

## Effectiveness of Medication and Non-Medication Therapy on Working Memory of Children with Attention Deficit and Hyperactivity Disorder

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**Abstract :** Background: Working memory includes the capability to keep and manipulate information in a short period of time. This capability is the basis of complicated judgments and has been attended to as the specific and constant character of individuals. Children with attention deficit and hyperactivity are among the people suffering from deficiency in the active memory, and this deficiency has been attributed to the problem of frontal lobe. This study utilizes a new approach with suitable tasks and methods for training active memory and assessment of the effects of the trainings. Participants: The children participating in this study were of 7-15 year age, who were diagnosed by the psychiatrist and psychologist as hyperactive and attention deficit based on DSM-IV criteria. The intervention group was consisted of 8 boys and 6 girls with the average age of 11 years and standard deviation of 2, and the control group was consisted of 2 girls and 5 boys with an average age of 11.4 and standard deviation of 3. Three children in the test group and two in the control group were under medicinal therapy. Results: Working memory training meaningfully improved the performance in not-trained areas as visual-spatial working memory as well as the performance in Raven progressive tests which are a perfect example of non-verbal, complicated reasoning tasks. In addition, motional activities - measured based on the number of head movements during computerized measuring program - was meaningfully reduced in the medication group. The results of the second test showed that training similar exercise to teenagers and adults results in the improvement of cognition functions, as in hyperactive people. Discussion: The results of this study showed that the performance of working memory is improved through training, and these trainings are extended and generalized in other areas of cognition functions not receiving any training. Trainings resulted in the improvement of performance in the tasks related to prefrontal. They had also a positive and meaningful impact on the moving activities of hyperactive children.

**Keywords :** attention deficit hyperactivity disorder, working memory, non-medical treatment, children

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