

Timed 25 Foot Walk Times are Predictive of EDSS in Persons with MS



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Introduction

- Expanded Disability Status Scale (EDSS) scores between 4.0 – 7.0 are primarily determined by a persons with MS's (PwMS) maximum walking distance (MWD), with or without gait aid.
- Due to the impracticality of measuring MWD in the clinical setting, many physicians instead often rely on patient self assessment.
- Previous studies have demonstrated significant discrepancies between patient reported and actual MWD [1,2,3]
- The Timed 25 Foot Walk (T25FW) is much easier to administer in clinical setting.
- It is unknown if T25FW values can be used to predict MWD.

Objective

To determine if T25FW values are predictive of MWD, and thus EDSS scores, in Persons with MS (PwMS).

Methods

This work is a post hoc analysis of a previously described prospective cohort study [3]

- PwMS of any subtype, ages 18 – 64 years old who had a previous EDSS score between 3.5 – 5.5, inclusive and no comorbid conditions affecting walking were approached for study.
- T25FW values were measured.
- Participant's MWD was then measured along a pre-specified walking course.
- We categorized T25FW values in two different ways. *Method 1* consisted of the following categories: as < 5.0 seconds (s), 5.0 – 5.9 s, 6.0 – 6.9 s, 7.0 – 7.9 s, 8.0 – 8.9 s, 9.0 – 9.9 s and 10.0 s or more.
- *Method 2* consisted of the following categories: < 6.0 s, 6 – 7.9 s, and 8.0 s or more.
- MWD distances were divided into their EDSS equivalents (MWD – EDSS): MWD > 500 metres (m), 300 – 499 m, 200 – 299 m, 100 – 199m

Statistical Analysis

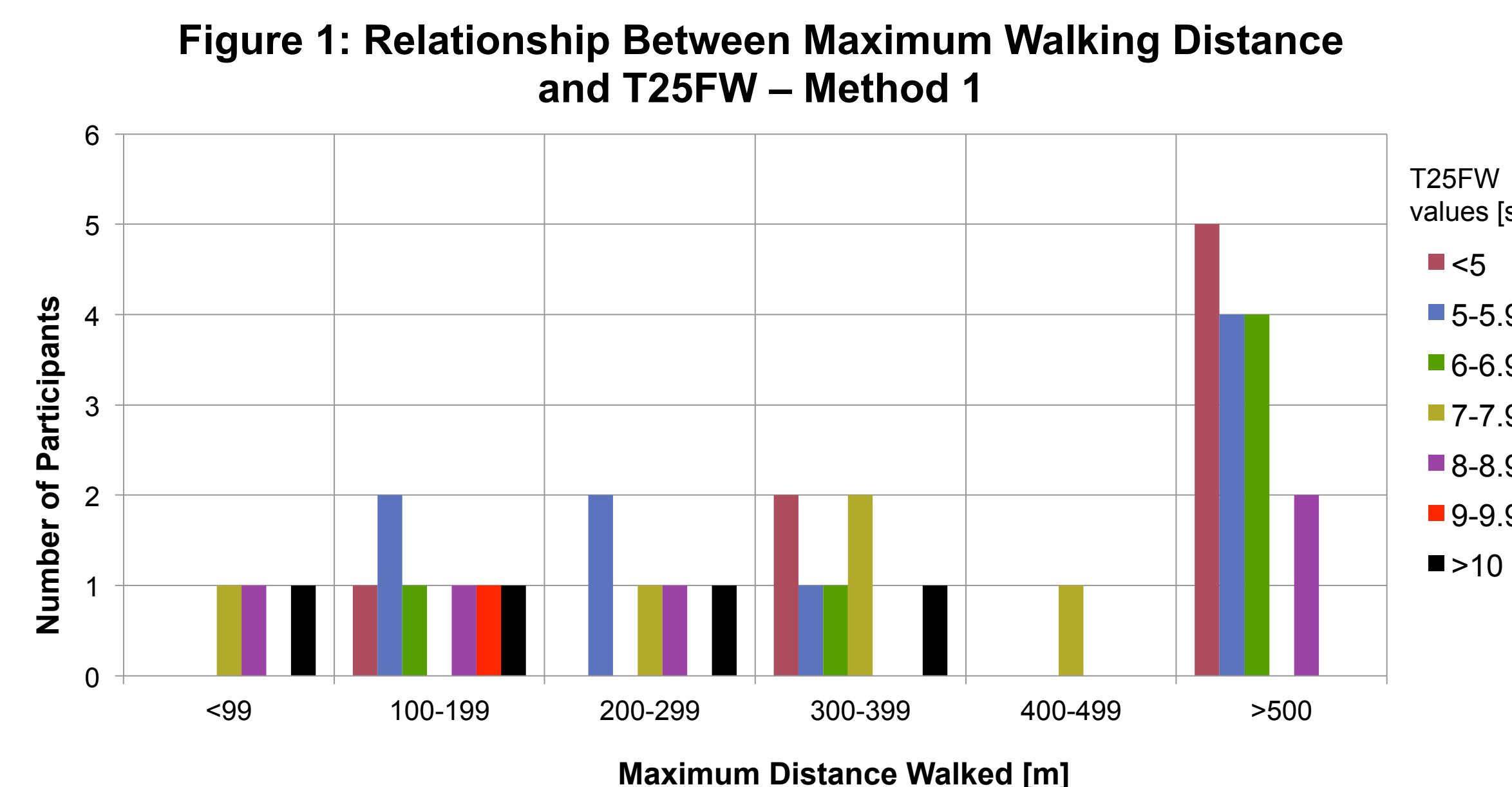
- Ordinal logistic regression was used to determine the predictive value of T25FW categories on MWD – EDSS.

Results

- 38 PwMS were included in this analysis. Baseline characteristics of the study population is shown in Table 1.

Characteristic (total patients, n = 38)	Value
Age [years]	50.8 (range 41, 59)
Female Gender [% of patients]	n= 27 (71%)
Caucasian [% of patients]	n = 33 (87%)
Disease Duration [years]	11.5 (range 1, 35)
Relapsing Remitting Subtype	n = 25 (67%)
Secondary Progressive Subtype	n = 10 (26%)
Primary Progressive Subtype	n = 3 (8%)

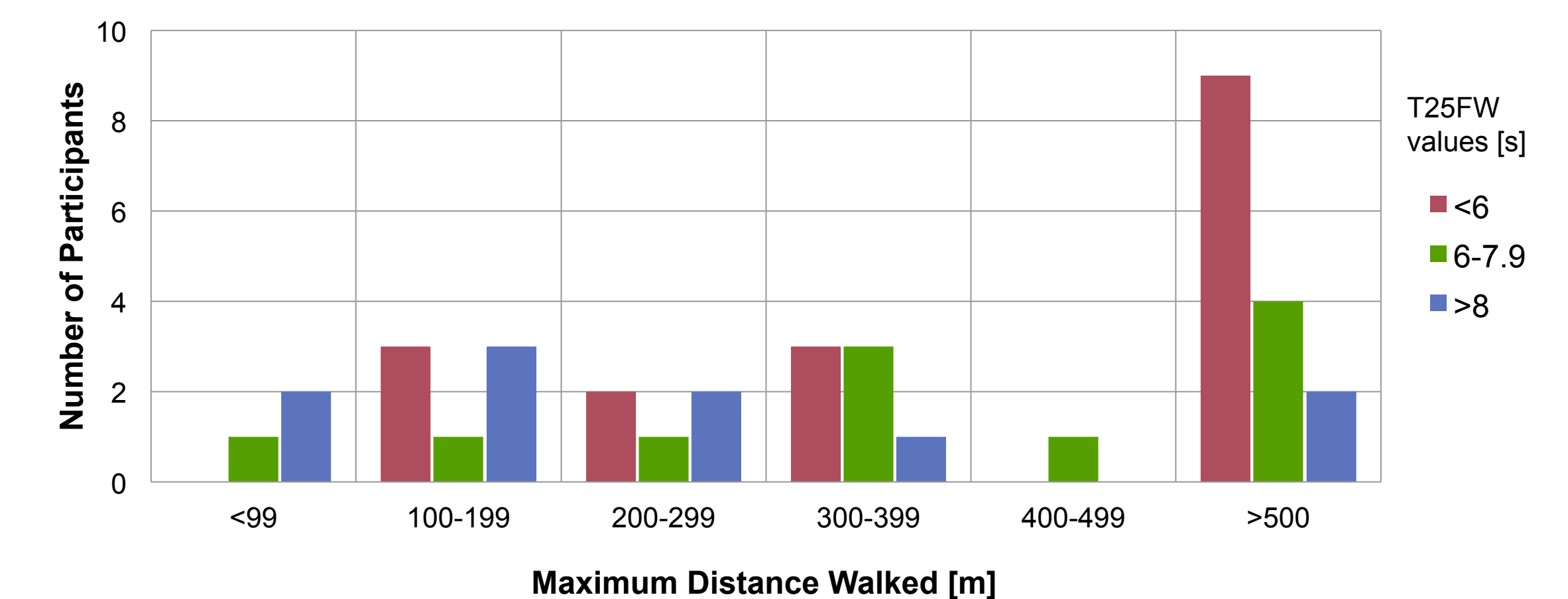
- The results of the analysis using *Method 1* is shown in Figure 1.



- Ordinal Logistic Regression, when controlled for sex, found that the T25FW categories divided as in *Method 1*, to be predictive of MWD – EDSS ($X^2 = 17.630$, $df = 7$, $p = 0.014$)

- The results of the analysis using *Method 2* is shown in Figure 2.

Figure 2: Relationship Between Maximum Distance Walked and T25FW – Method 2



- Ordinal Logistic Regression, when controlled for sex, found that the T25FW categories divided as in *Method 2*, to be predictive of MWD – EDSS ($X^2 = 8.678$, $df = 3$, $p = 0.034$)

Conclusions

- This data suggests that T25FW is predictive of MWD, and thus EDSS in PwMS.
- Further evidence is needed to determine if T25FW values can be used as surrogate estimates of MWD.

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References:

- 1) C.J.E. Watson et al., Estimates of distance by claudicants and vascular surgeons are inherently unreliable, Eur. J. Vasc 16 (1998) 429 – 443.
- 2) T. Giantomaso et al, The validity of patient and physician estimates of walking distance, Clin. Rehab 17 (2003) 394 – 401.
- 3) Berger et al., Self Reported maximum walking distance in persons with MS may affect the EDSS, JNS, 379 (2017) 77 – 80.