

Hand Function as Predictor of Motor Symptom Severity in Individuals with Parkinson's Disease

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Keywords

Parkinson's disease · Muscle strength · Motor activity · Upper limbs · Freezing

Abstract

Introduction: Parkinson's disease (PD) leads to deficits in upper limb strength and manual dexterity and consequently resulting in functional impairment. Handgrip strength is correlated with the motor symptom severity of the disease, but there is a gap in the literature about the influence of freezing in PD patients. **Objective:** The objective is to study the correlation between handgrip strength and motor symptom severity considering the freezing phenomenon and to verify variables that can predict Unified Parkinson's Disease Rating Scale (UPDRS) III. **Methods:** This is a multicenter cross-sectional study in PD. 101 patients were divided into 2 groups: freezing of gait (FOG) ($n = 51$) and nonfreezing (nFOG) ($n = 52$). Freezing of Gait Questionnaire (FOGQ); UPDRS II and III sections; Hoehn and Yahr (HY) scale; handgrip dynamometry (HD); 9 Hole Peg Test (9-HPT) were assessed. **Results:** In both groups, HD was correlated to UPDRS III (nFOG: -0.308 ; FOG:

-0.301), UPDRS total (nFOG: -0.379 ; FOG: -0.368), UPDRS item 23 (nFOG: -0.404 ; FOG: -0.605), and UPDRS item 24 (nFOG: -0.405 ; FOG: -0.515). For the correlation to UPDRS II (0.320) and 9-HPT (-0.323), only nFOG group presented significance. For the UPDRS 25 (-0.437), only FOG group presented statistical significance. The UPDRS III can be predicted by 9-HPT, age, and HY in nFOG patients (Adjusted $R^2 = 0.416$). In FOG group, UPDRS III can be predicted by HD, 9-HPT, age, and HY (Adjusted $R^2 = 0.491$). **Conclusion:** Handgrip strength showed to be predictive of motor impairment only in the FOG group. Our results showed clinical profile differences of motor symptoms considering freezers and nonfreezers with PD.

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Introduction

Muscle weakness can be a symptom in Parkinson's disease (PD) sometimes being also one of the main complaints reported by patients [1]. The primary origin of muscle weakness in PD is a divergent point in the litera-