

Background: Cognitive training (CT) during TMS may synergistically increase neural plasticity and improve depression outcomes. The objective of this study was to test whether TMS with CT would significantly improve clinical outcomes compared to TMS without CT.

Methods: Depression patients were offered CT (with BrainHQ) during TMS. Standard TMS was used (120% of motor threshold, left dorsolateral prefrontal cortex), with 5 sessions/week for 6 weeks. CT was done with every TMS session in the TMS+CT cohort. Standardized rating scales (QIDS, PHQ-9, HAM-D) were done, and remission and response rates were assessed in the TMS+CT cohort and a comparison group that got TMS only. We also calculated the changes in QIDS score after the TMS course in both groups.

Results: In the TMS+CT group, 5/9 (56%) remitted, and in the TMS only group, 30/45 remitted (67%): Chi-Square=0.406, p=0.52. In the TMS+CT group, 7/9 had either remission or response (78%), while 38/45 had either remission or response (84%) in the TMS only group: Chi-Square=3.33, p=0.068. The mean difference between QIDS score after TMS+CT vs. before treatment was 9.71; in the TMS only group, the mean difference in QIDS scores was 10.4: F=0.069, p=0.79.

Conclusions: The addition of cognitive training to TMS did not improve depression outcomes in a community setting compared to TMS alone. While there are theoretical reasons why TMS+CT may be synergistic at a neural level, we did not find evidence that this combination improved real-world depression outcomes.

Conflicts of Interests: None to Report

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