The Effect of Stroboscopic Vision Training on Eye-Hand Coordination

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1.Introduction

Purpose: Recent research suggests stroboscopic vision training may enhance some aspects of vision perception and attention (Appelbaum et al., 2012). The present study investigated whether a stroboscopic training intervention could improve Eye-Hand Coordination (EHC) performance using the Sport Vision Trainer (SVT™).

2. Aims

1. To determine the effects of an acute acquisition period of exposure to stroboscopic training on a discreet EHC protocol.
2. To establish if any gains could be identified in an alternative Visual Search (VS) task measuring visual cognitive abilities in terms of speed and accuracy.

3. Method

EHC training was completed in two conditions; Strobe (SG) vs Control (CG) using a between-participants experimental design.

Participants: Sixteen sports participants (age 20±4.4 years) were assigned to either a SG n=8 (5 male, 3 female) or a CG n=8 (5 male, 3 female) with ability matched across groups, all gave written informed consent and the study was approved by the local ethics committee.

Procedure: Following a vision and baseline (BL) EHC assessment on the SVT™ 80 sensor pad, the SG completed four x 2.5 min training acquisition trials wearing Nike Vapor Stroboscopic eyewear® (set to level 3, 100 ms clear, 150 ms opaque), whilst CG trained without. Post-training retention tests (RT) were administered immediately (Imm), 10-min, and 7-days after training. A VS task was completed prior to training and after 7-days to identify any transfer effects.

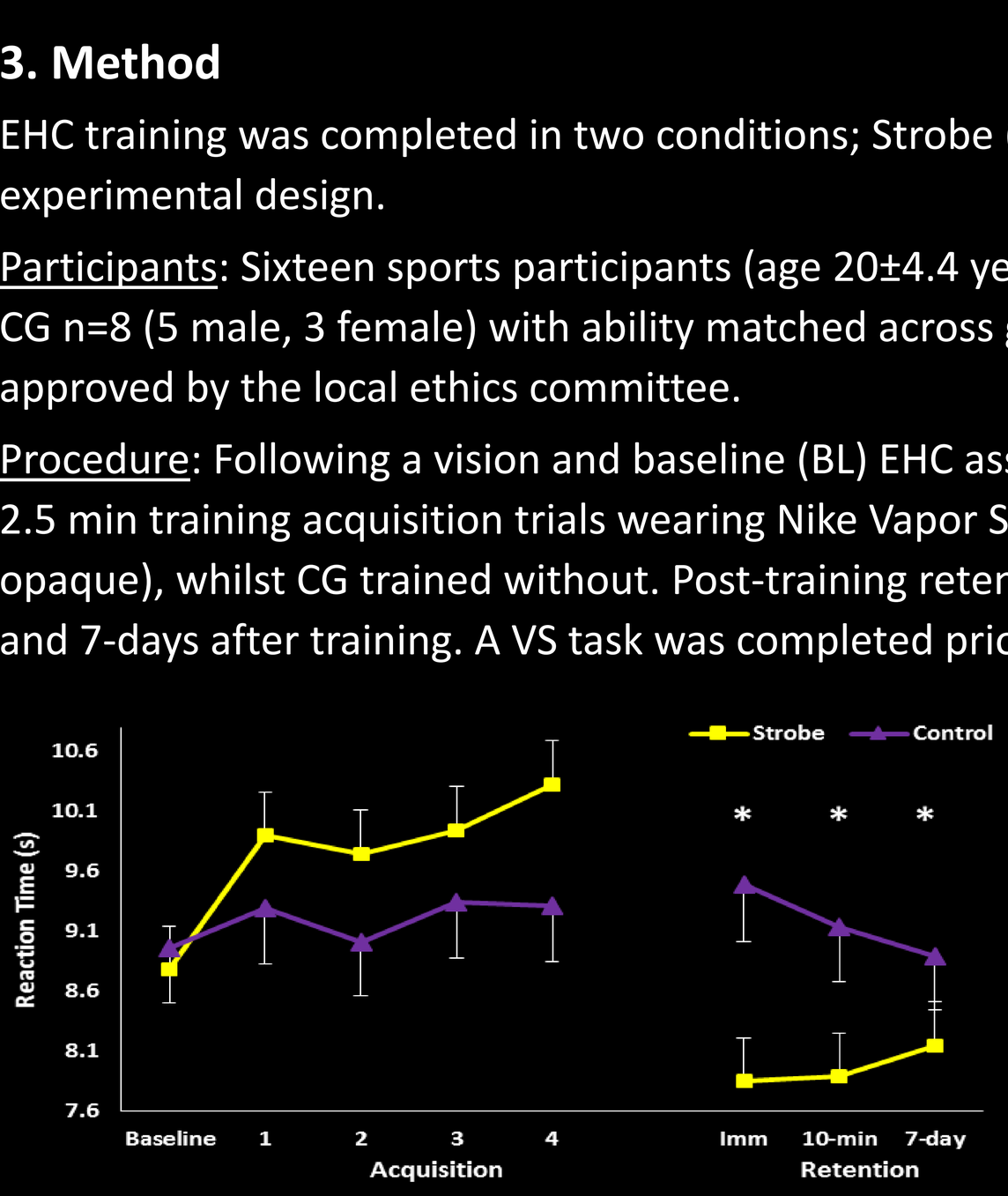

Figure 1: Mean Performance on SVT™
***Indicates significant difference ($p < 0.05$).**

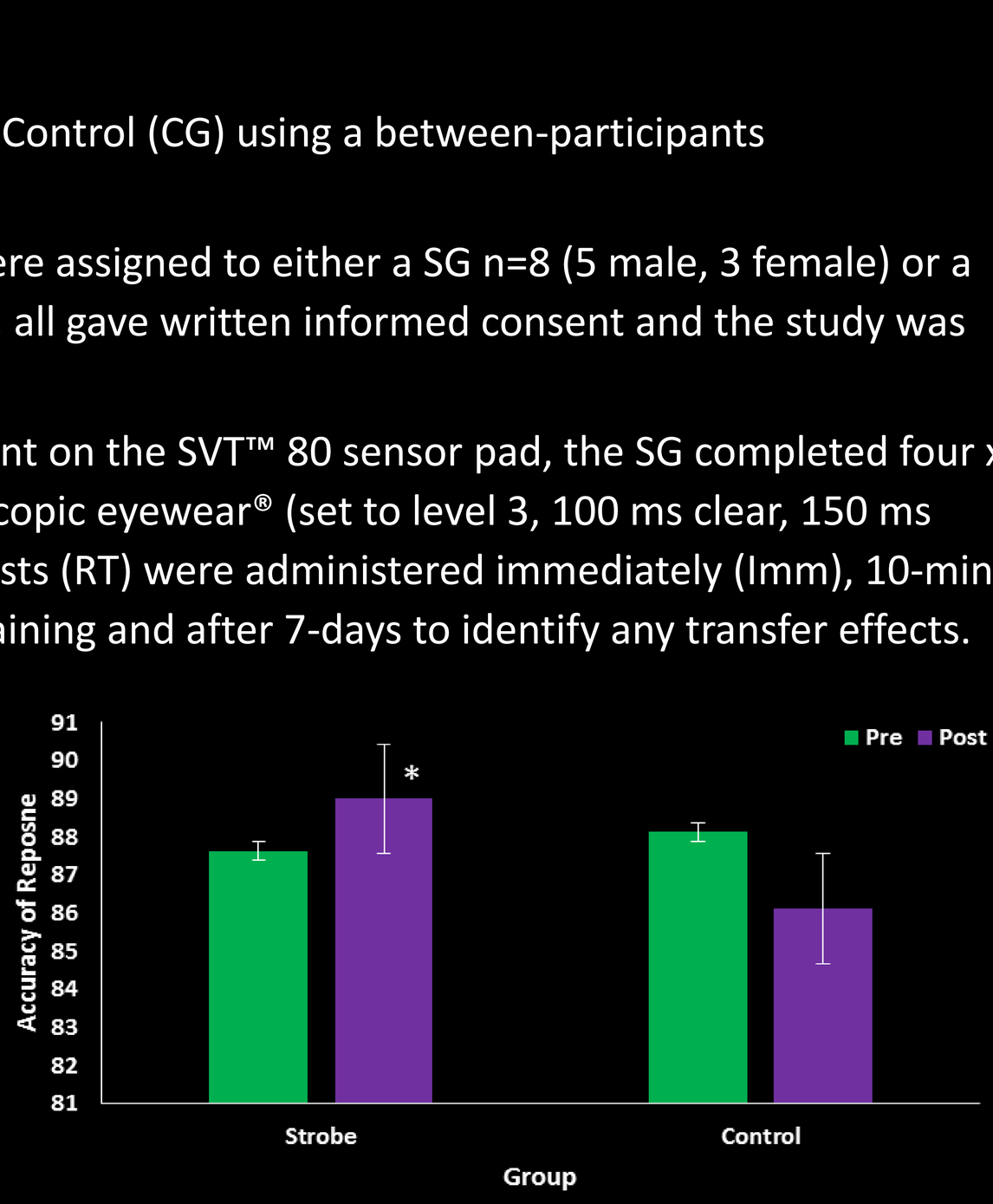

Figure 2: Mean accuracy of response for VS task
***Indicates significant difference ($p < 0.05$).**

4. Results

A 2 (Group) x 3 (Time) RM ANOVA indicated main effect for Group. The SG performed significantly ($p < 0.05$) quicker in all three RT versus the CG: Immediate (0.97s quicker compared to 0.43s slower than BL), 10-min (0.97s compared to -0.15s), and 7-day (0.55s compared to -0.11s) respectively (Fig 1). Significant differences were observed between groups in the VS accuracy of response task (Fig 2).

5. Conclusion

A short EHC training session using stroboscopic glasses supports previous research proposing improvements in certain characteristics of vision perception (Mitroff et al., 2013). Future research should explore these mechanisms further using different exposure times, frequencies, and focused identification of training drills as a complementary EHC intervention.

6. References

Appelbaum, L., Cain, M., Schroeder, J., Darling, E. and Mitroff, S. (2012) Stroboscopic Visual Training Improves Information Encoding in Short-Term Memory. *Attention, Perception, & Psychophysics,* 74(8) 1681-1691.

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