A handheld radial shape discrimination hyperacuity test: Assessment of variability in a clinical population.

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Purpose: A novel handheld Radial Shape Discrimination test (hRSD), presented on an Apple iPod Touch, has been reported to differentiate between early and neovascular Age Related Macular Degeneration (nAMD; Wang et al., 2013). We have investigated the use of this test in a UK clinical setting.

Methods: Fifty-five participants (aged 78±7 years old) being treated for nAMD in their first eye, performed a supervised hRSD test with their fellow (non-nAMD) eye at two sessions, 45±17 days apart. 32 participants also performed the test with no near Addition. Test-retest differences, and the effect of performing the test without near Addition, were assessed using paired t-tests, Bland-Altman analysis and Intraclass Correlation Coefficients (ICC).

Results: Mean (±SD) hRSD thresholds were not statistically significantly different for the first and second sessions (S1: -0.55±0.17; S2: -0.56±0.18 logMAR; t(54)=0.72, p>0.05). The upper and lower Bland-Altman 95% limits of agreement were 0.25 and -0.27 logMAR and the ICC (95%CI) was 0.71 (0.55 to 0.82). A small but statistically significant decrease in threshold was seen when near addition was not used (t(31)=2.99, p<0.01). The mean difference (95%CI) was 0.17 (0.06 to 0.30) logMAR.

Conclusion: The hRSD test was found to have good test-retest variability when performed in a clinical setting by elderly participants. The variability is similar to that of normally sighted younger adults (Knox et al., 2014). However, lack of near addition caused a statistically and potentially clinically significant decrease in hRSD threshold. It is advisable that the hRSD test is performed with near correction in this population.

References


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