

## Peripheral refraction in myopic patients after orthokeratology.

[Queirós A](#), [González-Méijome JM](#), [Jorge J](#), [Villa-Collar C](#), [Gutiérrez AR](#).

### Source

Clinical and Experimental Optometry Research Laboratory, Department of Physics (Optometry), School of Sciences, University of Minho, Braga, Portugal. [aqp@fisica.uminho.pt](mailto:aqp@fisica.uminho.pt)

### Abstract

#### PURPOSE:

The purpose of this study was to characterize the central and peripheral refraction across the horizontal meridian of the visual field before and after myopic corneal refractive therapy (CRT) with contact lenses.

#### METHODS:

Twenty-eight right eyes from 28 subjects (mean age  $\pm$  SD = 24.6  $\pm$  6.3 years) were fitted with Paragon CRT contact lenses to treat myopia between -0.88 and -5.25 D of spherical equivalent. Along with a complete set of examination procedures to assess suitability for treatment, the central and peripheral refractions were measured along the horizontal meridian up to 35 degrees of eccentricity in the nasal and temporal retinal area in 5 degrees steps.

#### RESULTS:

Baseline central average spherical equivalent (M) measured by subjective refraction changed from -1.95  $\pm$  1.27 D to -0.38  $\pm$  0.67 D. Changes in M component ranged between 1.42  $\pm$  0.89 D at center and 0.43  $\pm$  0.88 D at 20 degrees in the temporal retina ( $p < 0.002$ ). At 25 degrees to both sides of the central refraction measurement, peripheral refraction after treatment was not statistically different from baseline values ( $p > 0.351$ ). Beyond the 25 degrees limit, M component changed in the myopic direction up to -1.11  $\pm$  0.88 D at 35 degrees in temporal retina ( $p < 0.001$ ). Treatment induced was symmetric between nasal and temporal visual field along the horizontal meridian ( $p > 0.05$  for all eccentricities). Furthermore, the

degree of myopic increase in spherical equivalent for 30 degrees ( $r^2 = 0.573$ ,  $p < 0.001$ ) and 35 degrees ( $r^2 = 0.645$ ,  $p < 0.001$ ) eccentric refraction was highly correlated with axial spherical equivalent at baseline.

## **CONCLUSIONS:**

CRT inverts the pattern of peripheral refraction in spherical equivalent refraction, creating a treatment area of myopic reduction within the central 25 degrees of visual field, and a myopic shift beyond the 25 degrees. In peripheral refraction for 30 degrees and 35 degrees, the amount of myopia induced in terms of spherical equivalent has an almost 1:1 relationship with the amount of baseline spherical equivalent refraction to be corrected.