

Comparing the results of the application of moving and stationary sinusoidal gratings in the functionally assisted treatment of meridional amblyopia

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Abstract

Background: The aim of the present work was to investigate the influence of visual exercises implemented into computer games, which contained moving circular gratings as compared to such of stationary gratings, on the visual acuity development in patients with meridonal amblyopia.

Methods: Overall, there were two groups of patients who were selected according to the age structure and types of their type of disturbance. Using a cross-over design, the first group was alternately exercised 10 days with the moving vs. 10 days with the stationary grating stimulus, and the second group was alternately exercised 10 days with the stationary vs. 10 days with the moving grating stimulus, i.e. in reverse order.

Results: In the measurements of the corrected visual acuity along four meridians, a maximum improvement was found with alignment of the directional optotypes close to the meridian with minimal ametropia, and the minimal change in the orientation perpendicular thereto. In the patients of the both groups, the corrected visual acuity had significantly increased as a result of the treatment performed in the stage with a series of exercises with the moving circular sinusoidal grating. After the stage of treatment using the stationary grating, there was found no statistically significant improvement.

Conclusions: Exercises using special computer programs that contained a moving circular sinusoidal grating resulted in a statistically significant positive dynamics of visual acuity in the highest ametropic meridian. No statistically significant improvement was observed after exercises with the stationary grating.

Teaser

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