

The Modified Bradykinesia Rating Scale for Parkinson's disease: Reliability and Comparison with Kinematic Measures

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Background: Bradykinesia encompasses slowness, decreased movement amplitude, and dysrhythmia. Unified Parkinson's Disease Rating Scale (UPDRS)-based bradykinesia-related items requires that clinicians condense abnormalities in speed, amplitude, fatiguing, hesitations, and arrests into a single score.

Objective: To evaluate the reliability of a Modified Bradykinesia Rating Scale (MBRS), which separately assesses speed, amplitude, and rhythm, and its correlation with kinematic measures from motion sensors.

Methods: Fifty PD patients performed UPDRS-directed finger-tapping, hand-grasping, and pronation-supination while wearing motion sensors. Videos were rated blindly and independently by four clinicians.

Results: The MBRS and UPDRS demonstrated similar inter- and intra-rater reliability. Raters placed greater weight in amplitude than speed or rhythm when assigning a UPDRS score. MBRS scores for speed, amplitude, and rhythm correlated highly with quantitative kinematic variables.

Conclusions: The MBRS separately captures bradykinesia components with similar inter-rater and intra-rater reliability as the UPDRS. Kinematic sensors can accurately quantify speed, amplitude, and rhythm to aid in development and evaluation of novel therapies in PD.

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