

NCC 'FUTURE GENERATION 2024' PAPER Abstracts
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PAPER Abstracts

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Netherlands, Veldhoven,

NH De Koningshof, Baroniezaal

A new look at the myopia control efficacy of orthokeratology

Jacinto Santodomingo-Rubido, Sin-Wan

Cheung, César Villa-Collar,

ROMIO/MCOS/TO-SEE Groups

Purpose: To evaluate the efficacy of orthokeratology contact lens wear in slowing the axial elongation of the eye in myopic children.

Method: Data from three prospective studies, which evaluated the use of orthokeratology for slowing myopia progression in children in comparison to a parallel control group of distance, single-vision spectacle lens wearers over a 2-year period, were pooled together for analysis.

Results: Collectively, data from 125 orthokeratology and 118 control subjects were analyzed in this study. Of these, 101 (81%) and 88 (75%) orthokeratology and control subjects completed the 2-year follow-up period, respectively. Statistically significant differences in the change in axial length from baseline were found over time, between groups and for the time*group interaction (all $p < 0.001$), indicating that the rate of increase in axial length over time was significantly lower in the orthokeratology vs the control group. The lower axial elongation of the orthokeratology vs the control group was statistically significant at all time points (all $p < 0.001$), with significant differences being also present between each of the different pairs of time points (all $p < 0.001$). The interactions of group with age, gender, mean spherical refractive error and ethnicity at baseline were not

significant ($p > 0.05$). The change in axial length at the 2-year visit in comparison to baseline for the orthokeratology and control groups were 0.41 ± 0.25 and 0.65 ± 0.30 mm, respectively, thus providing a treatment effect following 2-years of lens wear of 0.24 mm (95% confidence intervals: 0.15 to 0.34mm). Twenty-six and 25% of the orthokeratology subjects experienced remarkably low and high levels of myopia progression, respectively (2-years axial elongation: ≤ 0.24 mm and > 0.59 mm, respectively).

Conclusions: Orthokeratology lens wear slows the axial elongation of the eye in comparison to spectacle lens wear in myopic children. The use of these lenses for slowing myopia progression appears to be very effective and not effective at all in about one quarter each of orthokeratology lens wearers.

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