



of the American Alliance for Health, Physical Education, Recreation and Dance

## AAHPERD RESEARCH GRANT PROGRAM AWARD 2005

### **Quantifying Movement Deficits in Children with Dyslexia Before and After Practice of a Motor Coordination Task**

**INVESTIGATORS** Nancy Getchell & Samuel Mackenzie, University of Delaware  
Jeanne Geddes-Key, The College School

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#### **ABSTRACT**

Although rarely the focus of research or remediation, motor coordination deficits evident in dyslexic individuals may affect their performance in physical education, sports, and activities of daily living (Nicolson & Fawcett, 1994). This study examined the intra- and inter-limb coordination characteristics of dyslexic and typically-developing children between the ages of 7–12 years during a dual motor task (DMT) performance to determine the effects of short-term practice on dual motor task performance when an auditory pacing signal (metronome) was provided.

Fifty-five children participated (22 typically developing, 33 dyslexic) and were instructed to clap while walking with no cues or instructions for three trials before completing four blocks of four trials where they clapped and walked to a metronome signal set at their preferred walking frequency. Finally, they performed the dual motor task again with no metronome signal. Inter-limb measures were mean relative phase (MRP) between limb girdles, and standard deviation of MRP (VRP). Intra-limb measures were period of clap and of step (PS, PC), and standard deviation of clap and step period (SDS, SDC). These measures were compared using a multivariate analysis of variance with age as the covariate.

There were no significant differences in any dependent measures between the groups prior to the intervention. Practice did result in changes, but did not affect the groups differently. In the intra-limb measures, there were significant differences in PS and PC between the first trial and all other trials; participants in both groups decreased PC and PH (e.g. increased frequency) in the first practice block and maintained the higher frequency in the post test. For the TD group, SDS decreased over the practice trials, but increased in the post test. For the dyslexic group, SDS continually declined over the course of the experiment.

Statistically, the short term training did not lead to differences in inter-limb coordination, but several possible explanations for this make it difficult to determine if no differences exist or if those differences are masked. Variability within each group was large. Also, the dyslexic group was involved in intensive physical education programming within their school (3–5 days a week), which may have improved their coordination. Future studies should make use of narrower age bands, different grouping variables (e.g. score on MABC), and a longer intervention period.

**For further information** on the AAHPERD Research Grant Program,  
contact the Research Consortium office at [research@aahtperd.org](mailto:research@aahtperd.org) / (703)476-3415