How Well Do Clinical Walking Measures Predict Natural Walking Behavior in People With Parkinson disease?

PRESENTER: **James T. Cavanaugh PT, PhD**
University of New England

INTRODUCTION

- Declines in the amount and intensity of natural walking behavior in people with PD may precede declines in motor behavior, gait and balance.
- Yet clinicians may be more likely to rely on quick performance measures of walking speed, capacity, and balance to make inferences about walking health, rather than employ direct measures of natural walking behavior.

METHODS

- Baseline assessment for prospective clinical trial.
- 58 participants with PD:
  - 34 Male / 24 Female
  - 67.7 ± 8.0 years
  - H&Y 2.0-3.0

Modus Health LLC
Edmonds, WA

- Clinical Measures:
  - Walking speed (*10MWT,* 10m Walk Test, m/s)
  - Walking distance (*6MWT,* 6 Minute Walk Test, m)
  - Dynamic balance (*MBT,* Mini-BESTest, total score)
- Natural Walking Behavior: Step Activity Monitor x 7 days
  - Amount (mean daily steps, #)
  - Moderate Intensity (mean daily minutes of ≥ 100 steps, #)
- Post-hoc sub groups:
  - More active (≥7.5K daily steps; n = 26)
  - Less active (<7.5K daily steps; n = 32)

RESULTS

Descriptives $\bar{X}$(SD)	Full Sample	More Active	Less Active
10 MWT (m/s)	1.15 (0.23)	1.2 (0.24)	1.1 (0.20)
6MWT (m)	447.6 (98.5)	484.0 (76.3)	418.0 (105.4)
MBT (score)	19.0 (3.6)	19.9 (2.9)	18.3 (3.9)
Steps	7,666 (3843)	10,723 (3502)	5,183 (1751)
Mod-intensity Minutes	7.4 (9.6)	12.1 (11.6)	3.6 (5.2)

Relationships Between Clinical & Walking Behavior Measures*

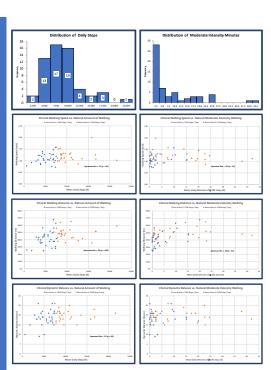|	10MWT	6MWT	MBT
Steps			
Full sample	.27 (.04)	.38 (.003)	.22 (.09)
More active	-.18 (.37)	-.06 (.77)	-.09 (.66)
Less active	.19 (.29)	.28 (.12)	.20 (.28)
Mod-intensity Minutes			
Full sample	.20 (.14)	.49 (<.01)	.13 (.35)
More active	-.25 (.21)	.18 (.39)	.01 (.96)
Less active	.30 (.10)	.48 (.006)	.07 (.70)

*Spearman's rho (p value)

Clinicians should be **cautious** when using clinical measures to make inferences about **Natural Walking Behavior** in people with Parkinson disease.

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DISCUSSION

- 55.2% of the sample accumulated < 7,500 steps / day.
- Only two participants achieved recommended levels of moderate intensity physical activity via walking behavior.
- Clinical walking measures appear to be relatively poor candidates for predicting the amount or intensity of natural walking behavior.
  - Only some participants with relatively robust walking speed, capacity, or balance were more active.
  - Only some participants with relatively diminished walking speed, capacity, or balance were less active.
  - The 6MWT appeared to show potential as a modest predictor of walking behavior – especially the walking intensity of relatively less active individuals.

Washington University in St. Louis
SCHOOL OF MEDICINE
Physical Therapy

BOSTON UNIVERSITY

UNE
UNIVERSITY OF NEW ENGLAND

Authors: James T. Cavanaugh, Cristina Colon-Semenza, Tami DeAngelis, Ryan P. Duncan, Daniel Fulford, Martha Hessler, Michael LaValley, Timothy Nordahl, Lisa Quintiliani, Kerri S. Rawson, Marie Saint-Hilaire, Cathi A. Thomas, Jenna A. Zajac, Gammon M. Earhart, Terry D. Ellis

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Updated (n = 58) version of abstract submission