Background

Standardized outcome measures (SOMs) are used in physical therapy clinical management to determine patient's activity/participation abilities and limitations then monitor patient's outcomes/interventions/outcomes. Neuromuscular physical therapists commonly manage patients with Parkinson's disease (PD), a neurodegenerative condition of progressive rigidity, bradykinesia, tremor, postural instability, gait disturbance and fall risk. 1 PD affects 1.2 in 1,000 of the population. 1 The prevalence increases with age and affects 1% of the population in people over the age of 60. 2 Timed Up & Go (TUG), Sit-to-Stand (STS), and other SOMs are appropriate for patients with PD, however, may not provide comprehensive assessments for patients with PD including dual task challenges and freezing of gait episodes. The Standardized Walking Obstacle Course (SWOC) is a SOM that examines functional ambulation with varying task conditions, physical features, and mobility abilities. However, research shows no evidence of clinicians using the SWOC as a SOM for patients with PD.

Research Question

Is the SWOC, as compared to other established SOMs, a valid test for individuals with PD to assess functional walking as well as detect postural instability and risk of falls?

Outcome Measures

SWOC: The Standardized Walking Obstacle Course Test is a method of assessing ambulation for adult and pediatric populations. Subjects complete 2 trials each of the obstacle course under 3 conditions: walking with arms at sides (walks arm-free), walking carrying the laundry basket with 128 weight or lunch tray with place settings (walk-basket or tray), and walking wearing sunglasses to simulate a darkened environment (walk-dark glasses). Condition order is typically randomized and recorded measurements are time with number of steps, stumbles and steps off the path.

methods

Psychometric properties of 3 functions of SWOC for people with Parkinson’s disease

- The purpose of the study was to investigate the interrater and intrarater reliability, construct validity, discrimination ability, and smallest detectable difference of the SWOC in individuals with Parkinson’s disease (PD) up and go (TUG), and body mobility test (BM) for people with PD.
- 18 subjects with PD (mean age 65 yrs, SD 17 yrs) were tested.
- 12 subjects in stage I, 12 subjects in stage II, 13 subjects in stage III, and 3 subjects in stage IV of Hoehn and Yahr Scale.
- Non-fallers vs fallers, 15 repeat fallers, 23 non-fallers and 16 con- hovers in the group with PD.
- The Hoehn and Yahr Scale, UPDRS part II and III, and 36-Item Short Form Health Survey (SF-36) were administered to subjects with PD.
- Testing occurred at the movement lab in the Parkinson's Hospital where the STS, TUG and BM were administered per standard procedure with subjects in the ‘on’ phase.
- The tasks were video recorded, with visual of subject.
- Intrarater reliability was determined by randomly timing Up & Go to the time the tasks again one week later.
- The contribution of the Sit to Stand (STS) task in the aggregate score can distinguish patients with slight and mild PD
- All 3 tests discriminate between the group with PD and healthy controls.
- Lower scores were observed in the group with PD.
- The time to complete the TUG is lower in the group with PD.

results

- Intrarater reliability (0.99 and 0.98) for the TUG and TUG-L was determined for both 3 trials.
- Condition between STS and part III of UPDRS (53) and Hoehn and Yahr (61) and significance respectively (p<0.05).
- Condition between STG and UPDRS part III of UPDRS (61) and Hoehn and Yahr (61) and significance respectively (p<0.05).
- No correlation ability can be determined for the difference between non-fallers and single fallers, repeat fallers, and fallers within the non-control group (p>0.05).
- The smallest detectable difference in values for STS and TUG were 0.61 and 2.13 seconds for intrarater and 0.39 and 2.13 seconds for interrater’ assessment.
- Results have shown a good correlation between UPDRS -III and all the UPDRS scores of all the tasks (p<0.05).
- The contribution of the Sit to Stand (STS) task in the aggregate score can distinguish patients with slight and mild PD from those who manifest moderate or severe motor impairments.

Conclusion

For patients with PD, it is important to have a valid and reliable measure for assessing functional mobility, postural instability and fall risk. SOMs such as the TUG and STS are commonly used by researchers and clinicians to assess functional ambulation. 7 Many risk factors and fall risk can be assessed using the SWOC, dimensional and motor impairments under varying physical conditions and environmental obstacles; however, there are no studies of clinicians using the SWOC as a SOM for individuals with PD.

LITERATURE REVIEW

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ANALYSIS OF LITERATURE

An Investigation of the Standardized Walking Obstacle Course (SWOC) for People with Parkinson’s Disease (PD)

Andy Luu SPT, Katherine Miller SPT, Nicole Scherer SPT

Advisor: Sharon Held PT DPT MS PCS C/NDT

Daemen College, Department of Physical Therapy

Background

When assessing gait, postural stability, and risk of falls in patients with PD, the TUG and the STS are valid SOMs however, these tools do not provide comprehensive assessments of activity/participation limitations and contextual challenges patients with PD experience. The SWOC incorporates components of both the TUG as well as the STS. The features of this tool include aspects needed for PD assessment including ability to adapt gait, stepping response and walking gait, and dual task abilities. However, research shows no evidence of clinicians using the SWOC as a SOM for patients with PD. The purpose of this further research is to determine whether the SWOC is a valid test to assess functional walking, postural instability, and risk of falls for patients with PD.

Literature Review

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REFERENCES