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A Longitudinal Analysis of BCAT® Working Memory Exercises for Community Patients: Preliminary Outcomes and Recommendations for Sustaining Cognitive Health

Background: Brain health is a multibillion-dollar industry. Despite often extravagant claims for the efficacy of cognitive exercises, there is a paucity of evidence that cognitive exercises sustain or improve cognitive functioning over time. Because cognitive functioning in general, and working memory in particular, are highly correlated with abilities to successfully perform complex activities of daily living, exercises that improve cognition would be at a high premium. There is ample evidence demonstrating that BCAT® working memory exercises improve cognition and IADL performance for people with mild cognitive impairment and mild stage dementia. However, most of these studies have focused on short-term efficacy. To address longer time horizons, the current study investigated cognitive functioning at 6-month and 12-month intervals after initial evaluation.

Purpose: Determine if prescribed working memory exercises (WME) sustain or improve cognitive functioning in patients with MCI and mild stage dementia over time. In this 4X4 design, two groups with a diagnosis of MCI and two groups with a diagnosis of mild stage dementia were compared at 6-month and 12-month intervals. The "treatment" groups used BCAT® working memory exercises, either with a brain health coach or independently, while the "control" group did not participate in a cognitive exercise program.

Participants: Community-dwelling older adults (N = 60, mean age=80) with MCI or mild stage dementia seen in the National Brain Health Center (Columbia, Maryland, USA). All participants were administered the BCAT® foundational test at three times: initial, at 6 months, and at 12 months). The treatment group participants were prescribed working memory exercises by a brain health coach. The control group participants did not participate in working memory exercises.

WME interventions: *Digital Working Memory Exercises* and the *Working Memory Exercise Book* are well-researched evidence-based programs. They target attention and working memory through a range of computerized and hard copy workbook tasks, respectively.

Key findings: Means, SD, t-tests, ANOVA

- For the MCI WME group, cognitive health improved over the 12-month period.
- For the MCI no-WME group, cognitive health decreased over the 12-month period.
- For the dementia WME group, small gains in cognitive health were achieved.
- For the dementia no-WME group, cognitive health significantly deteriorated.
- **MCI and mild stage dementia participants who engaged in WME at least three times per week demonstrated meaningfully higher BCAT® scores at 6-months and 12-months**.

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Table 1 & Figure 1: MCI Group Comparisons

MCI Group	Initial BCAT® Test Score	BCAT® Test Score: 6-month	BCAT® Test Score: 12-month
Participated in WME exercises	39	41	**41**
No cognitive exercises	39	36	**35**

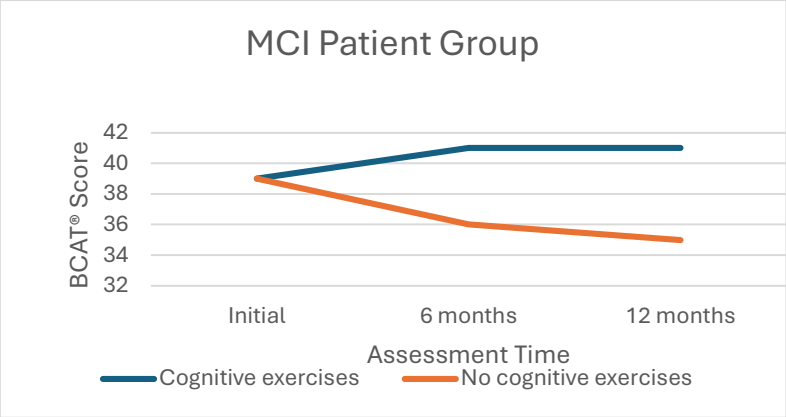
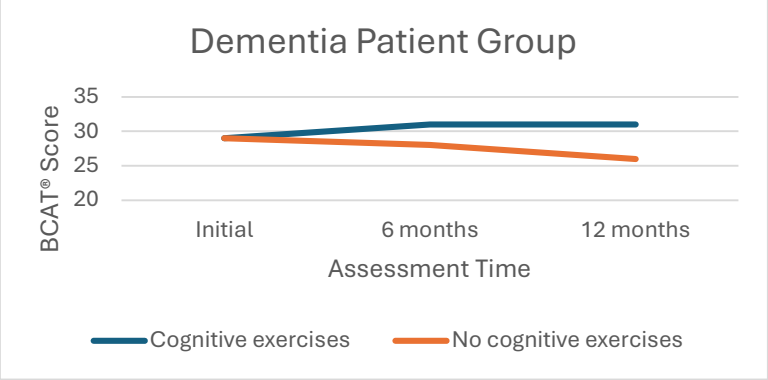


Table 2 & Figure 1: Mild Stage Dementia Group Comparisons

Dementia Group	Initial BCAT® Test Score	BCAT® Test Score: 6-months	BCAT® Test Score: 12-months
Participated in WME Exercises	29	31	**31**
No WME Exercises	29	28	**26**



Impact: This study demonstrates that clinicians should routinely prescribe working memory exercises for patients with MCI and mild stage dementia after active treatment. The study underscores the importance of a cognitive home exercise program that has empirical evidence for its efficacy. In the study, participants who participated in these exercises scored 5-6 points higher in their BCAT® test scores after one year.

For more information on the BCAT® Approach, please contact: **info@thebcat.com**