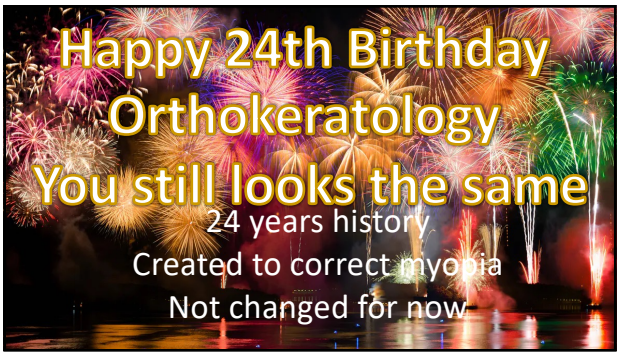
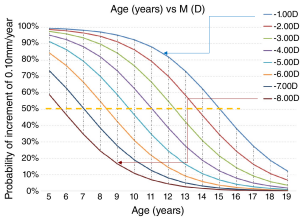
Optic Zone in Myopia Control with Ortho-K; Size Matters

1



2

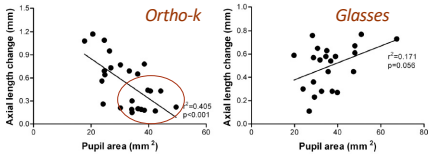
Age, Rx at baseline and myopia control with OK



Queirós, A. (2019) Refractive, biometric and corneal topographic parameter changes during 12 months of orthokeratology. Clin Exp Optom.

3

Pupil diameter and AXL increase

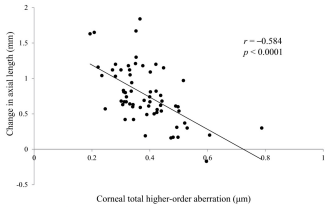


Larger pupils works better with ortho-k

Chen et al. Impact of Pupil Diameter on Axial Growth in Orthokeratology. Optometry and Vision Science, Vol. 89, No. 11, November 2012

4

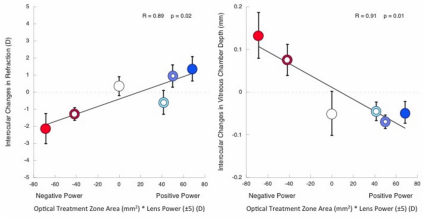
Aberrations; HO related to better control



Hiraoka, T. Relationship between higher-order wavefront aberrations and natural progression of myopia in schoolchildren. Nature, Scientific Reports, 2017.

5

Axial eye grow is dose dependent of imposed defocus



Benavente-Pérez, A ; Axial Eye Growth and Refractive Error Development Can Be Modified by Exposing the Peripheral Retina to Relative Myopic or Hyperopic Defocus. Invest. Ophthalmol. Vis. Sci. 2014;55(10):6765-6773

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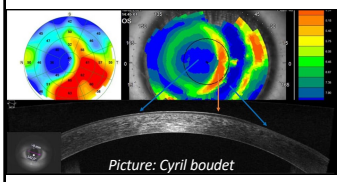
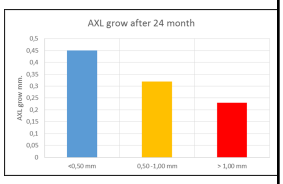
Decentered lenses has better Myopia Control effect





Wang A. Influence of Overnight Orthokeratology Lens Treatment Zone Decentration on Myopia Progression. J Ophthalmol. 2019 Nov 15.
Wu GY. Effect of decentration in controlling the development of myopia after orthokeratology. International Eye Science. 2018;18 (1)

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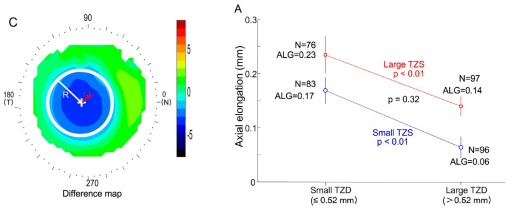
Treatment Zone Size & Treatment Zone Decentering influences AL growth



Lin W, Li N, Gu T, Tang C, Liu G, Du B, Wei R. The treatment zone size and its decentration influence axial elongation in children with orthokeratology treatment. BMC Ophthalmol. 2021 Oct 12;21(1):362.

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Treatment Zone Size may be modified

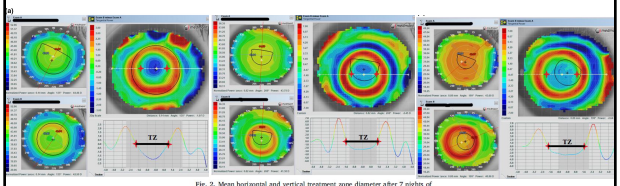

Fig. 2. Mean horizontal and vertical treatment zone diameter after 7 nights of overnight wear of Control and Test orthokeratology lenses (error bars represent standard deviation of the mean).

Guo B, Cheung SW, Kojima R, Cho P. One-year results of the Variation of Orthokeratology Lens Treatment Zone (VOLTZ) Study: a prospective randomised clinical trial. Ophthalmic Physiol Opt. 2021 Jul;41(4):702-714

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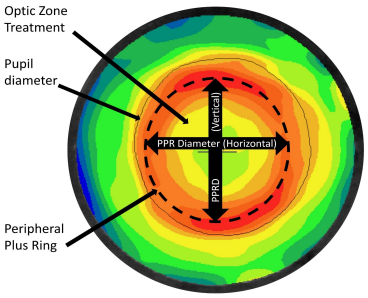
Our retrospective study



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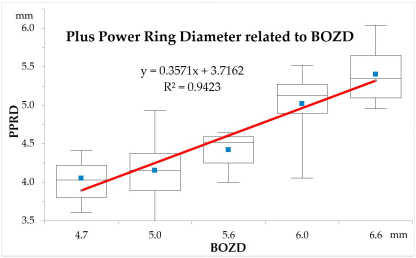
Change in BOZD induces TZD changes



Pauné, J. et al. (2021). The Role of Back Optic Zone Diameter in Myopia Control with Orthokeratology Lenses. *Journal of clinical medicine*, *10*(2), 336.

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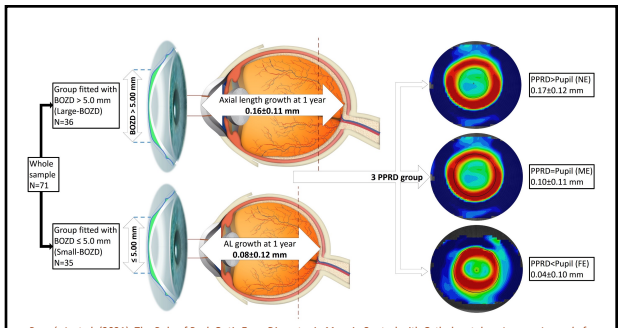

Pauné, J. et al. (2021). The Role of Back Optic Zone Diameter in Myopia Control with Orthokeratology Lenses. *Journal of clinical medicine*, *10*(2), 336.

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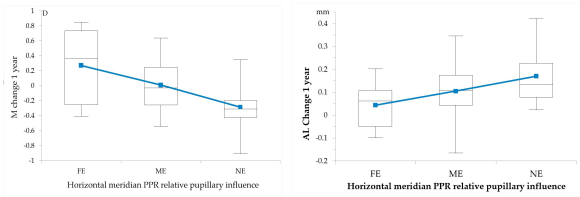
Dose-dependent response for Myopia control



Pauné, J. et al. (2021). The Role of Back Optic Zone Diameter in Myopia Control with Orthokeratology Lenses. *Journal of clinical medicine*, *10*(2), 336.

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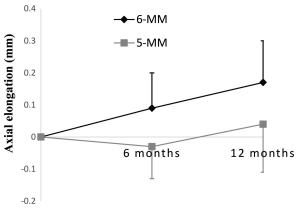
Smaller OZT induces lower AL growth

	AL 6 M-BL (mm)	AL 12 M-BL (mm)
6-MM group	0.09 ± 0.11	0.17 ± 0.13
	n = 33	*n* = 32
5-MM group	−0.03 ± 0.10	0.04 ± 0.15
	n = 29	*n* = 26
p	<0.001*	0.001*



Guo B, Cheung SW, Kojima R, Cho P. One-year results of the Variation of Orthokeratology Lens Treatment Zone (VOLTZ) Study: a prospective randomised clinical trial. Ophthalmic Physiol Opt. 2021 Jul;41(4):702-714.

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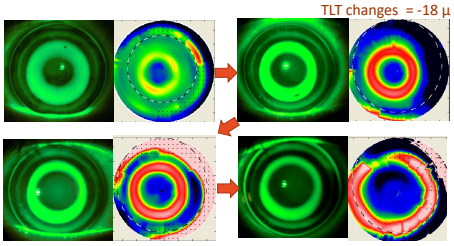
Treatment Optic Zone Diameter is related to apical tear layer thickness

TLT changes = -18 µ



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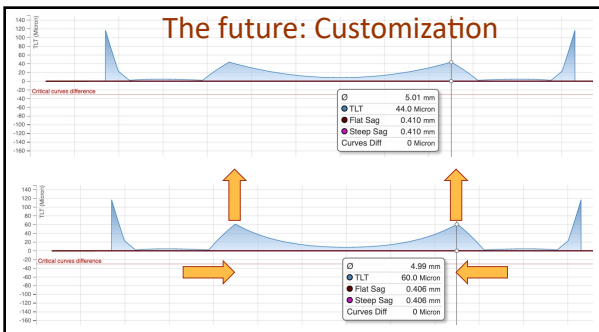
The future: Customization



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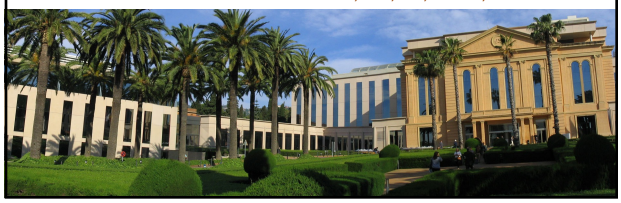
Myopia control with ortho-k; Size matters

Jaume Paune, DOO, Msc, FIOAMC, PhD



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