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A Randomized Trial of a Binocular iPad Game Versus Part-Time Patching in Children Aged 13 To 16 Years With Amblyopia

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Abstract (Current = 249 words; max = 250 words)

Purpose: To compare visual acuity (VA) improvement in teenagers with amblyopia treated with a binocular iPad game versus part-time patching.

Methods: One hundred participants aged 13 to <17 years (mean 14.3 years) with amblyopia (20/40 to 20/200, mean ~20/63) resulting from strabismus, anisometropia, or both were enrolled into a randomized clinical trial. Participants were randomly assigned to treatment for 16 weeks of either a binocular iPad game prescribed for 1 hour per day (N=40) or patching of the fellow eye prescribed for 2 hours per day (N=60). The main outcome measure was change in amblyopic eye VA from baseline to 16 weeks.

Results: Mean amblyopic eye VA improved from baseline by 3.5 letters (2-sided 95% confidence interval (CI): 1.3 to 5.7 letters) in the binocular group and by 6.5 letters (2-sided 95% CI: 4.4 to 8.5 letters) in the patching group. After adjusting for baseline VA, the difference between the binocular and patching groups was -2.7 letters (95% CI: -5.7 to 0.3 letters, p = 0.082) or 0.5 lines, favoring patching. In the binocular group, treatment adherence data from the iPad device indicated only 13% of participants completed >75% of prescribed treatment.

Conclusions: In teenagers aged 13 to <17 years, improvement in amblyopic eye VA with the binocular iPad game used in this study was not found to be better than patching, and was possibly worse. Nevertheless, it remains unclear whether the minimal treatment response to binocular treatment was due to poor treatment adherence or lack of treatment effect.