



## The Effect of Transcranial Direct Current Stimulation (tDCS) and Playing-Based Exercises on Sensory-Motor Functions in Children with Developmental Coordination Disorder (DCD)

### Poster Presentation

1Ali Moghadamzadeh; 2Mahmoud Sheikh; 2Foad Niknasab\*

1Department of Psychology, Faculty of Psychology and Educational Sciences, University of Tehran, Tehran, Iran

2Department of Motor Development, Faculty of Sport Sciences, University of Tehran, Tehran, Iran

(foad\_niknasab@yahoo.com)

### Abstract

**Introduction:** The purpose of the current research is to investigate the effect of transcranial direct current stimulation and playing-based exercises on sensory-motor functions in children with developmental coordination disorder (DCD).

**Methods:** The research method is semi-experimental, with pre-test and post-test designs. For this purpose, 36 children (8 to 12 years of age) were selected using screening tests (Developmental Coordination Disorder Questionnaire, IQ)(Moradi, et al, 2018). After completing Conner neuropsychological testing questionnaire as the pre-test, they were randomly divided into three groups of 12: tDCS, Playing-Based Exercises, and control groups. Then the experimental groups underwent Transcranial Direct Current Stimulation (8 sessions and 3 sessions per week) (Bahrami, et al, 2020) and playing-based exercises (36 sessions and 3 sessions per week) (Shoja & Ghasemi, 2019), while the control group did their usual activities in their life. afterward, the post-test was performed to evaluate Sensory-Motor functions between the three groups. Shapiro Wilk test was used to check the normality and t-test and analysis of covariance were run to determine intra-group and inter-group differences, respectively.

**Results:** The findings of this research showed that Transcranial Direct Current Stimulation and Playing-Based Exercises have a significant impact on increasing the Sensory-Motor Functions in Children with Developmental Coordination Disorder. In fact, the results showed that there is a significant difference between pre-test and post-test scores in the two experimental groups. However, no significant difference was observed between the mean scores of pre-tests and post-test in the control group. The findings showed that there is a significant difference between the two experimental groups with different interferences. Also, the tDCS group has a greater effect than the Playing-Based Exercises on further improvement in Sensory-Motor Functions.

**Conclusion:** The results indicated that Transcranial Direct Current Stimulation and Playing-Based Exercises can be considered as useful intervention techniques to improve Sensory-Motor Functions in children with DCD.

### Keywords

Transcranial Direct Current Stimulation; Playing-Based Exercises; Sensory-Motor Functions; Developmental Coordination Disorder

### Reference:

1. Bahrami, S., MOUSAVI SADATI, S., & Daneshjoo, A. (2020). Effect of Transcranial Direct Current Stimulation and Selected Exercises on Balance in Children with Developmental Coordination Disorder.
2. Moradi, H., Sohrabi, M., Taheri, H., & Dehghanizade, J. (2018). Effect of Different Levels of Contextual Interference of Training (Blocked and Random Practice) on Sensory-Motor Functions in Children with Developmental Coordination Disorder (DCD).
3. Shoja, M., & Ghasemi, A. (2019). The effect of playing-based exercises on weight, body mass index, and fat percentage of overweight children with developmental coordination disorder. *Iranian Journal of Health Education and Health Promotion*, 7(3), 274-284.