



Title: The Aberrometric Effect of Corneal Plus Power Ring on Axial length growth

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Abstract:

Optical signaling has been extensively investigated over the last decade to better understand its influence on ocular growth and myopia progression. While peripheral refraction has traditionally dominated the discussion, current research is shifting toward a more refined understanding of how specific optical image interactions affect retinal signaling, particularly within the mid-peripheral retina, between approximately 6 and 9 degrees eccentricity — an area increasingly considered the retinal “sweet spot” for myopia control.

Peripheral refraction and spherical aberration may, in fact, represent different expressions of the same optical phenomenon. Clinical evidence showing improved myopia control efficacy in moderate to high myopes treated with orthokeratology suggests the presence of a dose–response relationship linked to induced higher-order aberrations and corneal power redistribution.

The induction of corneal plus power rings generates characteristic changes in the point spread function (PSF) and ocular aberration profile, potentially modifying retinal image quality in a way that influences axial elongation. Understanding which specific PSF shapes or aberration coefficients correlate with enhanced myopia control may open the door to a new generation of customized contact lens designs.

This lecture will explore the aberrometric implications of corneal plus power ring geometry, with special focus on orthokeratology lens design optimization and its potential role in improving myopia control outcomes.