

19th Global Ophthalmology Summit

February 26-27, 2018 | Berlin, Germany



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Amblyopia treatment without occlusion: A vision therapy program using artificial intelligence-customized software

Statement of the Problem: Amblyopia is the partial loss of vision in one or both eyes caused by conditions that affect the normal development of visual function. The most frequent conditions causing amblyopia include strabismus and anisometropia, among others. Current treatments strategies range from visual therapy with patching and optical correction to surgery.

Methodology & Theoretical Orientation: We have used an innovative and integrative visual therapy method named Brain VT, which allows the patient to work several tasks, including anti suppression, ocular movements, fixations (from periphery to centre), accommodation, spatial localization, Vestibular reflex, body posture and basic cognitive skills. The program provides a wide variety of visual stimulus for different conditions, ordered according to the subject's level of maturation. The artificial intelligence algorithm proceeds automatically according to the patient's responses. Size, shape, colour, number and timing of stimulus presentation and response are all customized to the patient's needs, and there are many levels according to task difficulty, making ceiling and floor effects unlikely.

Findings: Although studies are still in an early phase and therefore there is a lack of scientific evidence, preliminary clinical results are encouraging.

Conclusion & Significance: Practitioners are advised to take advantage of emerging digital technologies in order to improve the quantity and quality of vision of their patients, particularly in amblyopia.

Recent Publications

1. Clarke M P (2010) Review of amblyopia treatment: Are we overtreating children with amblyopia? Br. Ir. Orthopt. 7: 3-7.
2. Maconachie D E and Gottlob I (2015) The challenges of amblyopia treatment. Biomed J. 38(6): 510-516.
3. Hess R F and Thompson B (2015) Amblyopia and the binocular approach to its therapy. Vis. Research 114:4-16.
4. Eaton N C, Sheehan H M and Quinlan E M (2016) Optimization of visual training for full recovery from severe amblyopia in adults. Learn Mem. 23(2): 99-103.