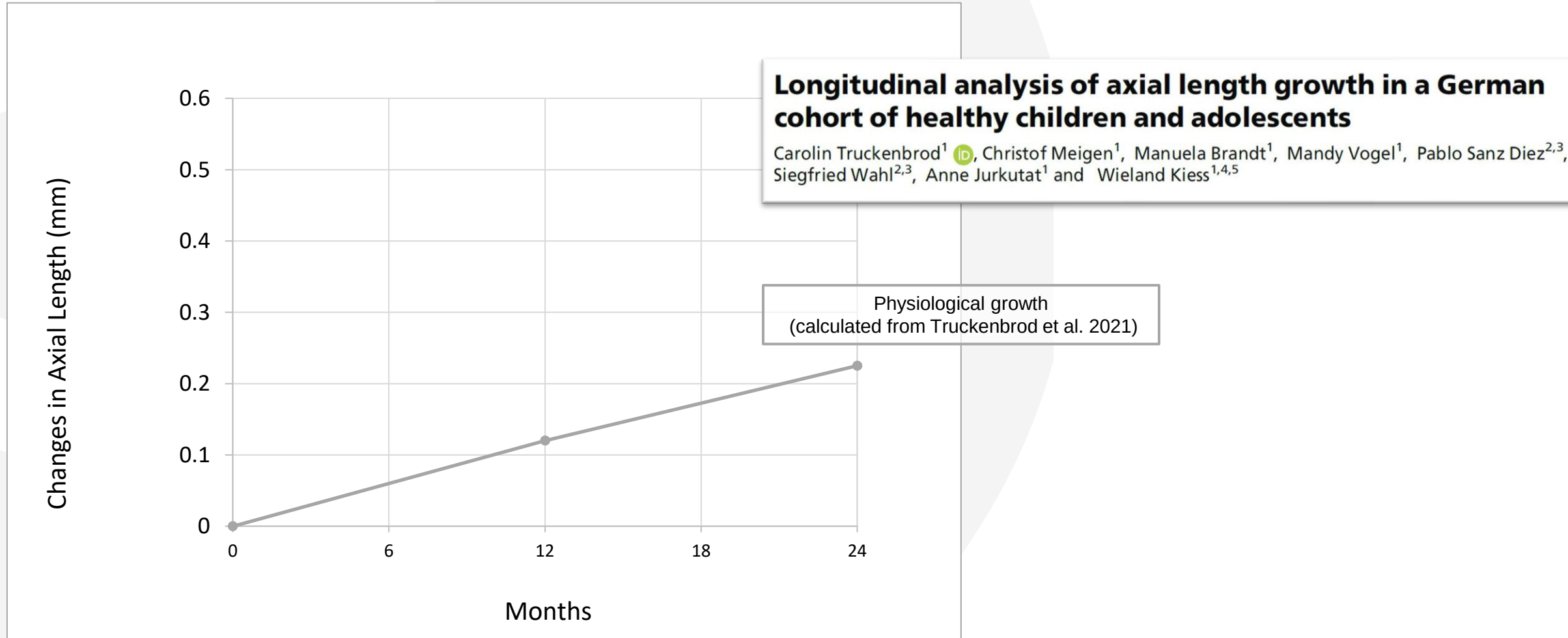
Effektivität von Myopietherapien



- Li et al. Differential Effects on Ocular Biometrics by 0.05%, 0.025%, and 0.01% Atropine: Low-Concentration Atropine for Myopia Progression Study. *Ophthalmology*. 2020 Dec;127(12):1603-1611. doi: 10.1016/j.ophtha.2020.06.004.
- Walline et al. 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. doi: 10.1001/jama.2020.10834.
- Lam et al. 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*. 2021 Mar 17;bjophthalmol-2020-317664. doi: 10.1136/bjophthalmol-2020-317664.
- Bao et al. 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. doi: 10.1001/jamaophthalmol.2022.0401.
- Chamberlain et al. 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. doi: 10.1097/OPX.0000000000001873.
- Rappon J, Chung C, Young G. et al Control of myopia using diffusion optics spectacle lenses: 12-month results of a randomised controlled, efficacy and safety study (CYPRESS) *British Journal of Ophthalmology* Published Online First: 01 September 2022. doi: 10.1136/bjo-2021-321005



Therapieziel: das physiologische Achslängenwachstum von emmetropen Kindern





Unterschied zwischen Asiatische und Europäische Augen?

Ethnic differences in refraction and ocular biometry in a population-based sample of 11–15-year-old Australian children

JM Ip¹, SC Huynh¹, D Robaei¹, A Kifley¹, KA Rose²,
IG Morgan³, JJ Wang¹ and P Mitchell¹

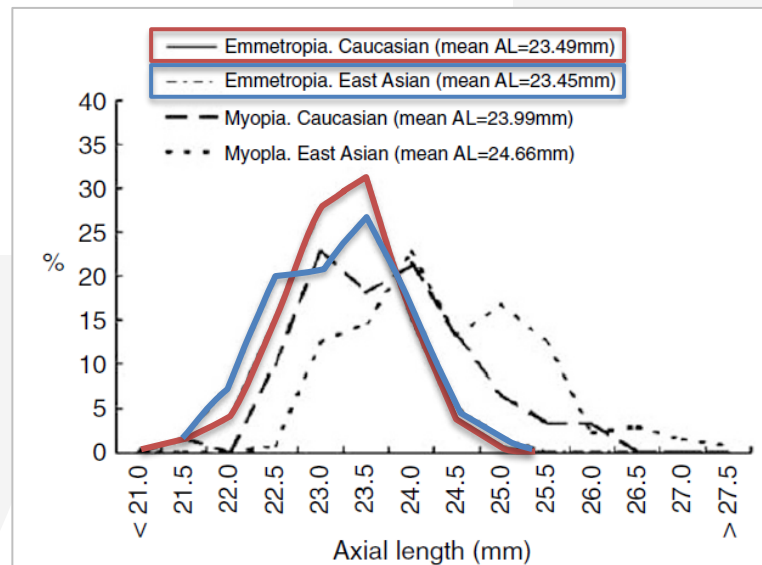


Figure 1 Distribution of axial length among children with emmetropia ($-0.50\text{ D} < \text{SE} < 0.50\text{ D}$) and myopia ($\text{SE} \leq -0.50\text{ D}$), in children of European Caucasian and East Asian ethnicity. X-values represent minimum value of each interval. SE, spherical equivalent refraction; AL, axial length; D, dioptres.

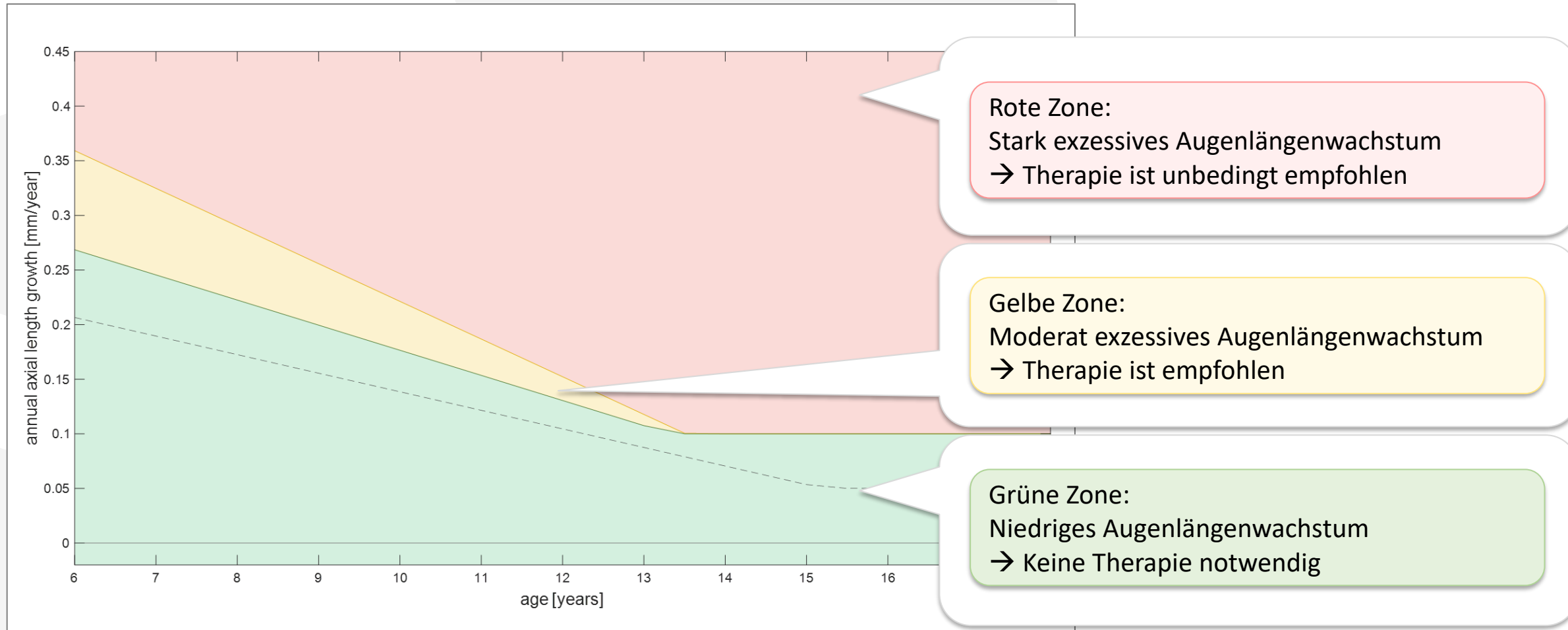
→ Gleiche Augenlängen bei emmetropen Augen!



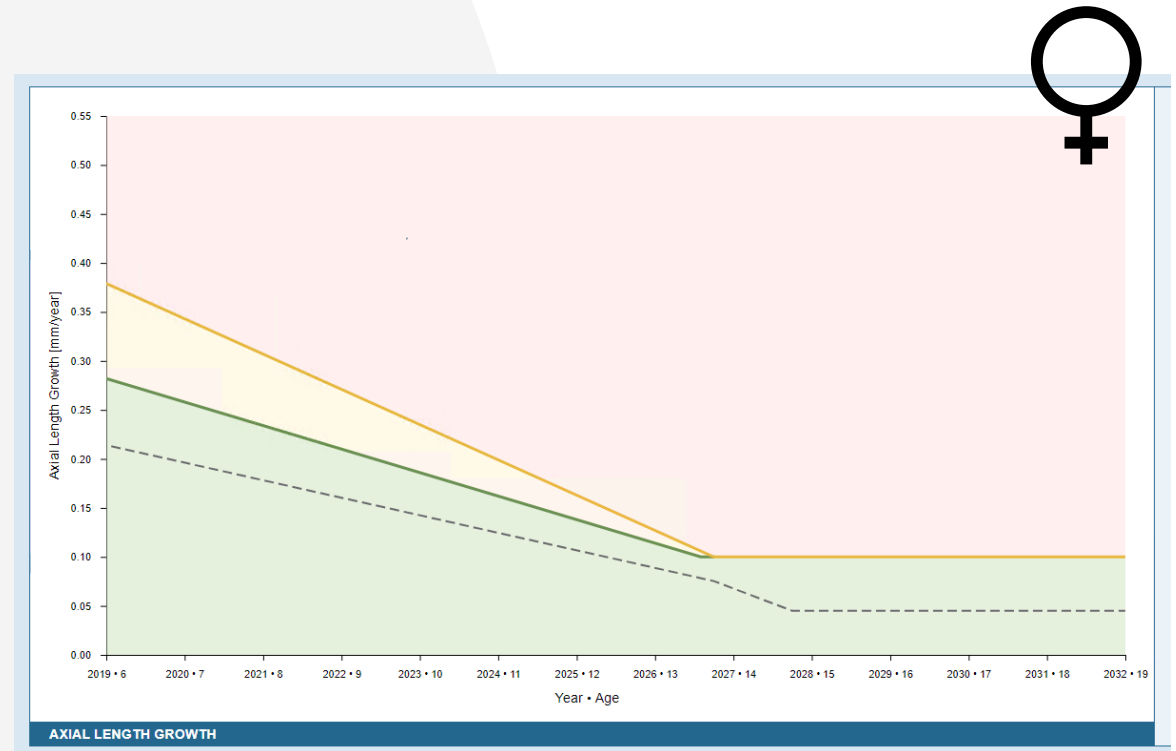
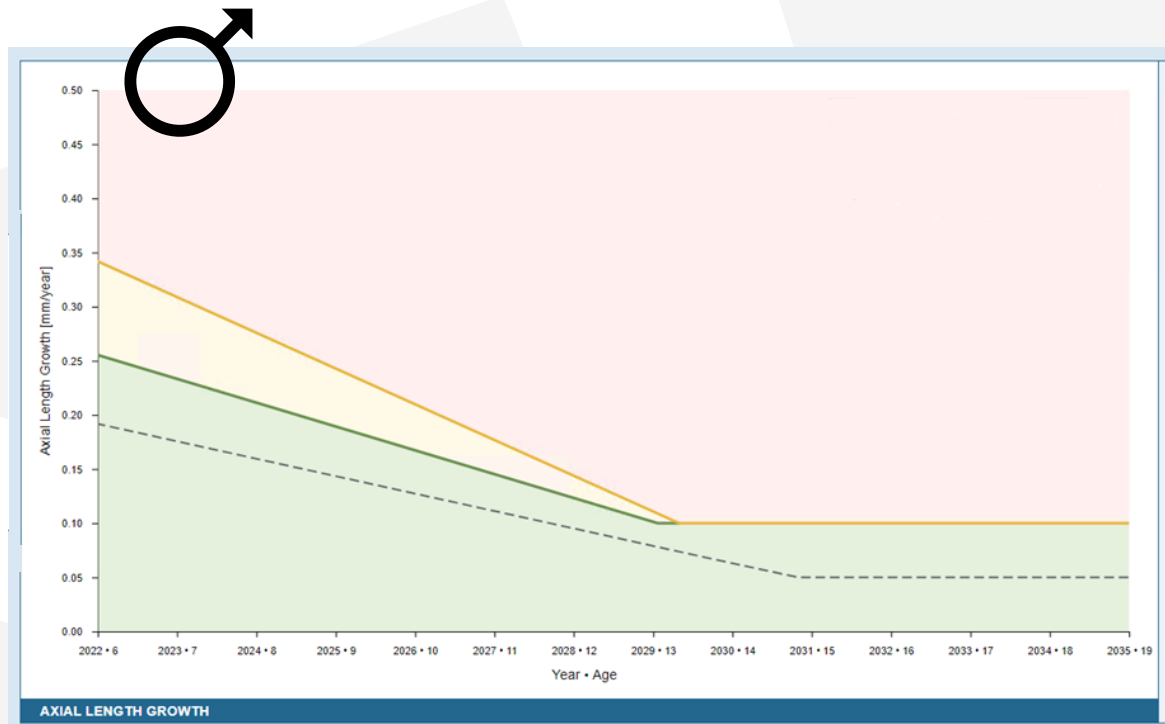
AMMC

Age-Matched Myopia Control

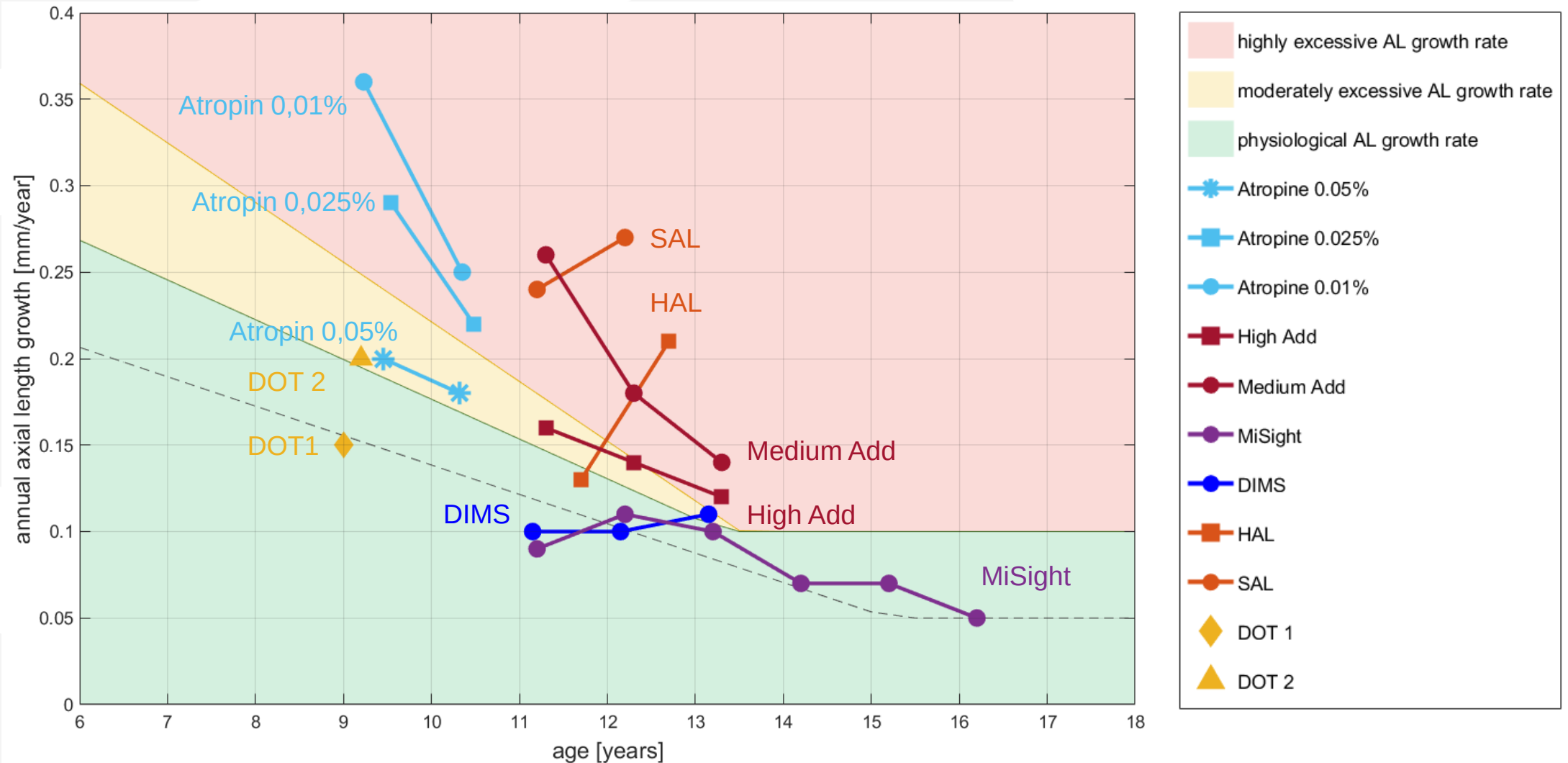
Age-Matched Myopia Control (AMMC)



Age-Matched Myopia Control (AMMC)



Vergleich verschiedener Therapieoptionen für Myopie



- 1) Yam et al. Two-Year Clinical Trial of the Low-Concentration Atropine for Myopia Progression (LAMP) Study: Phase 2 Report. *Ophthalmology*. 2020 Jul;127(7):910-919. doi: 10.1016/j.ophtha.2019.12.011.
- 2) Walline et al.; 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. doi: 10.1001/jama.2020.10834.
- 3) Chamberlain et al. 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. doi: 10.1097/OPX.0000000000001873.
- 4) Bao et al. 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. doi: 10.1001/jamaophthalmol.2022.0401.
- 5) Lam et al. 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. doi: 10.1136/bjophthalmol-2020-317664.
- 6) Rappin J, Chung C, Young G, et al Control of myopia using diffusion optics spectacle lenses: 12-month results of a randomised controlled, efficacy and safety study (CYPRESS) *British Journal of Ophthalmology* Published Online First: 01 September 2022. doi: 10.1136/bjo-2021-321005



Unser Therapieschema

Wann mit
einer Therapie
starten?

Therapie der ersten Wahl: MiYOSMART Brillengläser

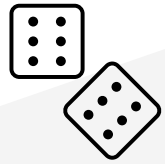
Im Falle einer therapeutischen Lücke: Kombination MiYOSMART + Atropin (0,025%)

Beim Wunsch für Brillenunabhängigkeit: Multifokale Kontaktlinsen mit hoher Addition

Beim Wunsch für Brillenfreiheit: OrthoKeratologie

Dosisfindungsstudie zur Therapie mit Atropin-Augentropfen

EudraCT Nr.: 2021-004884-29



randomisiert



doppelt-verblindet

0,005 %

Placebo

0,01 %

0,025 %

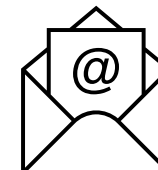
0,05 %



12 Monate
Behandlungsdauer

- ✓ Alter: 6-12 Jahre
- ✓ Myopie: zw. -1 und -4 dpt mit Progression
- ✓ Achsenmyopie
- ✓ in den letzten 3 Monaten keine Myopietherapie

- ✗ Astigmatismus > 1,5 dpt
- ✗ Korrigierter Visus < 1,0
- ✗ Kontraindikation gegen Atropin
- ✗ Ostasiatische, afrikanische Herkunft



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