

Introduction

Chronic kidney disease (CKD) increases the risk of poor physical function, which affects transplant suitability and self-management. Routine functional assessments are underutilized in CKD care and validating remote and patient-reported outcome measures (PROMs) could improve access and implementation.

Objectives:

- Determine if there is a difference between in-person assessors (INPA) and remote assessors (RA) for physical function performance tests
- Determine if there is difference between hand grip strength (HGS) scores between the Jamar dynamometer (the gold standard) and a digital dynamometer
- Evaluate the association between PROMIS 20a and physical function performance tests

	CKD stage 1-3a (N= 8)	CKD stage 3b-5 (N= 8)
Age, mean (SD)	65 (15.2)	69.9 (19.9)
Female sex, N (%)	4 (50%)	3 (37.50%)
Male sex, N (%)	4 (50%)	5 (62.50%)
Race		
Black, N (%)	4 (50%)	7 (87.50%)
White, N (%)	4 (50%)	1 (12.50%)
Education Level		
High school graduate, N (%)	0	2 (25%)
Some college or specialized training, N (%)	2 (28.57%)	3 (37.50%)
College or university graduate, N (%)	5 (71.43%)	3 (37.50%)

Methods

Participants completed self-report surveys and physical function tests in two clinic visits 2-4 weeks apart. Physical function was assessed using hand grip strength with digital and Jamar dynamometers, timed-up and go (TUG), and 6-meter gait speed tests. Validity was evaluated using Bland-Altman plots with 95% limits of agreement (LOA) for device and remote/in-person comparison and Pearson correlations for PROMIS 20a.

Results

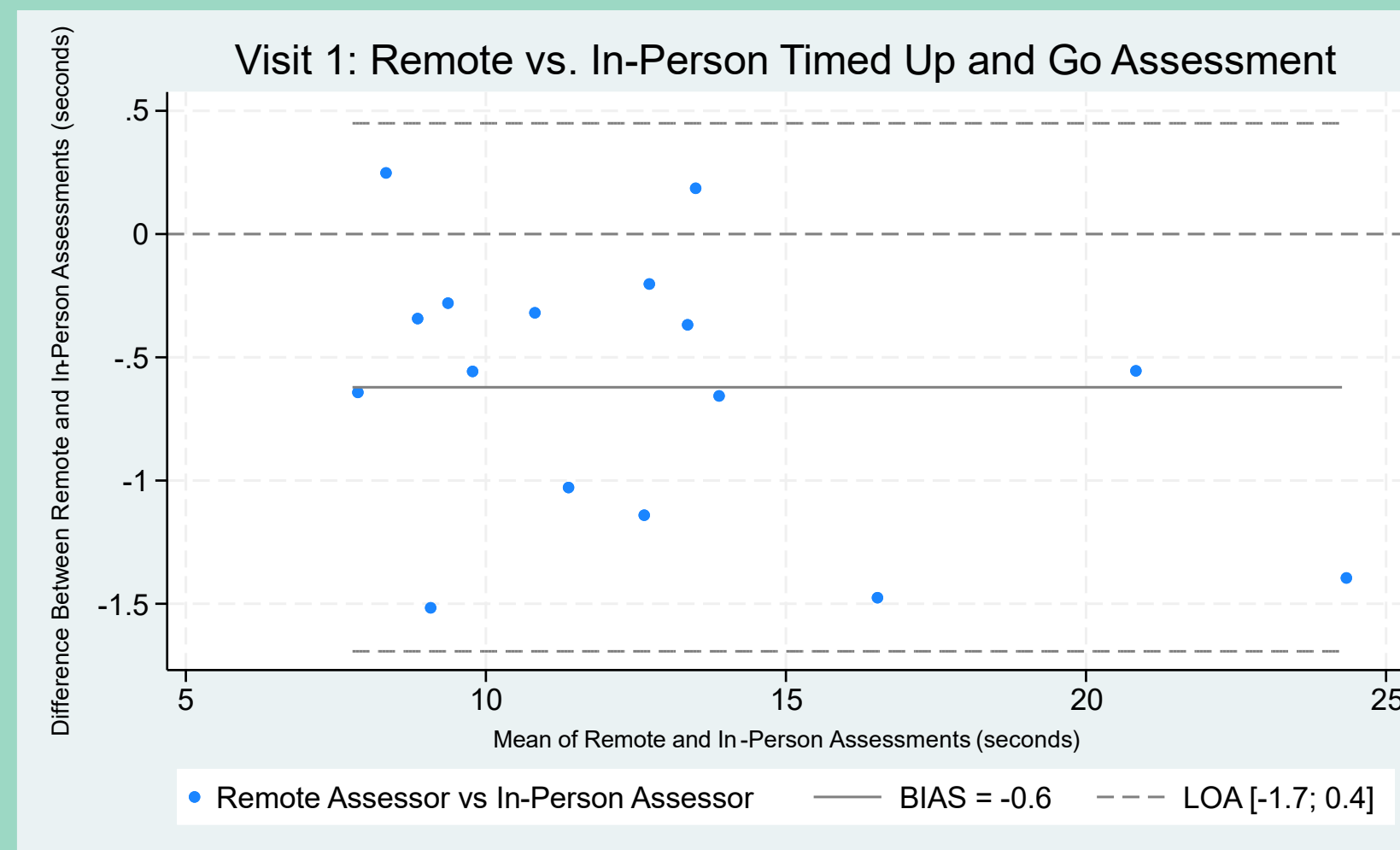


Figure 1

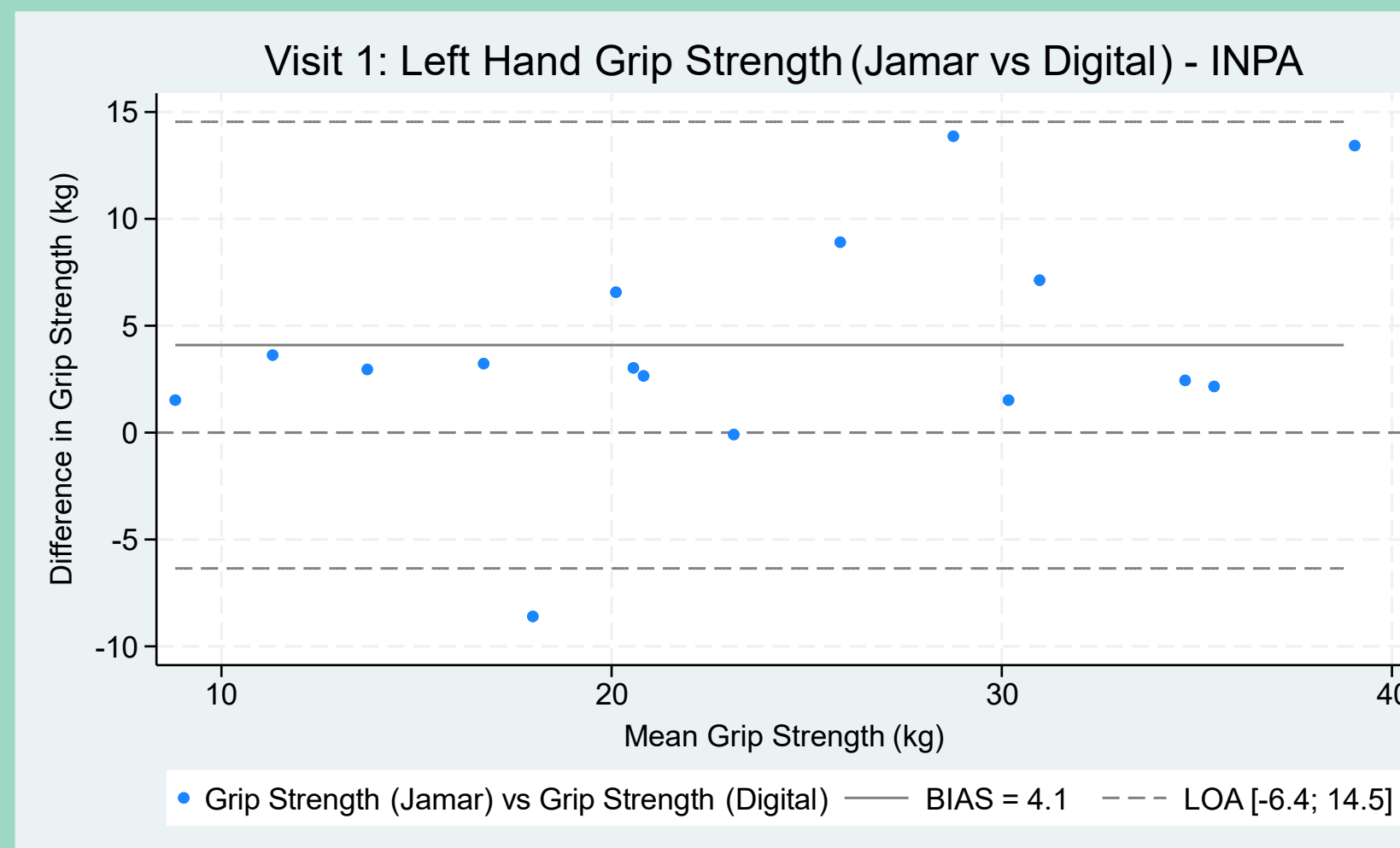


Figure 2

Remote assessments showed consistent overestimation in Visit 1 and Visit 2 for TUG (for Visit 1, see Figure 1) and gait speed [Visit 1: bias = -0.7; 95% CI (-1.18, -0.31); LOA [-2.4; 0.9]] tests compared to in-person assessments.

The digital device consistently provided lower hand grip strength measurements than the Jamar device for both Visit 1 (for left hand, see Figure 2) [right hand bias = 3.6; 95% CI (1.34, 5.84); LOA [-4.7; 11.9]] and Visit 2.

Moderate to strong negative correlations were observed between PROMIS 20a t-scores and gait speed (see Figure 3) and TUG test values (Visit 1: $r = -0.53$; $p = 0.0328$).

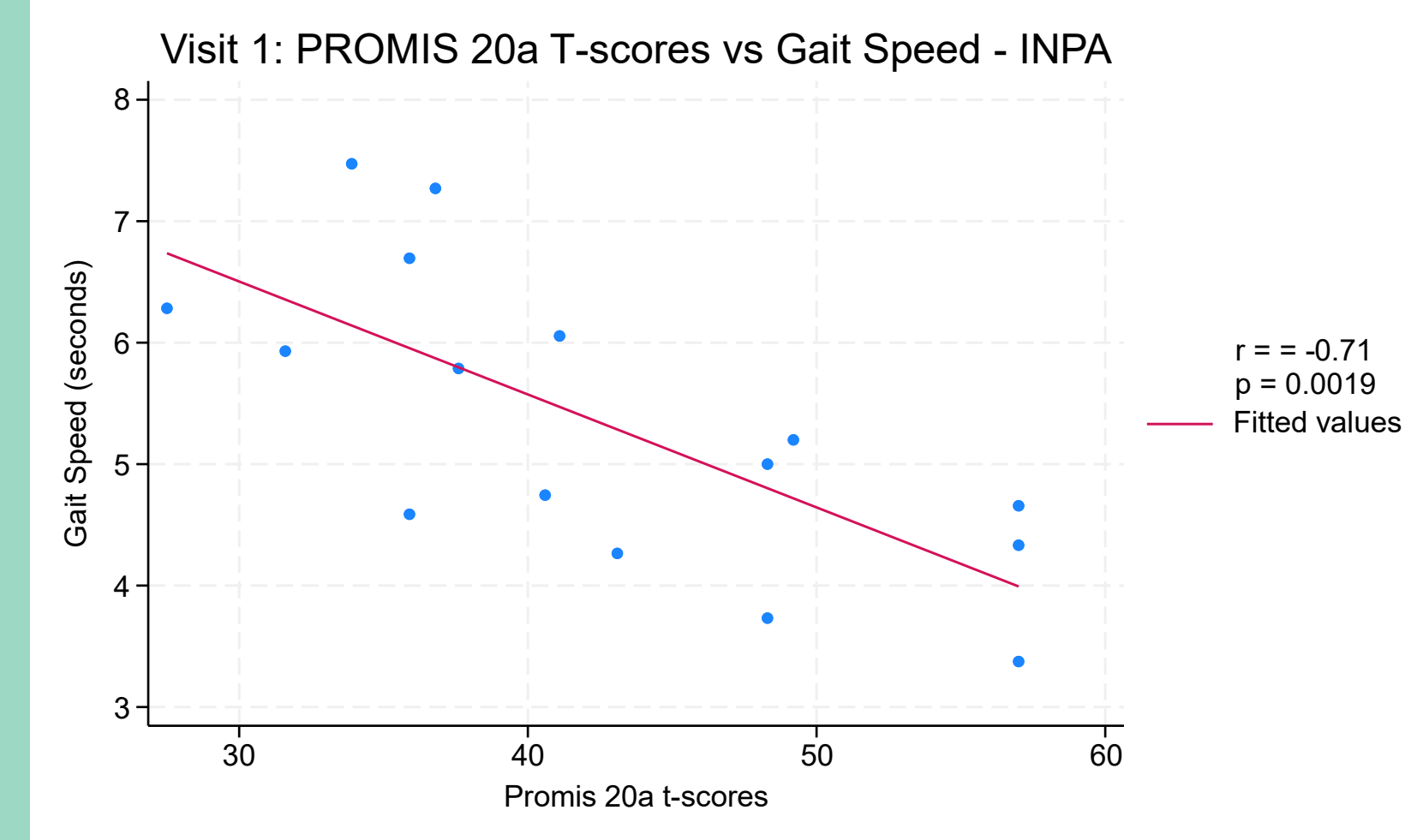


Figure 3

Conclusion

- There is excellent agreement of remote and in-person measures of TUG times.
- The digital dynamometer was found to consistently produce lower values than Jamar.
- Findings suggest that PROMIS 20a is closely correlated with gait speed, an objective physical function test.

Future Directions

Future studies could include the exploration of a correction factor for usage of the digital dynamometer and evaluating how well PROMIS 20a t-scores predict clinical outcomes compared to objective measures (i.e. gait speed).

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