

Evaluating dexterity in people with Parkinson's disease: construct validity of the Nine Hole Peg Test and Purdue Pegboard Test.

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Objectives

Clinicians and researchers regularly use the Nine Hole Peg Test (NHPT) and Purdue Pegboard Test (PPT) to quantify dexterity in people with Parkinson's disease (PD), yet the validity of these tools is largely untested in this group. We investigated the convergent validity of the NHPT and PPT in a sample of Australians with PD.

Methods

Participants were 30 volunteers with idiopathic PD on daily oral levodopa. The NHPT and PPT were administered in the 'on' phase of the medication cycle, and participants completed the Manual Ability Measure-36 (MAM-36), a manual activity questionnaire¹. Moderate relationships (≥ 0.50) were hypothesised between variables. Participant characteristics were reported with means and standard deviations or median scores, and Pearson's Correlation Coefficients examined relationships between dexterity measures and self-reported manual performance.

Results

Participants had a mean age of 67.1 years, mean disease duration of 6.4 years, and median HY Stage of 2. Moderate negative linear relationships existed between MAM-36 and NHPT scores (dominant $r = -0.37$; nondominant $r = -0.37$), and stronger positive linear associations were observed between the MAM-36 and PPT subtests (dominant $r = 0.31$; nondominant $r = 0.49$; bimanual $r = 0.45$; combined $r = 0.44$; assembly $r = 0.51$). In an analysis based on the laterality of motor signs, MAM-36 scores were more strongly associated with NHPT and PPT more affected hand scores than with dominant hand scores (NHPT $r = -0.46$; PPT $r = 0.47$).

Conclusion

NHPT and PPT scores were moderately correlated with self-reported manual performance in this group with mild to moderate PD, and difficulties carrying out daily manual tasks were more strongly associated with dexterity in the more affected hand than the dominant hand. Lower than hypothesised correlations may be partly due to differences in constructs measured by the pegboards and MAM-36, that is, the ability to complete standardised dexterity tests in a controlled setting and performance of dextrous activities in the home environment. This study provides new evidence to support the continued use of the NHPT and PPT in clinical practice, but further evidence of construct validity is needed in people in HY Stages I to IV, who may be candidates for physiotherapy interventions.

1. Chen, C.C. and R.K. Bode, *Psychometric Validation of the Manual Ability Measure-36 (MAM-36) in Patients With Neurologic and Musculoskeletal Disorders*. Arch Phys Med Rehabil, 2010. **91**: p. 414-420.