



The effect of Dual task training on cognitive and metacognitive function of children with Developmental Coordination Disorder

Oral Presentation

1Robabeh Rostami*; 2Ayoub Hashemi

1Department of Physical Education, Faculty of Education and Psychology, Shiraz University, Shiraz, Iran
(rostami@shirazu.ac.ir)

2Department of motor behavior, Faculty of physical education & sport science, University of Tehran, Tehran, Iran

Abstract

Introduction: Motor experiences are very important early in a child's life; because in childhood, the basics of movement are being formed. The purpose of this study was to evaluate the effectiveness of dual-task training on cognitive and metacognitive function in children with developmental coordination disorder (DCD).

Methods: The method of the present study was quasi-experimental with a pre-test design with a control group. The statistical population of the present study included male students with DCD in Shiraz. 45 male students with DCD were selected by the multi-stage cluster sampling method and randomly divided into three groups of dual-task training (n=15), single-task training (n=15), and control (n=15). Developmental Coordination Disorder Questionnaire (DCDQ7), Raven Intelligence Test, and Movement Assessment Battery for Children (MABC-2) were used to screen children, and the Cognitive Assessment System and Metacognitive Questionnaires for Children were used to measure dependent variables. The experimental groups performed the selected training program with different conditions for eight weeks and three sessions of 40 minutes per week. Paired t-test and analysis of covariance were used to analyze the data.

Results: The results showed that in the post-test stage, cognitive and metacognitive performance in the dual-task training group was better than both single-task training and control group ($P < 0.05$). and also, the single-task group had better performance compared to the control group in cognitive and metacognitive ($P < 0.05$).

Conclusion: Simultaneous use of motor and cognitive interventions is more effective in improving the cognitive and metacognitive performance of children with DCD. Therefore, it is recommended to use this training method in planning physical activity classes for these children.

Keywords

Dual task; single task; cognitive function; metacognition; Developmental Coordination Disorder (DCD)

Reference:

1. American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: American Psychiatric Association.
2. Jane, J. Y., Burnett, A. F., & Sit, C. H. (2018). Motor skill interventions in children with developmental coordination disorder: a systematic review and meta-analysis. Archives of physical medicine and rehabilitation, 99(10), 2076-2099.
3. Jelsma, L. D., Geuze, R. H., Fuermaier, A. B. M., Tucha, O., & Smits-Engelsman, B. C. M. (2021). Effect of dual tasking on a dynamic balance task in children with and without DCD. Human movement science, 79, 102859.
4. Schott, N. (2019). Dual-Task Performance in Developmental Coordination Disorder (DCD): Understanding Trade-offs and Their Implications for Training. Current Developmental Disorders Reports, 6(2), 87-101.
5. Schott, N., & Klotzbier, T. (2017). The motor-cognitive connection: Indicator of future developmental success in children and adolescents?. Physical Activity and Educational Achievement, 111-129.