



**EFFECTS OF WORKING MEMORY TRAINING ON DEPRESSIVE SYMPTOMS AND FRONTAL ALPHA  
ASYMMETRY: A PILOT STUDY**

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Goal: To assess the effects of working memory training (WMT) on depressive symptoms and frontal alpha asymmetry of young adults with moderate-severe depression.

Methods: 30 participants were randomly allocated to the WMT or control groups. Two subjects dropped out and one participant was excluded from EEG analysis. The WMT group completed 5 sessions of automatically adjusted n-back training (starting from 2-back) and the control group only performed 1-back trials. Main outcome measures were self-reported depressive symptoms and frontal alpha asymmetry (pre- and post-training).

Results: There was a significant time\*group interaction for self-reported depression ( $p = .047$ ,  $\eta_p^2 = .144$ ) and F4-F3 alpha asymmetry ( $p = .043$ ,  $\eta_p^2 = .153$ ). *Post-hoc* analysis revealed significant improvements in depression on the WMT group ( $p < .001$ ) and non-significant findings regarding F4-F3 alpha asymmetry. There was no significant interaction for F8-F7 alpha asymmetry ( $p = .115$ ,  $\eta_p^2 = .096$ ).

Conclusion: WMT may be an effective tool to reduce depressive symptoms. Frontal alpha asymmetry should be explored as a neurophysiological outcome measure of cognitive training efficacy.

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