

Feasibility and Reliability of the Five Times Sit-to-Stand Via Telehealth in Multiple Sclerosis

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Background

Multiple sclerosis (MS) is a chronic neurodegenerative disease impacting the central nervous system.^{1,2} Symptoms of MS significantly impact functional independence and quality of life.^{3,4} Physical Therapy (PT) via telehealth appears to be an effective mode of service delivery for persons with MS (PwMS), and may improve accessibility for many. While PT via telehealth has been identified as successful for this population, there is a scarcity of evidence to guide the selection of outcome measures used in digital PT practice in the rehabilitation of PwMS.⁴⁻⁶ A commonly used outcome measure, the Five Times Sit to Stand Test (FTSTS), has been shown to be a valid and reliable assessment tool used to measure an individual's sit-to-stand performance and functional lower extremity strength in PwMS, but has not yet been examined via telehealth administration.⁷

Purpose

The aim of this study was 1) to examine the reliability of the FTSTS via telehealth in PwMS. It is hypothesized that this outcome measure will have good reliability when used in a virtual mode, and 2) to examine the feasibility of using telehealth to conduct the FTSTS in PwMs. It is hypothesized that the FTSTS test is a safe and feasible outcome measure to use with PwMS via telehealth.

Instruments

The FTSTS was used via telehealth (Qliqsoft) on an iPad.

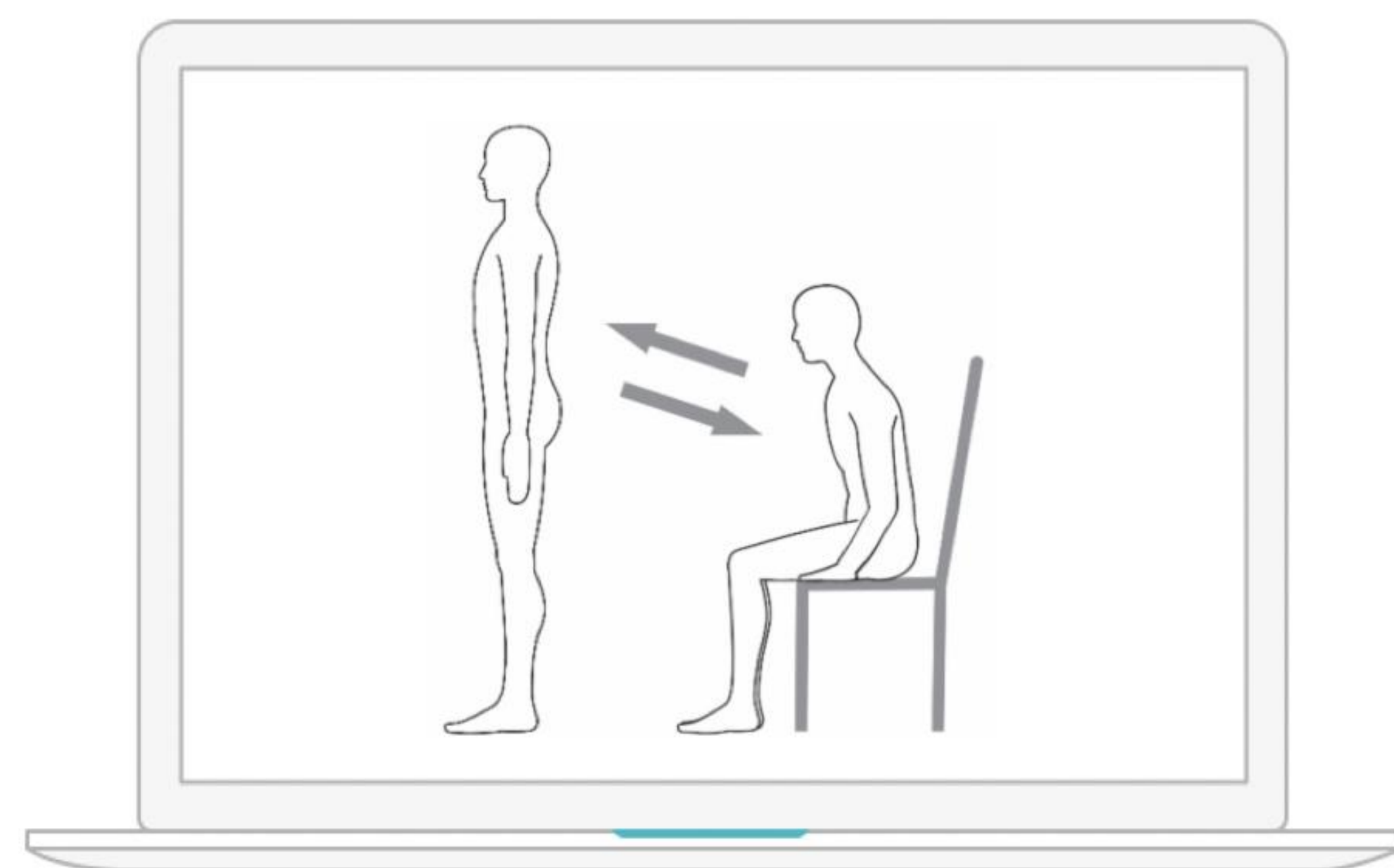


Figure 1. FTSTS Remote Administration

Materials and Methods

Participants:

- A convenience sample (n=22: 5 males, 17 females) of PwMS

Variables Collected:

- Demographics (age, gender, race, ethnicity)
- Disease characteristics (disease duration and disability level [Patient Determined Disease Steps; PDDS])
- FTSTS (in-person and remote)

Statistical Analysis

- Data were analyzed using SPSS software.
- Inter-rater reliability assessed using a two-way random effect, single measurement ICC.

Results

Table 1. Descriptive Statistics

Demographics	
Age (yrs)	55 (16.5)
BMI (kg/m ²)	28.3 (9.9)
Sex, n (%)	Male, n=5 (22.7) Female, n=17 (77.3)
Ethnicity, n (%)	Hispanic or Latino, n=3 (13.6) Not Hispanic or Latino, n=19 (86.4)
Race	Black or African American, n=1 (4.5) White or Caucasian, n=21 (95.5)
Disease Characteristics	
PDDS	2.5 (4.0)
Disease Duration	14.0 (16.8)
Outcome Measures	
In-person FTSTS (s)	9.9 (3.6)
Telehealth FTSTS (s)	9.8 (3.8)
Incidences requiring intervention (n)	0
Data presented as Median (IQR) unless otherwise stated	

- The ICC inter-rater reliability was 1.0 (p<0.001).
- Researchers determined it was feasible to administer the FTSTS remotely due to the ease of use of equipment, including a chair, electronic device (phone, tablet, or laptop), and timer.
- No adverse events or interjection was required from the in-person clinician during testing; therefore, remote administration of the FTSTS was determined to be safe for the PwMS with similar disability levels.
- Two participants with PDDS of 6.0 did not need safety intervention; however, the in-person rater did provide close supervision during test administration. Bilateral upper extremity (UE) support was required by both participants to complete the test.

Discussion

- The FTSTS is a reliable and feasible outcome measure to administer via telehealth with PwMS.
- The results of this study demonstrates excellent inter-rater reliability between remote and in-person measurements (ICC=1; p<0.001).
- There was no need for the in-person rater to intervene for safety, which may indicate the FTSTS is safe to utilize in PwMS with PDDS scores 0 to 6, however close supervision may need to be considered for PDDS >5.
- The FTSTS was considered easy to set-up and administer via telehealth.

Conclusion

The findings of this study indicate the FTSTS is a feasible and reliable outcome measure to be used via telehealth in PwMS. Although no safety intervention was needed, conducting the FTSTS via telehealth services in PwMS with PDDS of >6.0 may not be recommended, due to the possible need for safety intervention. The FTSTS may be used by clinicians via telehealth in PwMS to provide more accessible care. Opportunities for future research may include examining the validity of the FTSTS via telehealth in PwMS. Additionally, the reliability and feasibility of the FTSTS via telehealth could be explored in other neurological populations.

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