

PERIPHERAL REFRACTION, TOPOGRAPHIC PROFILE AND ABERRATIONS OF SIX HYDROPHILIC CONTACT LENSES FOR MYOPIA CONTROL

Julia Bodas Romero¹, Wael Almalki¹, Mhamed Ouzzani², Laura Batres¹, Jaime Paune³, Gonzalo Carracedo¹

¹ Department of Optometry and Vision, Faculty of Optics and Optometry, University Complutense of Madrid, Spain

² Optometry group, LPCMME, Oran 1 University, Oran, ALGERIA

³ Clínica Teknon Barcelona, Spain

PURPOSE

The aim of this pilot study was to evaluate the differences in peripheral refraction, corneal topography and aberrations between 6 hydrophilic contact lenses for myopia control.

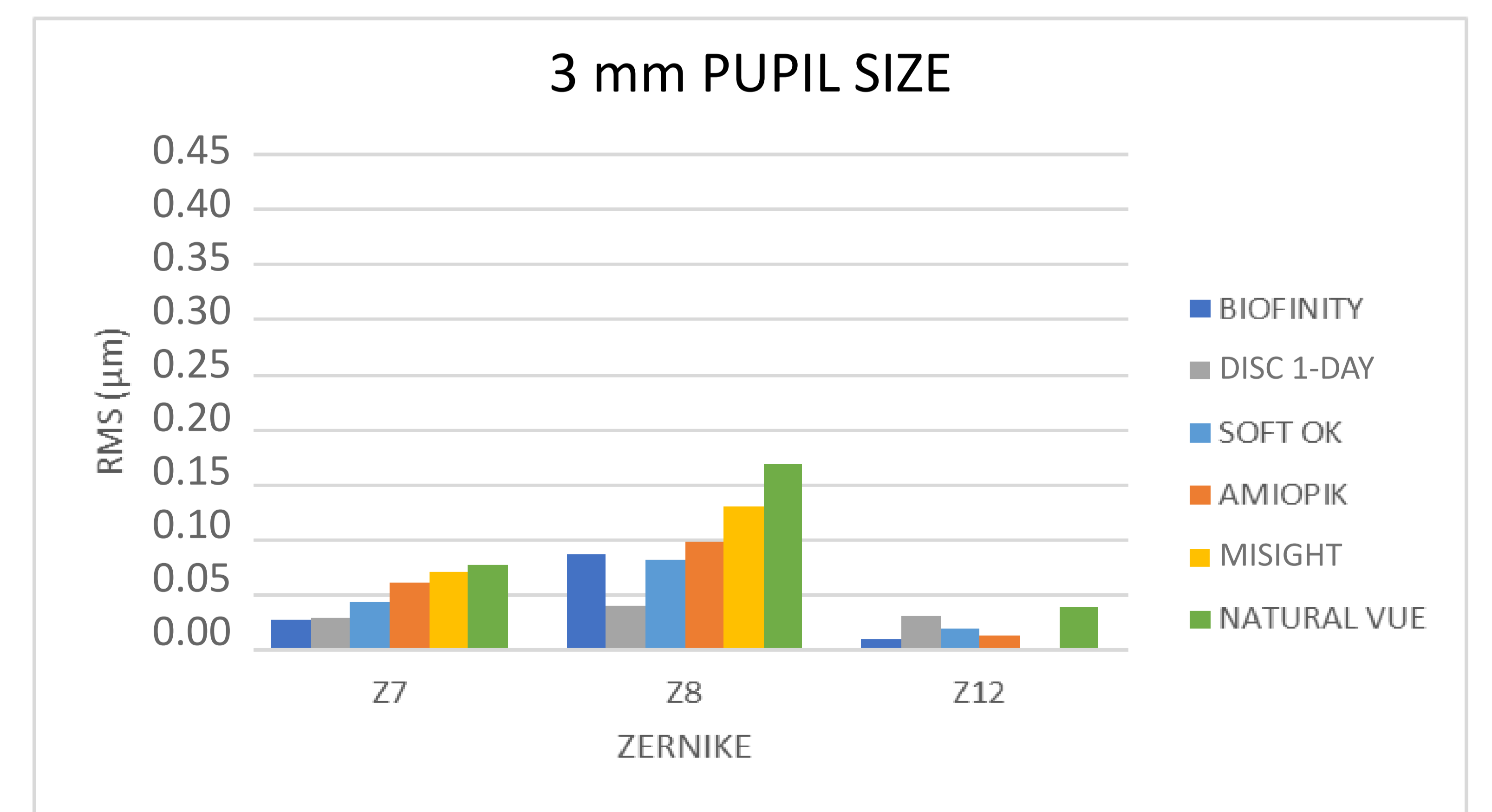
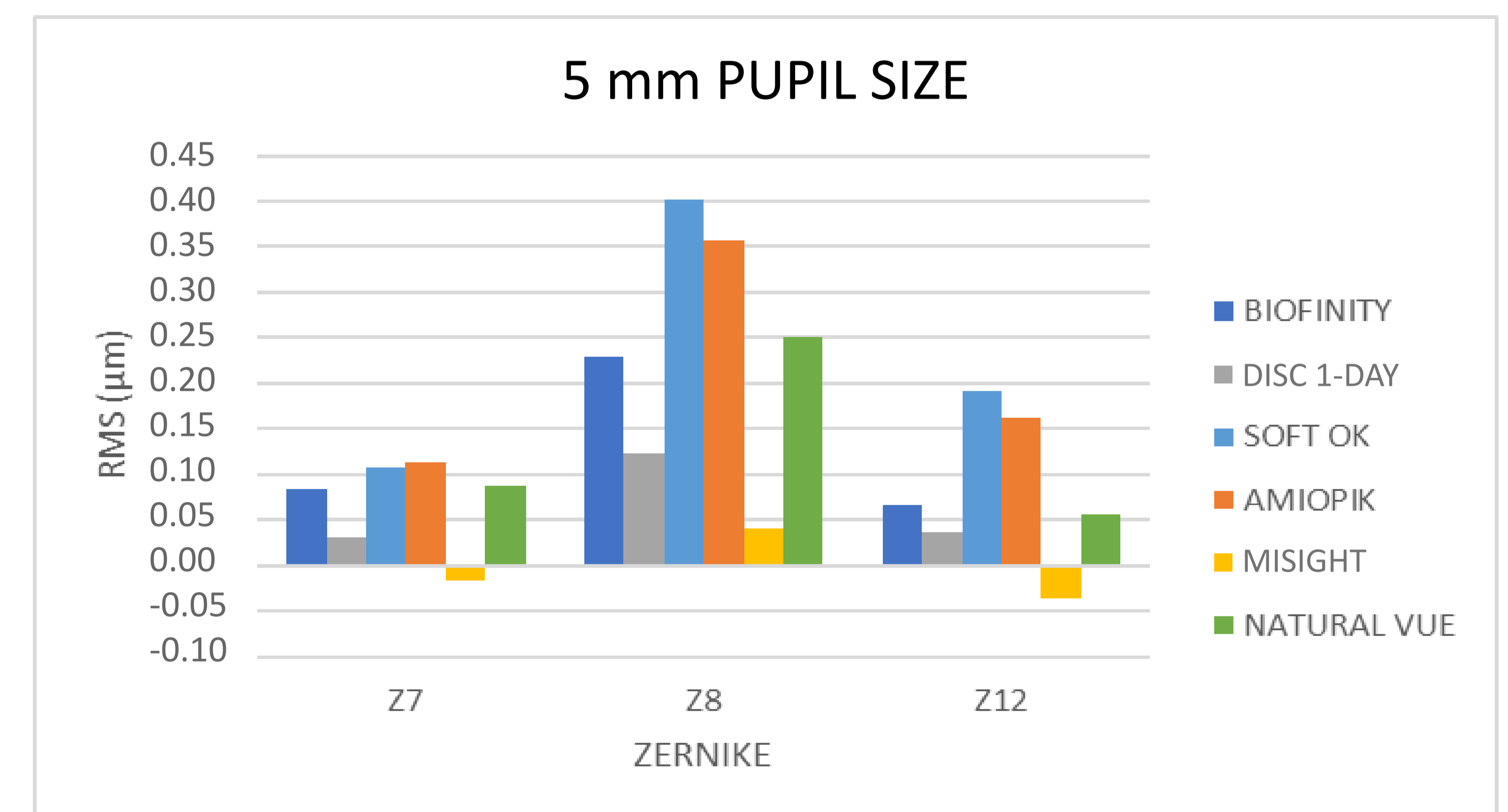
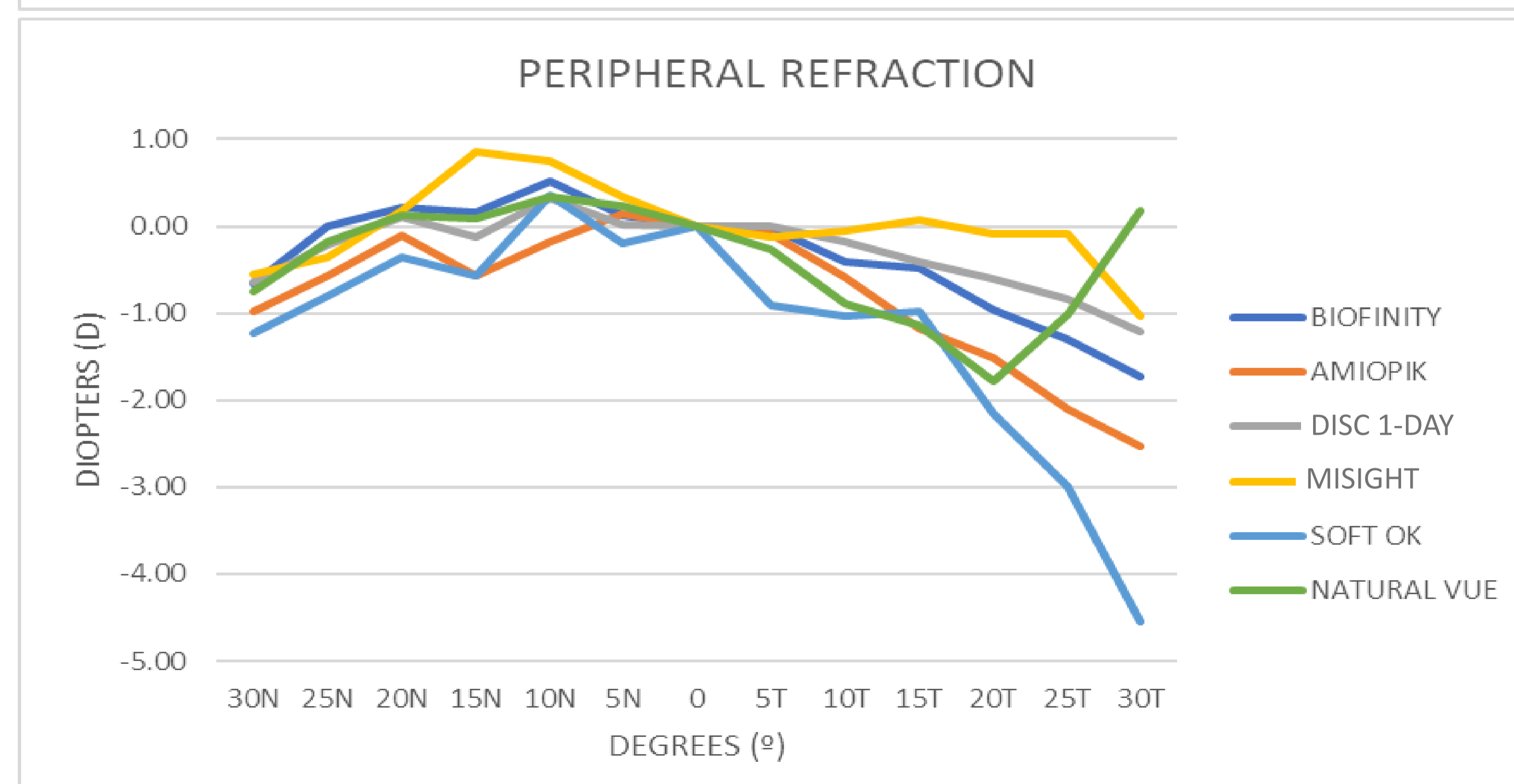
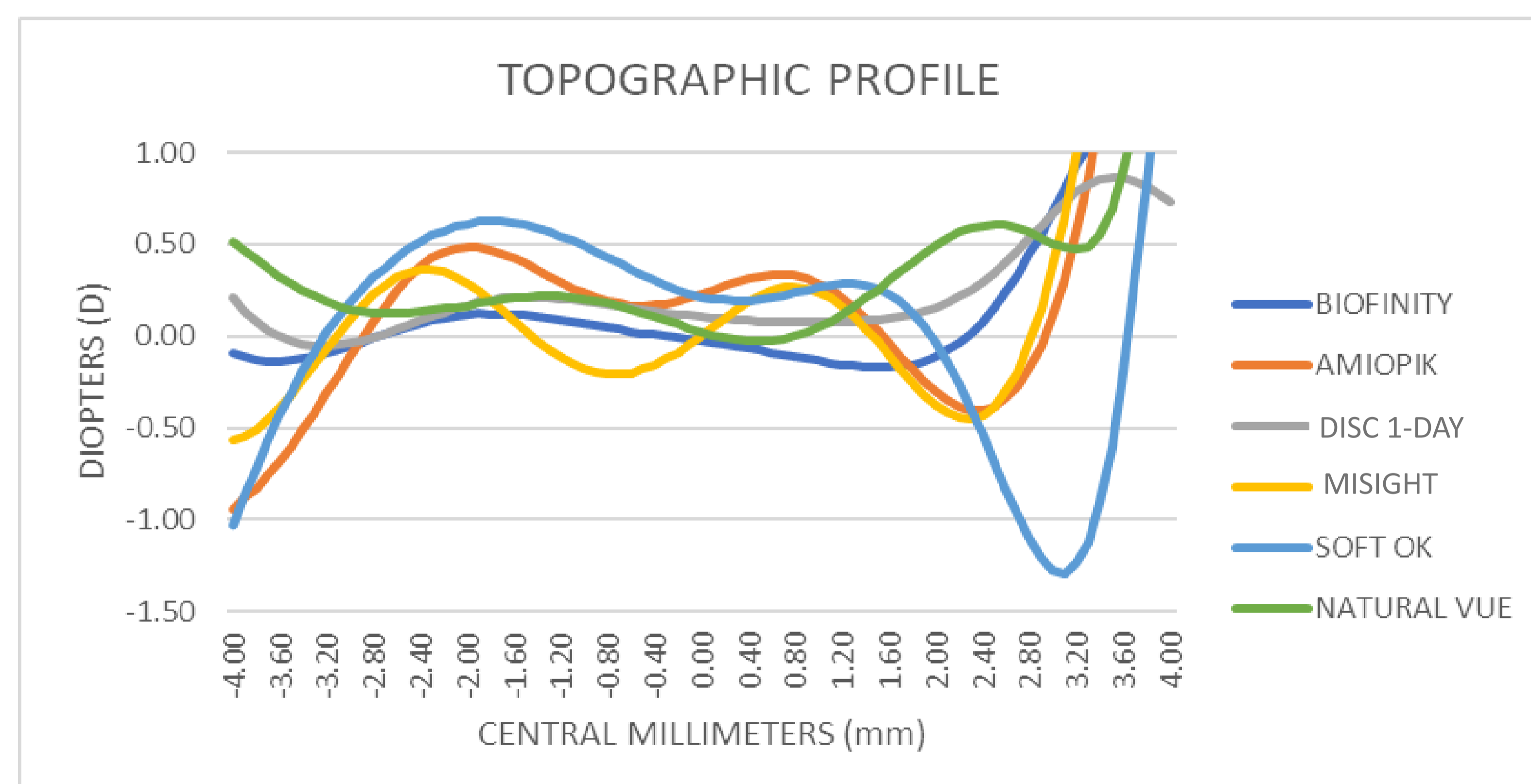
METHODS

A total of 7 subjects have participated (4 women and 3 men) whose average age was 27.43 ± 4.08 years, with ametropia between 0.00 and +1.00. Each subject was fitted with 6 specific contact lens designs for myopia control. The **peripheral refraction** (measured with an open field auto-refractometer), **topographic profile of each contact lens** (Scheimpflug camera topographer), and **higher order aberrations** (spherical aberration and coma), were evaluated. The lenses used were: Biofinity® (CooperVision), Amioptik (PauneVision), DISC-1day (Vision Science Technology), Misight® (CooperVision), Soft OK (GOV®), and NaturalVue® (VTI Redefining Vision)

RESULTS

Two main patterns were observed, **3 lenses** showed a more **progressive multifocal design**, and the other **3 lenses** showed a **bifocal design with central-far**. Statistically significant differences were found in the power profiles of the topography ($p < 0.05$), but these are not related to peripheral refraction. Although in all of them a change in peripheral blur from hyperopic to myopic is observed, being more marked in the **temporal side**, and observing statistically significant differences ($p < 0.05$) **from 10° in the temporal hemisphere**.

Statistically significant differences ($p < 0.05$) were found in total aberrations, with an increase in spherical aberration (Z12), vertical (Z7) and horizontal coma (Z8).



CONCLUSIONS

All contact lenses had a similar pattern of peripheral refraction despite their design, showing a myopic peripheral defocus and being more pronounced in the temporal hemisphere. In addition, an increase in coma aberration was shown, indicating an off-centeredness of the lenses. To assess the effectiveness of these lenses, the influence of this off-centeredness of each contact lens design should be taken into consideration.

CONTACT

jbodas@ucm.es