

17TH ASIA PACIFIC OPHTHALMOLOGISTS ANNUAL MEETING

September 17-18, 2018 Tokyo, Japan



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Near and distance stereopsis restoration in amblyopia with 3D computer treatment

Purpose: To evaluate the effect of using stereoscopic 3 D (S3D) technology visual training system in children with amblyopia.

Methods: 30 children, 4-16 years old, 18 with Ametropic Amblyopia (AMA) and 12 with Anisometropic Amblyopia (ANA) were recruited in this study. A binocular 3D shutter glasses technology visual training system was used for training trials. Each training time lasted 1 hour and the number of training trials totaled 33 (mean \pm SD=32 \pm 8) times on average, per-person. Before and after the training trials, we measured the Best Corrected Visual Acuity (BCVA) of each eye, range of fusion by synoptophore, as well as near and distance stereopsis acuity by Yan Shaoming random-dot test and synoptophore, respectively.

Results: A significant difference was found pre and post-treatment in BCVA in both kinds of amblyopia studied. Significant improvement was also found in fusion range and stereopsis acuity. The improvement of fusion range and stereopsis recovery was higher in ANA than in AMA patients. The near stereopsis acuity recovered better than the stereo acuity in distance.

Conclusions: S3D display vision training systems are indicated for the recovery of stereoacuity in children with amblyopia.

Biography

Hongwei Deng has received her BD and MD in Medicine from Zhengzhou University in 1995 and 1999, respectively and has received the PhD from Jinan University, Guangzhou, China in 2002. She has advanced her clinical experience in pediatric ophthalmology field as an observer training for 6 months in Wilmer's Eye Institute in John Hopkins University and Boston Children's Hospital. Currently she is the Dean of the low vision department in Shenzhen Eye Hospital, also works in the pediatric ophthalmology field from 2007 till now. She was a visiting scholar and a postdoctoral researcher for one year in Schepens Eye Research Institute in 2017. Her research interests include stereo vision and vision induced diseases.

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