

Configurations of the Six-Minute Walk Test in People with Parkinson Disease: Do the number of turns matter?

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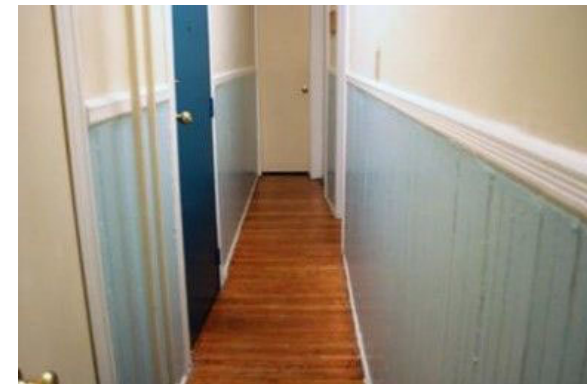
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Disclosures

- Dr. Russo has no financial relationship or conflict of interest to disclose
- Dr. Kuettel has no financial relationship or conflict of interest to disclose
- Dr. McIsaac has no financial relationship or conflict of interest to disclose

Background

- Presentation of Parkinson's Disease (PD) includes impaired gait, decreased balance, and cognitive deficits.
- PD can also lead to the phenomenon of freezing of gait (FoG) or festination of stepping which can limit activities and restrict participation.
- FoG can be triggered by various environments



Nieuwboer, A., & Giladi, N. (2013) *Mov Disord* 28(11):1509-19.
ATS Board Statement (2002) *Am J Respir Crit Care Med* 166:11-117.

Background

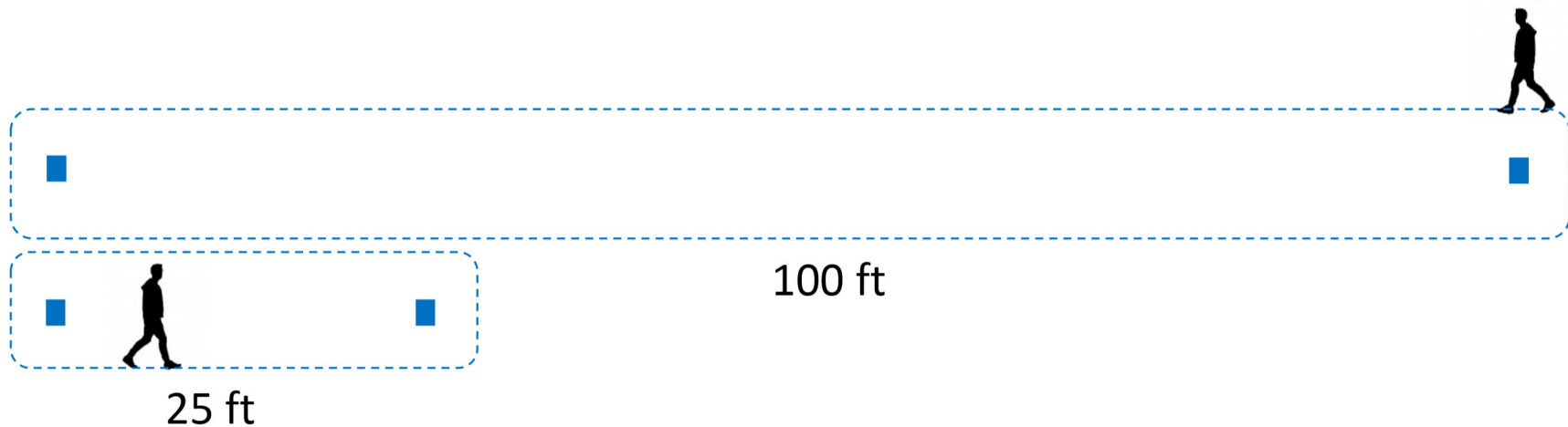
- The 6 Minute Walk Test (6MWT) is a valid and reliable outcome measure to assess walking endurance.
 - Chronic Progressive Conditions:
 - Evidence Quality = I; Recommendation Strength = Strong
 - Test-Retest Reliability in PD (ICC of 0.96)
 - Minimal Detectable Change (MDC) for individuals with PD of 82 meters
- Many clinicians and clinics are constrained in space when administering the 6MWT



Moore et al. (2018) *JNPT* 42(3):174-220; Steffen T & Seney M (2008) *Phys Ther*; 88(6):733-746
ATS Board Statement (2002) *Am J Respir Crit Care Med* 166:11-117.

Aims of Current Study

- To determine if the configuration of the 6MWT (25 feet vs 100 feet) matters in distance walked for individuals with PD.
- Determine if FoG has an effect on distance covered during a 6MWT.



ATS Statement: Guidelines for the Six-Minute Walk Test

THIS OFFICIAL STATEMENT OF THE AMERICAN THORACIC SOCIETY WAS APPROVED BY THE ATS BOARD OF DIRECTORS

MARCH 2002

Am J Respir Crit Care Med Vol 166. pp 111–117, 2002

TECHNICAL ASPECTS OF THE 6MWT

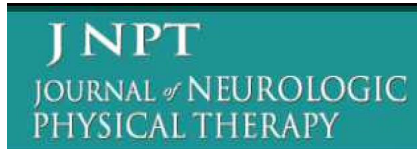
Location

The 6MWT should be performed indoors, along a long, flat, straight, enclosed corridor with a hard surface that is seldom traveled. If the weather is comfortable, the test may be performed outdoors. The walking course must be 30 m in length. A 100-ft hallway is, therefore, required. The length of the corridor should be marked every 3 m. The turnaround points should be marked with a cone (such as an orange traffic cone). A starting line, which marks the beginning and end of each 60-m lap, should be marked on the floor using brightly colored tape.

A Core Set of Outcome Measures for Adults With Neurologic Conditions Undergoing Rehabilitation

A CLINICAL PRACTICE GUIDELINE

Moore, Jennifer L., PT, DHS, NCS; Potter, Kirsten, PT, DPT, MS; Blankshain, Kathleen, PT, DPT; Kaplan, Sandra L., PT, DPT, PhD; O'Dwyer, Linda C., MA, MSLIS; Sullivan, Jane E., PT, DHS, MS



July 2018 - Volume 42 - Issue 3 - p 174-220

Reliability and Minimal Detectable Change of Physical Performance Measures in Individuals With Pre-manifest and Manifest Huntington Disease

Lori Quinn, Hanan Khalil, Helen Dawes, Nora E. Fritz, Deb Kegelmeyer, Anne D. Kloos, Jonathan W. Gillard, Monica Busse; for the Outcome Measures Subgroup of the European Huntington's Disease Network
Phys Ther. 2013;93:942-956.



- A hallway or open area at least 12 meters long with a smooth, consistent surface
- A turnaround point approximately 49 in (124 cm) wide with clear markings should be set up at both ends

Methods - Recruitment

- Inclusion Criteria

- 18+ years old
- Hoehn and Yahr Stage 1-3
- Understand and speak English
- Able to understand task instructions

- Exclusion Criteria

- Unable to ambulate 6 minutes
- Contraindications to exercise

- Comorbidities that inhibit ability to participate in study

Methods

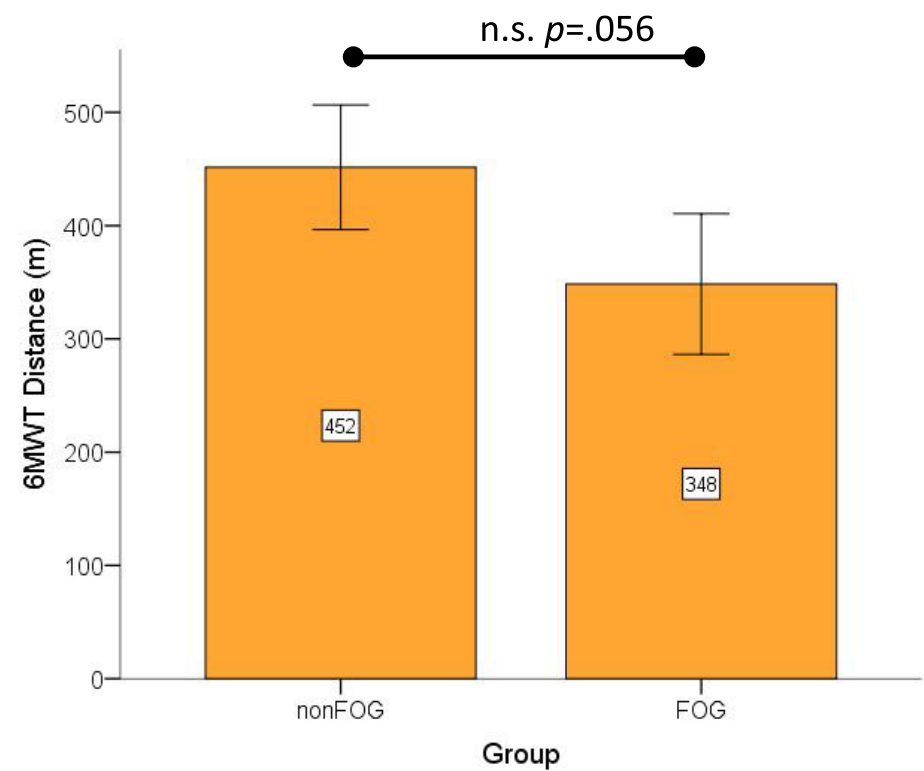
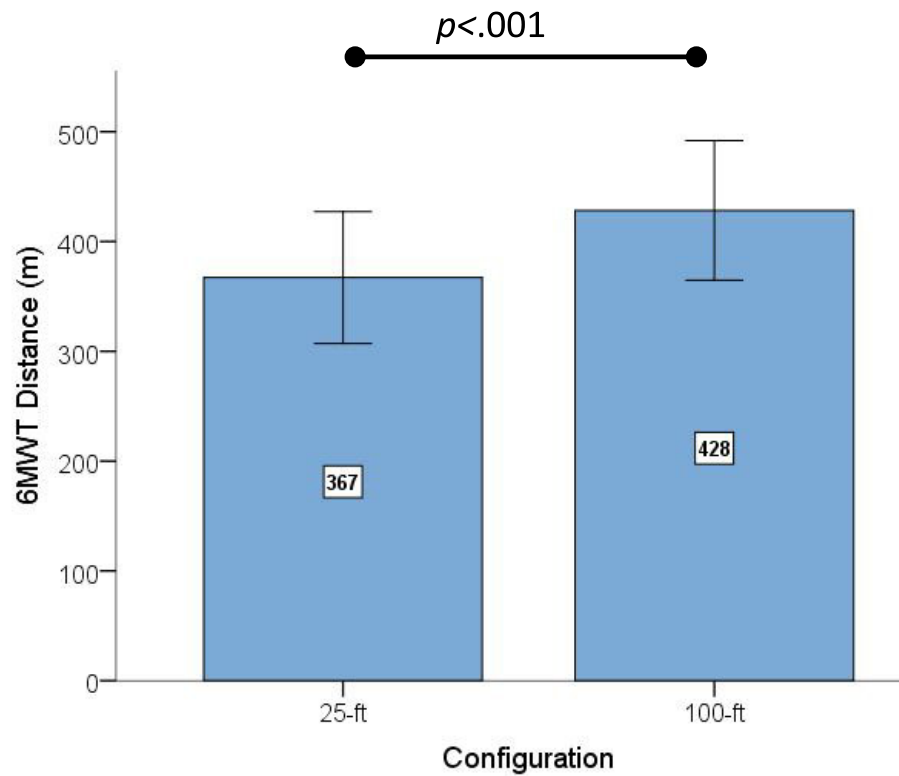
- Participants were placed in either “FoG” or “Non-FoG” group according to score on “New Freezing of Gait Questionnaire”
- Order of presentation of the 25-foot or 100-foot configuration was counterbalanced and performed ~ one week apart.
- Participants were given instructions per the standardized “American Thoracic Society” protocol for the 6MWT

Nieuwboer, A., et al. (2009) *Gait & Posture* 30(4):459-63.
ATS Board Statement (2002) *Am J Respir Crit Care Med* 166:11-117.

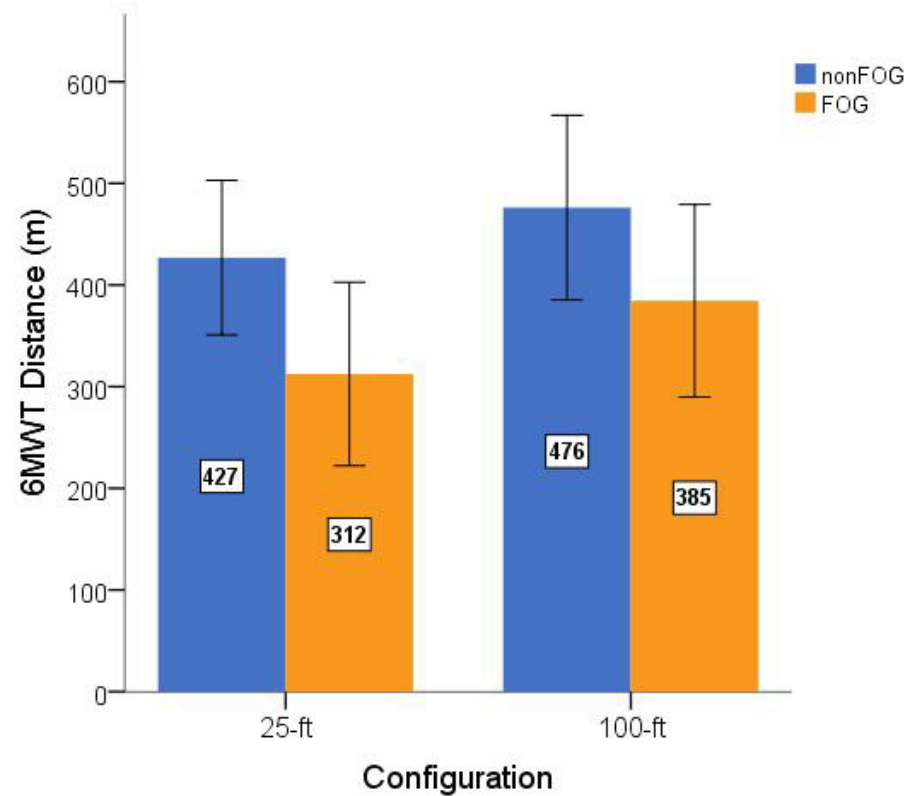
Participant Characteristics

	Non-FoG (n = 11)	FoG (n = 12)	p-value
Age (years)	69.0 ± 5.8	71.3 ± 6.7	.388
H&Y	2.2 ± .4	2.6 ± .5	.051
MDS-UPDRS	31.8 ± 5.5	38.9 ± 10.3	.055
MoCA (out of 30)	26.5 ± 3.2	26.8 ± 1.4	.771
N-FoGQ	0	16.8 ± 7.0	<.001

Results – main effects



Results – no interaction



No interaction $p=.096$

Clinical Comparisons

- Minimal Detectable Change (MDC) in the 6MWT for people with PD is **82 m**

Comparison	Average Difference (m)	P-value
25-foot vs. 100-foot	63	<.001
FoG vs. Non-FoG	104	.056
FoG vs. Non-FoG in 25-foot configuration	115	.150
FoG vs. Non-FoG in 100-foot configuration	92	.018

Steffen T, Seney M (2008). *Phys Ther*, 88(6):733-746.

Conclusion – Clinical Implication

- The number of turns DO matter for people with PD
- If constrained on space, maintain consistency of configuration
- Document configurations and/or protocol followed
- Fewer sharp turns, such as in the Clinical Practice Guidelines 6MWT, may create less problems than the 100-ft or the 25-foot for people with PD, but this would need to be explored.

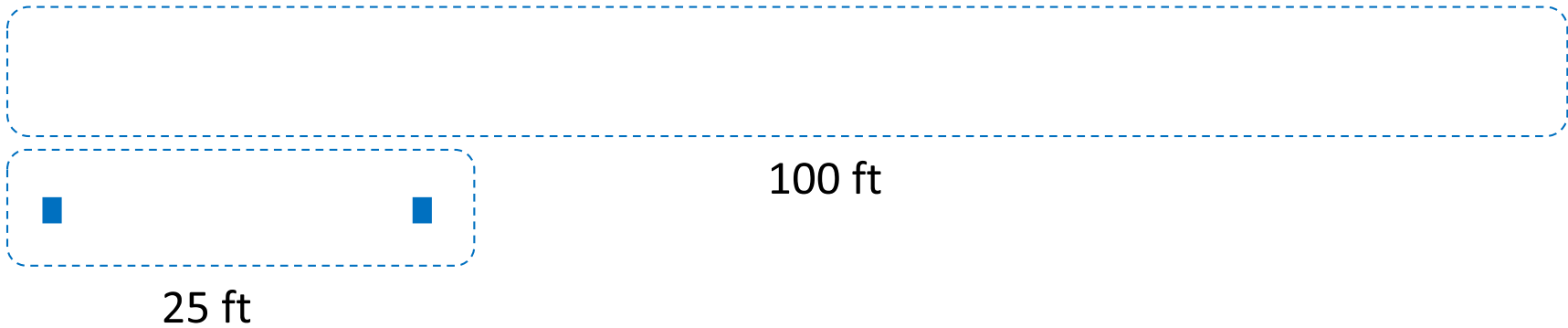
Questions?

Conclusion – Clinical Implication

Clinical Practice Guideline for 6MWT



American Thoracic Society Guidelines for 6MWT



Additional data not yet reported

CW or CCW
N=17
(FoG=4; n-FoG=13)
Mean distance: **471 m**

