

PERIPHERAL VISUAL ACUITY CORRELATION WITH CENTRAL VISUAL ACUITY

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Introduction

Peripheral visual acuity in population varies highly [1], also it is remarked that under normal conditions peripheral visual acuity has wide variation between subjects[2]. In myopic subjects, when ametropia is axial, and retinal stretching is present, the distance between photoreceptors increases, therefore visual acuity compared to emmetropic subjects is limited.

The aim of this study is to acknowledge any possible correlation between central and peripheral VA, if ametropia is fully corrected.

Methods

From previous studies data of peripheral visual acuity (VA) is taken to show the impact of optical defocus on peripheral VA (Figure 2 and 3) [3].

Subjects of varying ametropia were found their highest possible central VA (determined with FrACT 3.7.1 (*Freiburg Visual Acuity and Contrast Test*)), peripheral VA is determined using designed computer program at 7 degree eccentricity in nasal visual field.

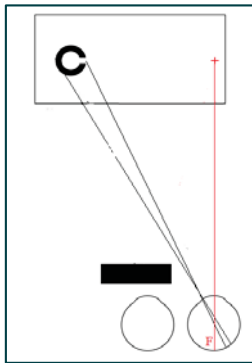


Figure 1 Eye position in the model of experiment

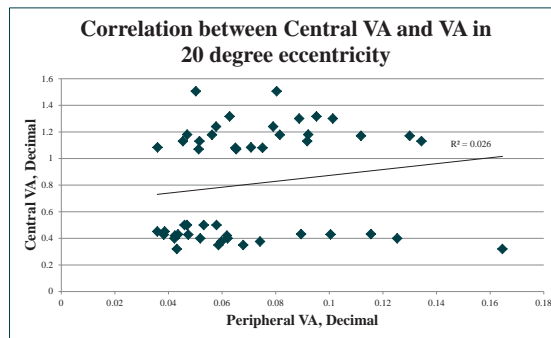


Figure 2 Correlation between Central VA and peripheral VA is low, as is expected with high contrast symbols

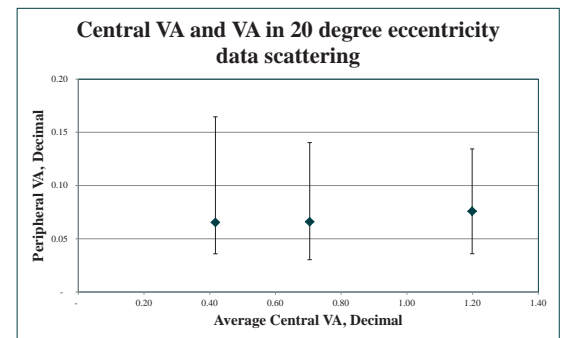


Figure 3 Scattering of data for Peripheral VA for all subjects, 3rd point represents VA without optical defocus, 1st and 2nd – with highest and lower defocus

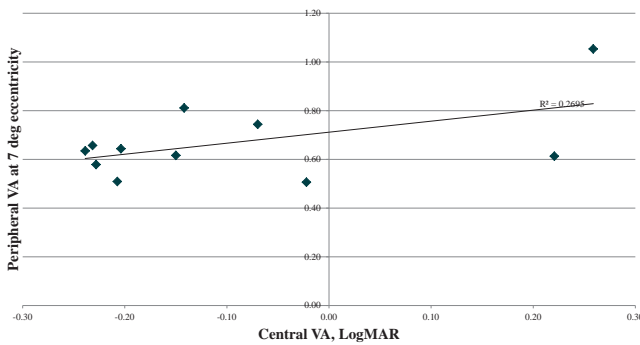


Figure 4 VA for all subjects showing both central and peripheral VA

Results

Two subjects with amblyopia in one eye showed reduced central VA, however only one of the subjects actually showed reduced peripheral VA.

The correlation between central and peripheral VA can be found, however it is quite low (0.27).

Also, few subjects showed higher peripheral VA if central VA was higher, however data points describing higher central VA show moderate correlation (if central VA is above -0.05 LogMAR).

Discussion

As correlation between central and peripheral VA is quite low further experimental data is required. Also it would be advisable to add few more subjects with reduced central VA (not induced by dystrophies or changes in optical media in the eye). The further study should include comparison between subjects amblyopic and better seeing eye, that would further the understanding what limits the peripheral VA.

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