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Newly developed binocular treatment of amblyopia using head-mounted display

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Amblyopia is the most common cause of visual impairment in children and most of current treatments are monocular patching or penalization. Recent studies report that abnormal binocular interactions play a key role in amblyopia. The mechanism of dichoptic presentation is presenting the strong stimulus to the amblyopic eye and another weak stimulus to the normal fellow eye. The device which directly targets the binocular function using dichoptic presentation is developed. The developed device and software program separate the 3D images and control the visual inputs into the both eyes using head-mounted display. It increases the contrast, size and intensity of the 3D target to the amblyopic eye and decreases those to the normal fellow eye. This separation of 3D images is expected to improve the monocular visual acuity of the amblyopic eye with the reduction of suppression and strengthen the binocular fusion including stereopsis. The newly developed binocular therapy using head-mounted display is hand-held and convenient. Further investigation is needed to prove the effectiveness in improvement of both monocular and binocular vision in children and adults with amblyopia.

Biography

Seong-Joon Kim has completed his PhD from Seoul National University. He is a Professor in Department of Ophthalmology, Seoul National University College of Medicine with specialization in Strabismology and Neuro-Ophthalmology. He has published more than 80 papers in reputed journals and has been serving as an Editorial Board Member of *Korean Journal of Ophthalmology*.

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