

BACKGROUND

- Moderate-to-vigorous intensity physical activity (MVPA) is a modifiable lifestyle factor that supports brain health and lowers risk of Alzheimer disease and related dementias (AD/ADRD).
- Few studies have examined how MVPA across adulthood is associated with cognitive function and AD-related plasma biomarkers in midlife.

Objective: Examine associations of MVPA from young adulthood through midlife and MVPA at late midlife with cognitive performance and AD-related plasma biomarkers in late midlife.

METHODS

Study Cohort

- Coronary Artery Risk Development in Young Adults (CARDIA) study, n= 1,356 (57.8% female, 45.4% Black) enrolled at one of four U.S. clinical centers in 1985-86
- Mean baseline age = 25.1 years and followed for 35 years (through 2020-22)

MVPA Exposure

- Measured using the validated CARDIA Physical Activity History
- Young adult to midlife MVPA- Age-based time-weighted average of repeated MVPA assessments (in exercise units) from baseline through Year 30 (assessed every ~2-5 years)
- Late midlife MVPA- MVPA assessed at the Year 35 in-person exam

Brain Health Outcomes at Year 35

- Cognitive function- Digit Symbol Substitution Test (DSST), Rey-Auditory Verbal Learning Test (RAVLT), Stroop Test, Montreal Cognitive Assessment (MoCA), and verbal fluency test.
- AD-related Plasma Biomarkers- amyloid- β 42/amyloid- β 40 ratio (A β 42/40), phosphorylated tau-217 (p-tau217), neurofilament light chain (NfL), and glial fibrillary acidic protein (GFAP)

Statistical Analysis

- Analyses included CARDIA participants with ≥ 2 PA assessments from Years 0-30 with ≥ 1 cognitive outcome at Year 35 and ≥ 1 biomarker outcome at Year 35
- Young adult to midlife MVPA and Year 35 MVPA exposures were categorized into tertiles (low, moderate, or high MVPA)
- Linear regression used to examine associations with cognitive and biomarker outcomes
- Cognitive models adjusted for: age, sex, race, and education
- Biomarker models additionally adjusted for: Year 35 eGFR

CORRESPONDENCE

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RESULTS

Young Adult to Midlife MVPA

Figure 1. Higher young adult to midlife MVPA was associated with better performance on DSST, MoCA, and Verbal Fluency

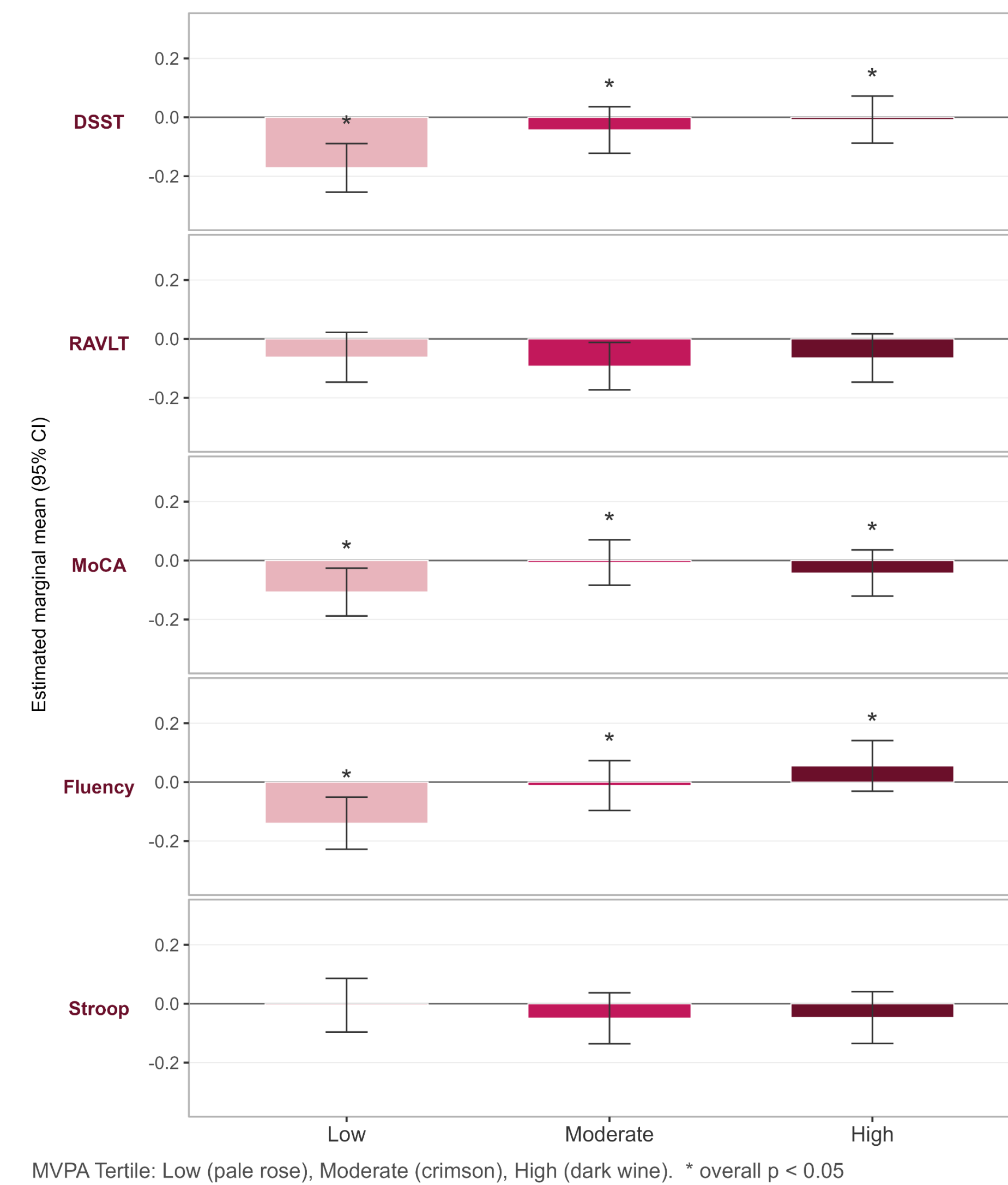
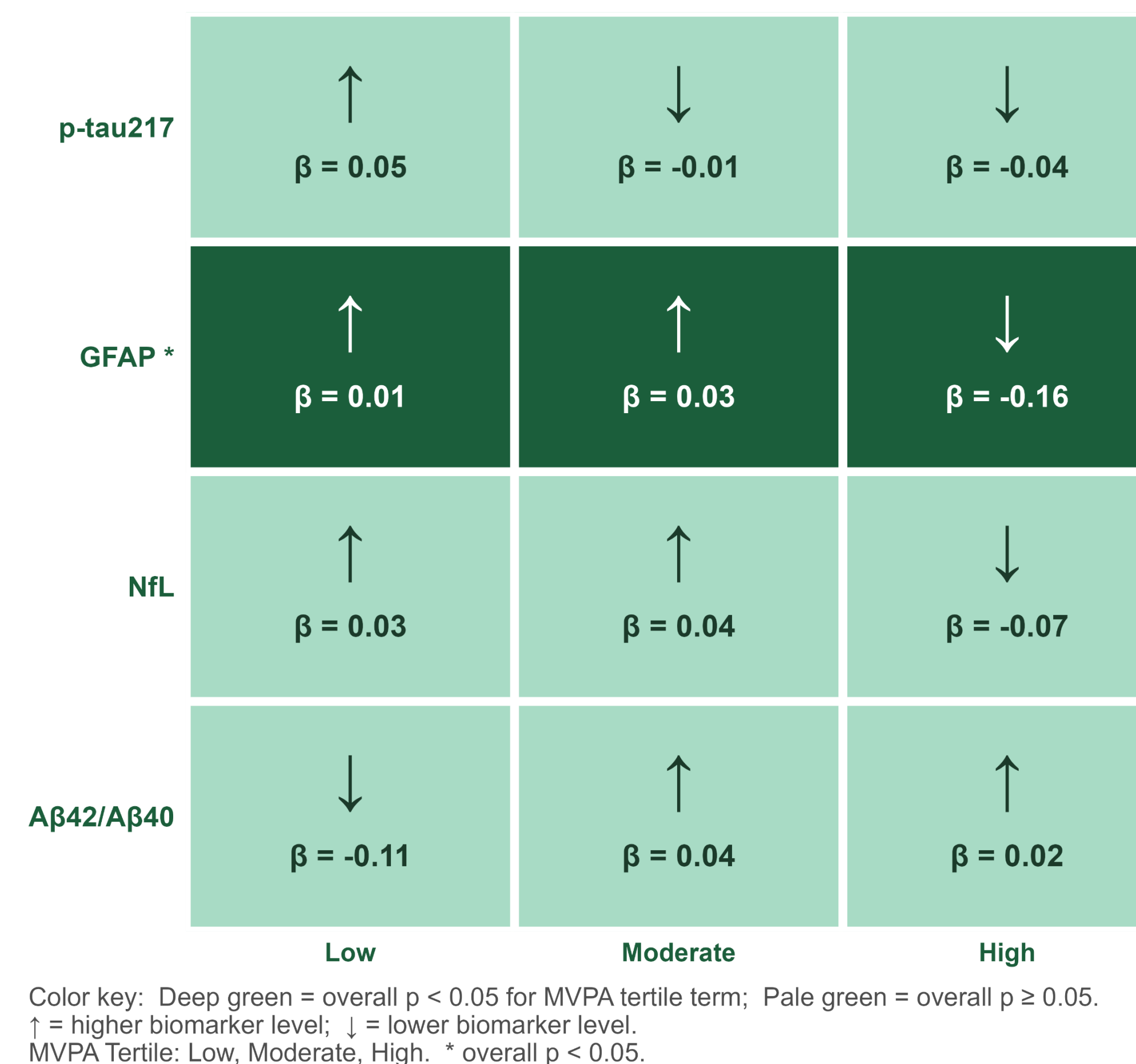


Figure 2. Higher young adult to midlife MVPA was associated with lower GFAP levels



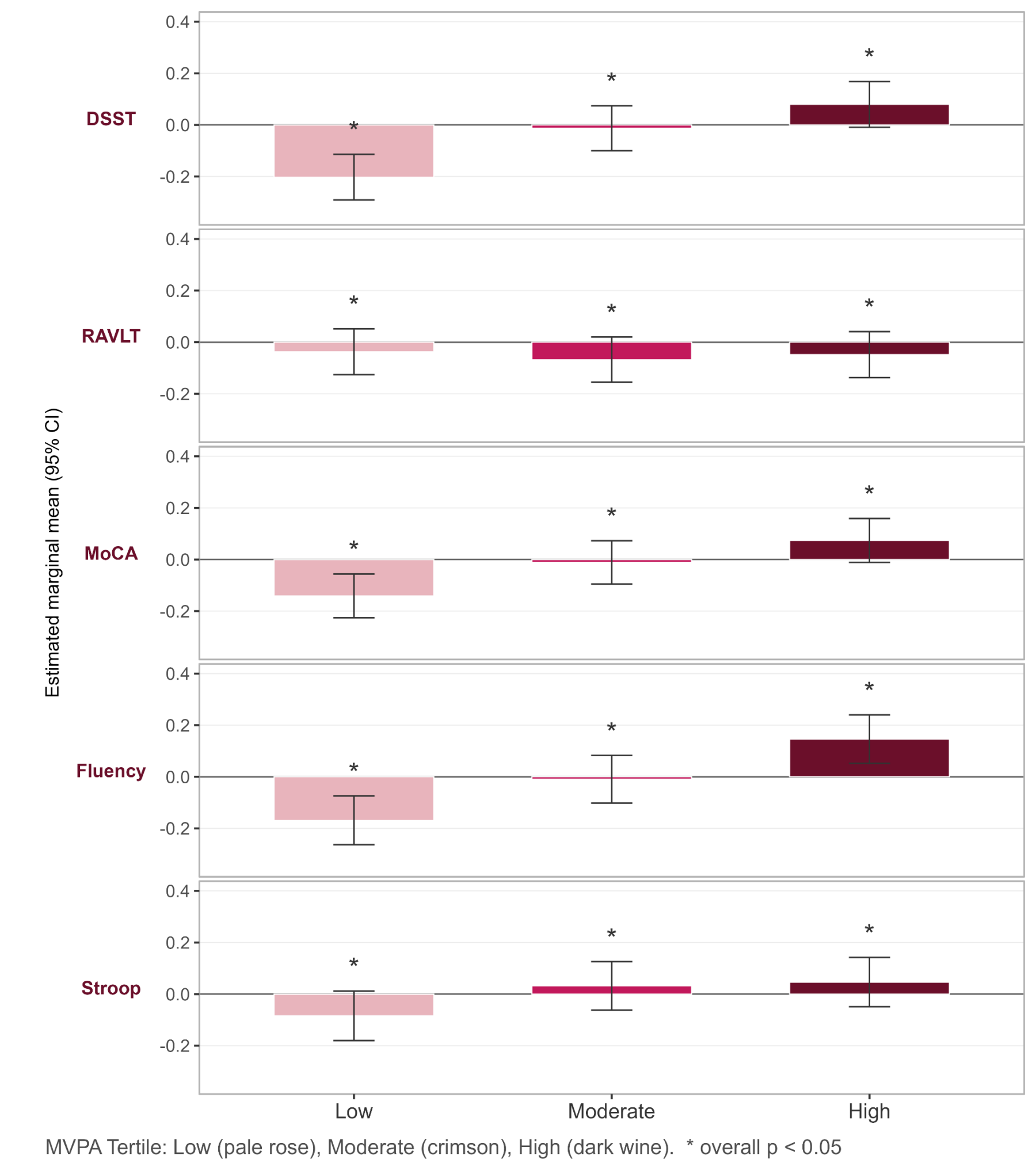
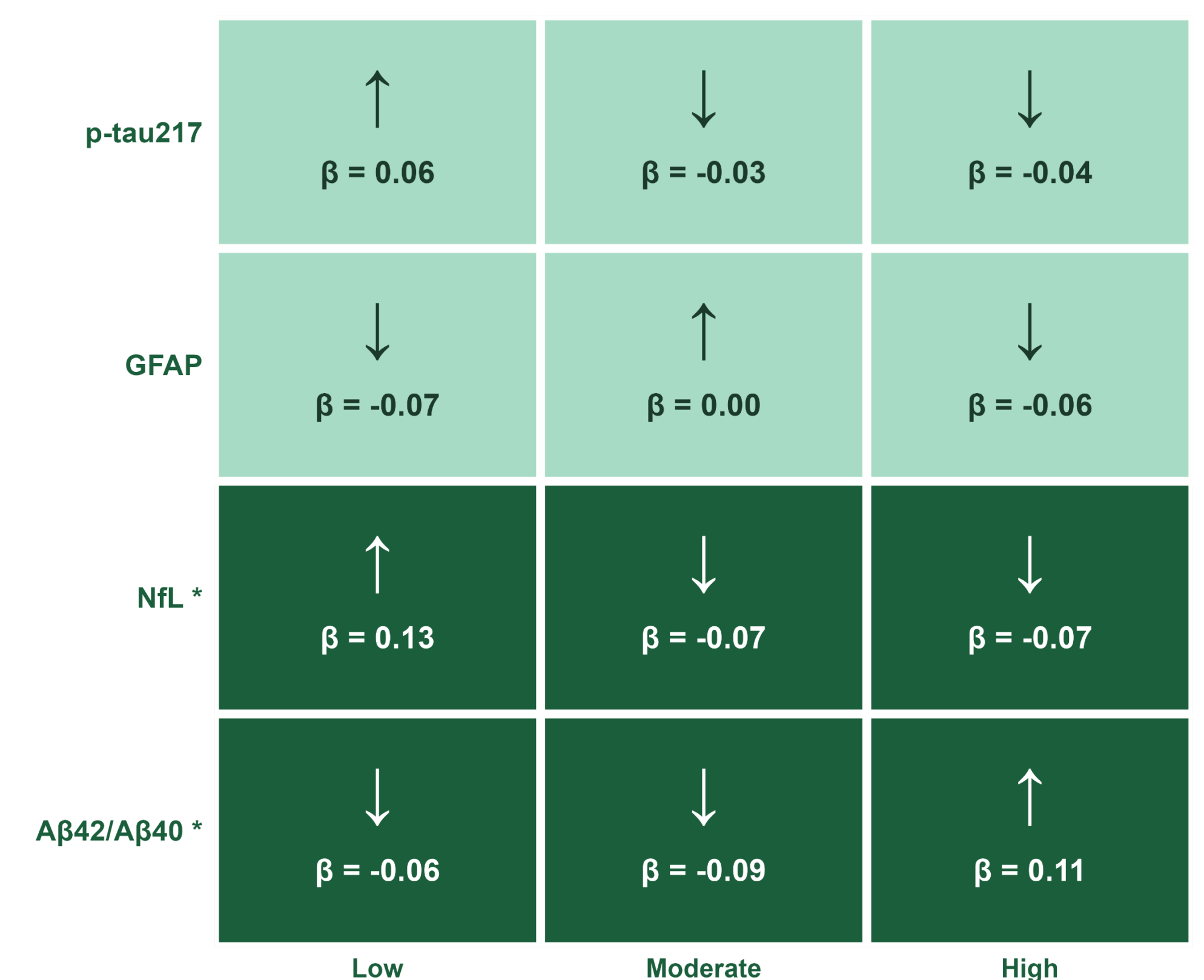
Physical Activity Tracking Across Adulthood

Young adult to midlife MVPA was moderately correlated with late-midlife MVPA ($r=0.53$, $p<.001$).

RESULTS

Late Midlife MVPA

Figure 3. Higher late midlife MVPA was associated with better performance across all cognitive tests

Figure 4. Higher late midlife MVPA was associated with more favourable levels of A β 42/40 and NfL

CONCLUSIONS

- Higher MVPA from young adulthood to midlife was associated with higher midlife cognition in several domains.
- Midlife findings support the importance of concurrent MVPA.
- Findings support MVPA across adulthood as a potential strategy for promoting brain health.