

Correlating blood-based biomarkers of Alzheimer’s Disease with Multiple Motor Assessments: Implications for Disease Specificity



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Introduction

Motor assessments may be sensitive to cognitive and functional impairments associated with Alzheimer’s disease (AD), as well as disease pathology.

A novel functional fine motor test has been linked to AD pathology, but its association with AD biomarkers relative to other motor assessments remains unclear.

Purpose and Hypothesis

Understand the extent to which gait speed, grip strength, and the functional fine motor test are associated with amyloid and tau pathology in asymptomatic older adults.

We **hypothesize** that the functional fine motor test will have more associations with amyloid and tau pathology than gait speed and grip strength.

Methods

	Longevity (N=43)
Age (yrs)	82.84 ± 6.48
Education (yrs)	15.84 ± 1.40
Sex (M/F)	12/31
Gait Speed (m/s) – 10M Walk	3.14 ± 0.81
Grip strength (lbs) – Avg of L and R Maximum	34.30 ± 13.93
Functional Fine Motor Test – Avg Trial Time (s)	80.88 ± 15.47

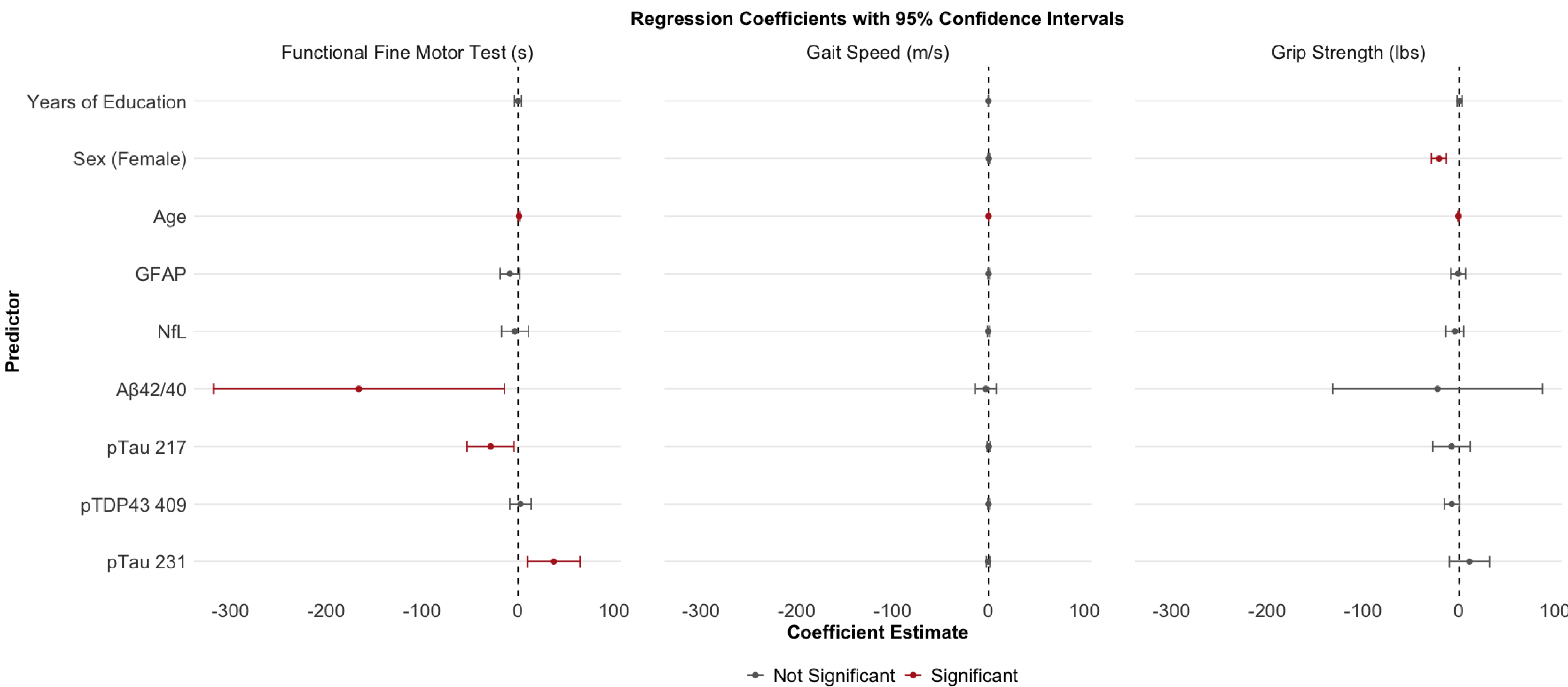
Functional Fine Motor Test: Using their non-dominant hand, participants transferred two raw kidney beans at a time with a spoon from a central cup to three distal cups in a prescribed sequence. Once the central cup is empty, that constitutes one trial. Four trials were completed, and average trial time was calculated.



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Statistical Analysis: Regression models adjusted for age and sex were used to examine associations between motor measures, PBT, and blood-based biomarkers.

Results



Functional Fine Motor Test and AD Pathology: Worse (higher) functional fine motor test scores were associated with higher levels of p-tau 217, p-tau 231, and Aβ 42/40 ($p < 0.05$). Neither gait speed nor grip strength were significantly related with amyloid or tau biomarkers.

Take Home Message

Taken together with prior work, the functional fine motor test may be more sensitive and specific to AD pathology in cognitively unimpaired older adults, supporting its potential as an early biomarker of AD.



See QR code for key studies on the functional fine motor test

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