

NCC 'FUTURE GENERATION 2024' PAPER Abstracts  
SCIENTIFIC SESSION IN COOPERATION WITH THE BCLA

**NCC 'Future generation 2024'**

**Organization Section: NCC/ BCLA**

**PAPER Abstracts**

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**The influence of Back Optic Zone Diameter on Relative Corneal Refractive Power Changes following Orthokeratology fitting**

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**Purpose:** Stronger power changes from corneal center to mid-periphery following orthokeratology fitting (relative corneal refractive power changes, RCRPC) are expected to produce greater reduction in peripheral hyperopic retinal defocus, the latter being thought to stimulate myopia progression. In fact, children with higher RCRPC showed less myopia progression after orthokeratology fitting. The aim of this study was to analyze the influence of the orthokeratology back optic zone diameter (BOZD) on RCRPC.

**Method:** This retrospective study analyzed nasal and temporal RCRPC of the right eyes of 71 subjects (48 female, 23.55±9.34 years) from five horizontal segments of the refractive difference map of the Keratograph 5M (Oculus, Wetzlar, Germany). The Kruskal Wallis test was performed, comparing the test statistic H with the critical value of the chi-square distribution determined by the degrees of freedom. Pairwise comparisons were used to test for differences in nasal and temporal RCRPC for three BOZD groups (5.5, 6.0 and 6.6 mm).

**Results:** The BOZD groups presented different nasal RCRPC ( $H(2)=7.845$ ;  $p=0.02$ ). Post-hoc analyses showed a statistically significant difference between groups 6.0 (median=2.35D) and 5.5 (median=3.71D) ( $z=2.742$ ;  $p=0.018$ ), which

is a moderate effect according to Cohen (1992) with  $r=0.36$ . There was no difference in nasal RCRPC between groups 6.6 and 5.5 ( $z=1.127$ ;  $p=0.779$ ) and between 6.0 and 6.6 ( $z=-1.141$ ;  $p=0.762$ ). Temporal RCRPC did not differ between the three groups ( $H(2)=3.366$ ;  $p=0.186$ ).

**Conclusions:** Smaller BOZD seem to produce stronger RCRPC along the nasal corneal meridian. Smaller BOZD could lead to a better myopia control effect, because more plus power may fall into the pupillary area and stronger topographic plus power with corresponding influence on the retinal defocus profile may be induced. Stronger RCRPC could also improve near vision in orthokeratology presbyopia correction.

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