

Exploring the Association Between the Timing of Sleep and Cognition in Older Adults

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BACKGROUND:

- Individuals diagnosed with Alzheimer’s disease often exhibit disrupted circadian rhythms including sleep disturbances.
- Less research has examined circadian rhythm disruption as a potential modifiable risk factor for Alzheimer’s disease particularly during the presymptomatic stage.
- Modification of sleep timing and consistency may represent potential approaches for stabilizing circadian rhythms.

Aim: The present study examined the relationship between actigraphy-derived circadian measures and cognitive performance in older adults.

METHODS:

- Participants:**
- 54 older adults (mean age = 69.78; 46.3% female).
 - Recruited from the Brain Resilience Study.

- Procedure:**
- Participants wore actigraphy watches for 14 days and completed online or paper sleep diaries.
 - Following the 14 days, participants completed in-person cognitive assessments including the Montreal Cognitive Assessment (MoCA).

- Measures:**
- Midpoint sleep is the halfway point between bed and waketime and is a measure of sleep timing.
 - Interdaily stability is a measure of circadian rhythm consistency.

RESULTS:

- Midpoint sleep time was not significantly associated with MoCA scores.
- Interdaily stability was not significantly associated with MoCA scores.
- No significant difference in midpoint sleep time between healthy and at-risk groups.
- Females showed significantly higher interdaily stability compared to males.

Figure 1.

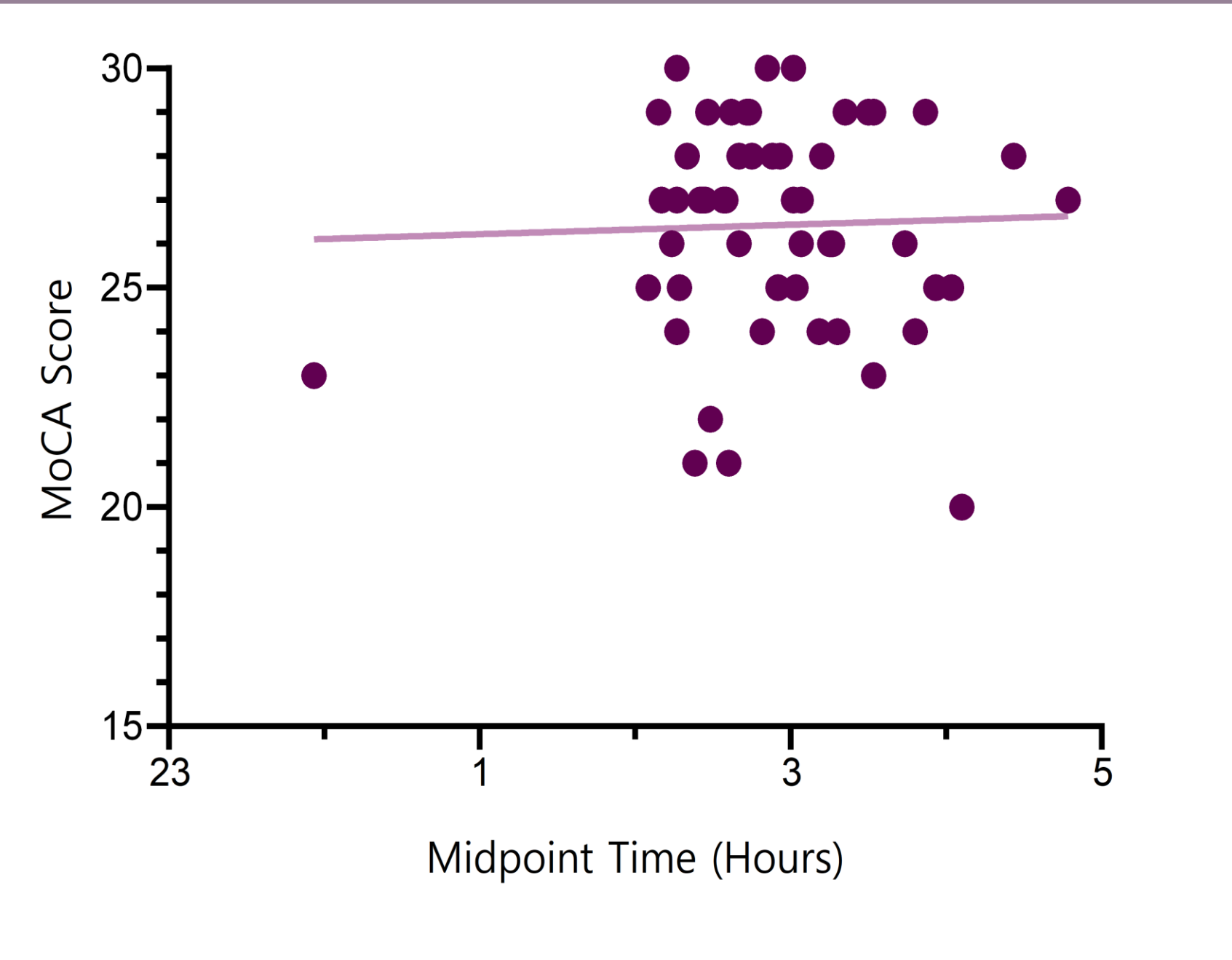


Figure 1. No significant relationship between midpoint sleep time and MoCA scores. ($r = -0.02873$, $p = 0.8366$)

Figure 2.

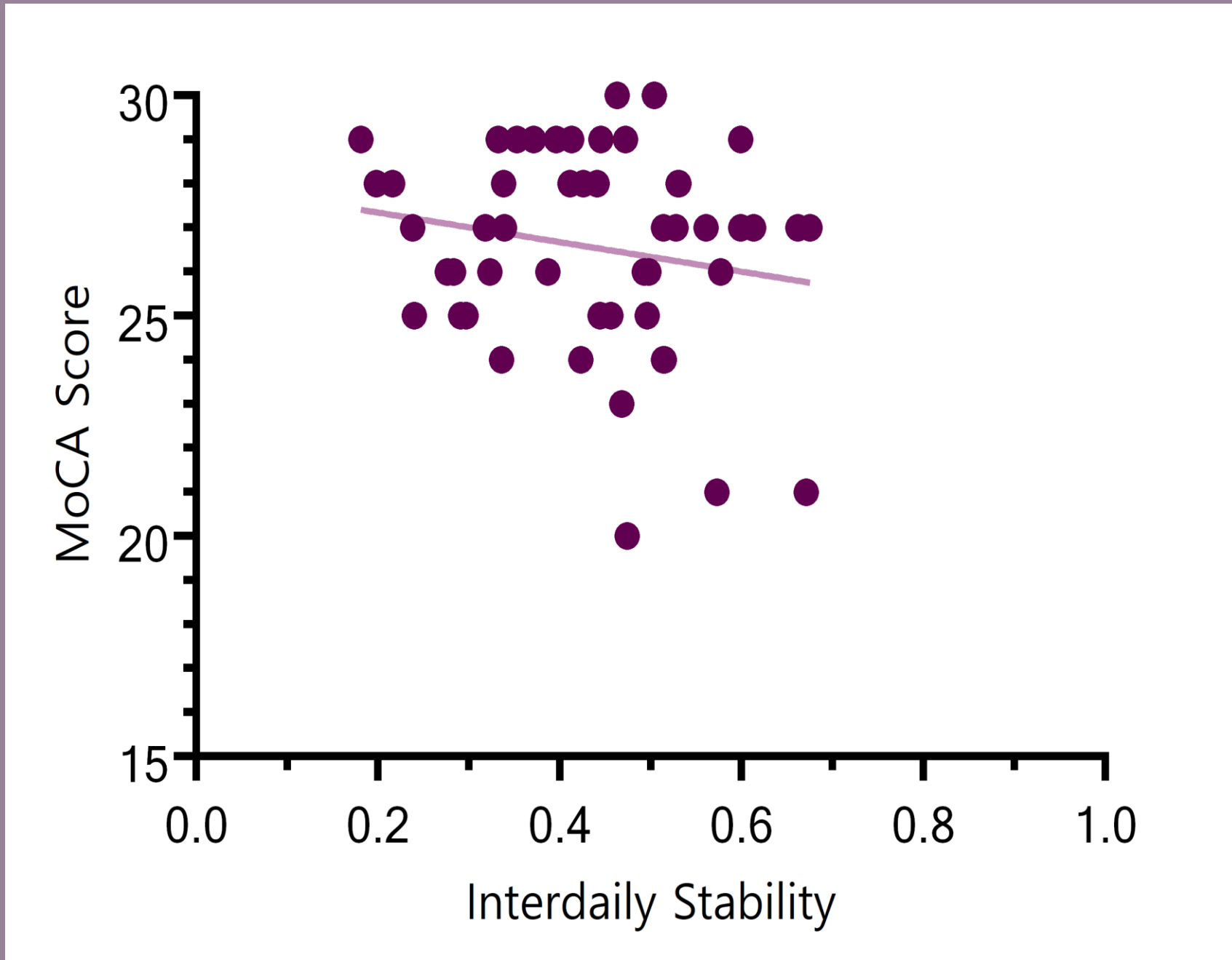


Figure 2. No significant relationship between interdaily stability and MoCA scores. ($r = -0.1195$, $p = 0.4086$)

Figure 3.

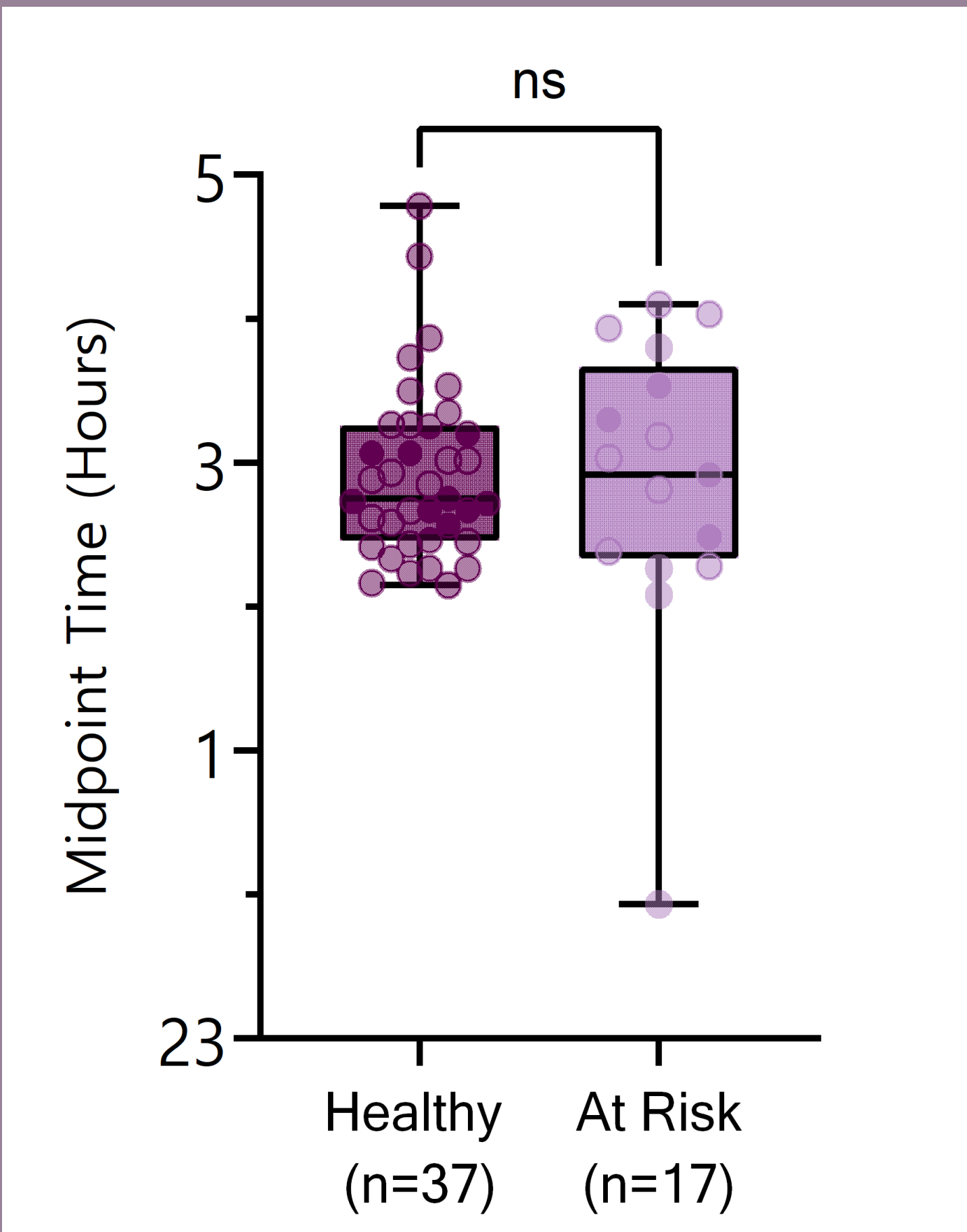


Figure 3. No significant difference in midpoint time for healthy group (MoCA score ≥ 26) and at-risk group (MoCA score < 26). ($p = 0.7998$)

Figure 4.

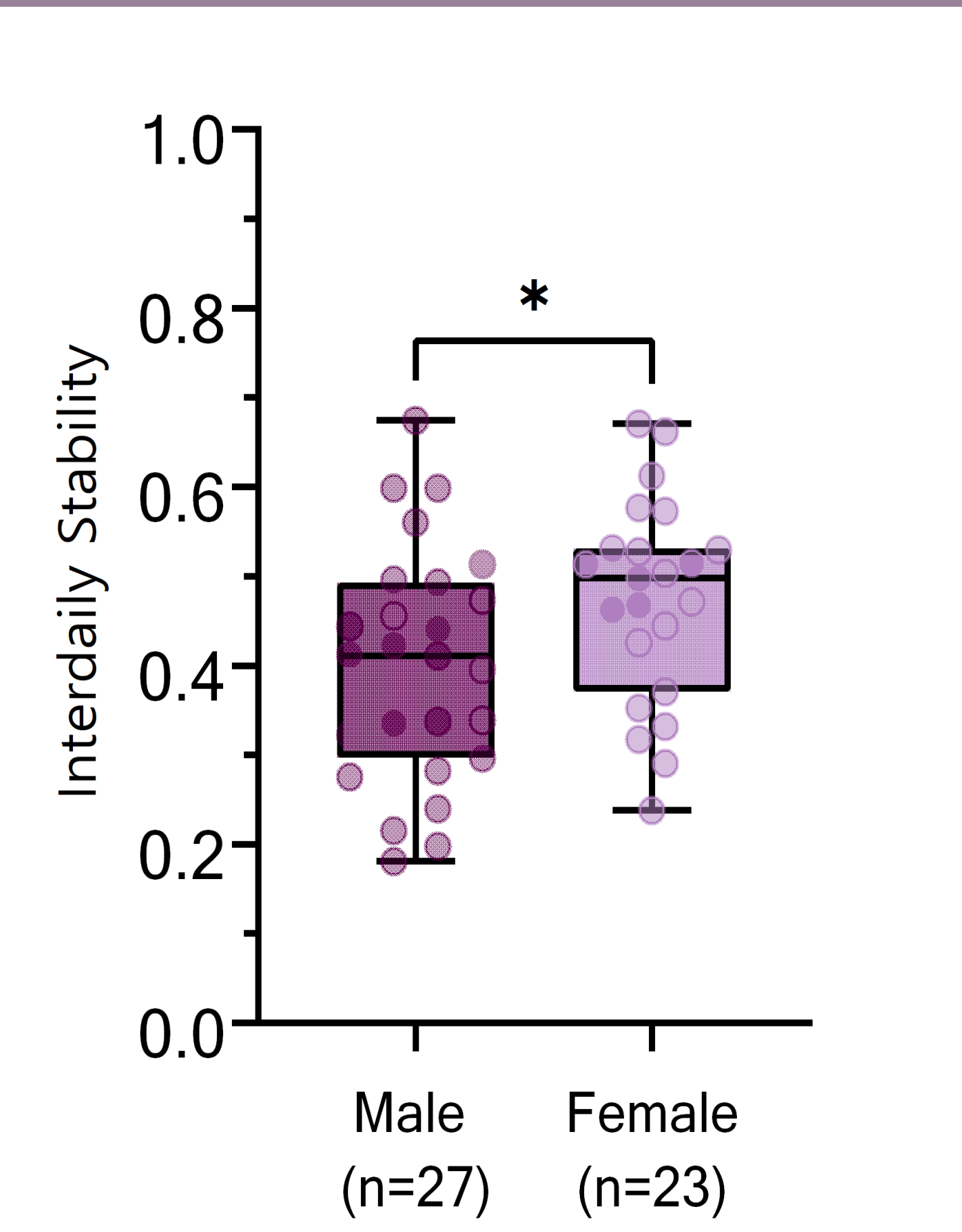


Figure 4. Significant difference in interdaily stability between males and females. ($p = 0.0386$)

DISCUSSION:

- Sleep timing and circadian rhythm consistency were not associated with cognitive performance in this sample.
- Results may reflect limited sample size, early cognitive risk, limited MoCA score variability, or little variation in sleep timing and rhythm consistency.
- Interestingly, females exhibited higher interdaily stability compared to males suggesting potential sex differences in circadian rhythm stability.

FUTURE DIRECTIONS:

- Conduct additional analyses examining other circadian rhythm measures including acrophase and amplitude.
- Compare circadian measure outputs across actigraphy software to validate results.
- Investigate relationship between participant self-reported sleep data with objective actigraphy data.
- Examine whether baseline measures predict changes in cognitive performance in future follow-up assessments.

REFERENCES:

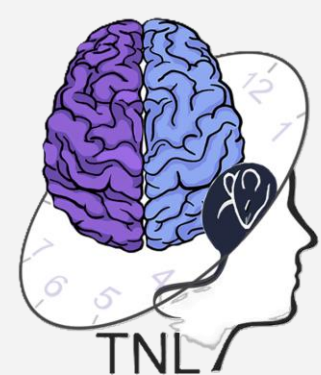
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