

# **Learning Effect with Repeated Use of the Dynavision™ D2: Visual-Motor Evaluation**

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**PURPOSE:** Recently a light-training reaction device has been developed to enhance sensory motor integration with the purpose of improving athletic performance. It has also been suggested that this system can serve as an evaluation tool for concussions and visual-field deficits that can provide information for a team's medical staff on issues related to return to play. However, in these circumstances it becomes critical to determine how many trials are needed to achieve a true baseline measure. Thus, the purpose of this study was to examine the effect of repeated trials on performance improvements using the Dynavision™ D2 reaction device.

**METHODS:** Twenty-one female division I college athletes (10 basketball and 11 volleyball) performed hand-eye reaction time tests of peripheral vision (PV), peripheral vision with number recall (PVNR), and visual-reaction (VR) on the Dynavision D2 (Dynavision, Ontario Canada). The PV and PVNR tests measured accuracy (hits) in reacting to light stimuli for one minute duration. The VR measured time in reacting to 5 separate visual stimuli with the dominant and non-dominant hands. Each volunteer completed four trials of each test. Differences between subsequent trials were analyzed with one-way repeated measures ANOVA.

**RESULTS:** Significant improvements in PV were seen between T1 ( $69.3 \pm 7.8$  hits) and T2 ( $77.3 \pm 12.5$  hits). No other significant differences were noted between testing sessions. Similarly, significant improvements were noted in PVNR between T1 ( $55.5 \pm 11.1$  hits) and T2 ( $65.6 \pm 10.9$  hits), but no additional improvements ( $p > 0.05$ ) were seen in subsequent testing sessions. No significant differences between trials were observed for VR in visual reaction time in dominant ( $0.40 \pm 0.07$  s) or non-dominant hands ( $0.41 \pm 0.10$  s), or in motor reaction time in dominant ( $0.37 \pm 0.14$  s) or non-dominant hands ( $0.38 \pm 0.13$  s).

**CONCLUSION:** Results indicate that competitive athletes should perform two trials to achieve baseline performance measures in PV or PVNR. In addition, both visual and motor reaction time does appear to be consistent with each testing trial, suggesting that there is a limited learning effect in VR observed during consecutive testing trials when assessing competitive athletes.