research provides effect sizes to assist in more thorough examinations of this topic.

15.14 Validation of the freezing of gait questionnaire (FOG-Q) in Parkinson's disease

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Introduction: The objective of the present study was to validate the Freezing of Gait Questionnaire (FOG-Q), in patients with Parkinson's disease (PD). The study population was a subgroup of 454 patients with PD (264 males) who participated in LARGO (a phase III prospective, randomized placebo, rasagiline and entacapone controlled study).

Methods: Subjects were assessed at baseline and after 10 weeks of treatment for FOG severity by the FOG-Q. In addition, all patients were assessed using the Unified Parkinson's Disease Rating Scale (UPDRS) for disease severity. FOG-Q's internal structure was evaluated by principle component analysis (PCA) and reliability determined by Cronbach's Alpha. Construct validity was explored by relating FOG-Q score to other clinical rating scales. Predictive validity was assessed by relating changes from baseline to Week 10 in FOG-Q to the above clinical evaluations. All validity coefficients are Pearson correlations.

Results: PCA showed that the FOG-Q measures a single dimension (one eigen value >1.0), with an Alpha = 0.90. The FOG-Q was moderately correlated ($r = 0.43$, $P < 0.001$) with UPDRS-ADL item #14, "Freezing When Walking" during "ON". The correlation between FOG-Q total score and change from baseline in "ON" time demonstrated moderate predictive validity ($r = 0.26$, $P < 0.001$). The FOG-Q demonstrated stronger correlations with dimensions associated with gait disturbance not adequately measured within the chosen PD scales.

Conclusions and Discussion: The Freezing of Gait Questionnaire (FOG-Q) demonstrated moderate convergent, divergent and predictive validities.

15.15 Does turning differ from walking? Turning duration, gait indices and fall risk in Parkinson's disease and idiopathic fallers

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Introduction: Difficulty in turning is an intrinsic risk factor for falls and subsequent morbidity in the elderly and in Parkinson's disease (PD) patients. Since turning is distinct both from continuous gait and standing in place, we sought to clarify the relationship between turning time and indices of gait and balance.

Methods: 31 PD patients, 17 idiopathic elderly fallers and 28 elderly controls wore force-sensitive insoles during a 2 min self-paced walk along a 20-meter hallway. At each end of the hallway, the subjects performed a 180-degree turn before resuming walking. The longest gait cycle during the walk was calculated as a quantitative estimate of duration of turning.

Results: Turning time was significantly slower in PD patients and in idiopathic fallers, compared to controls ($P = 0.03$ and $P = 0.02$, respectively). It was only weakly correlated with gait and balance indices (Table 1). Subjects with turning time above 2 s were more likely to be fallers (1.4 ± 0.3 vs. 0.5 ± 0.2 falls in the previous 6 months, $P < 0.01$).

Table 1: Correlation of turning time with indices of balance and gait

Parameter	Correlation	P value
TuaG	0.33	0.03
Berg test score	−0.21	0.16
Gait variability	0.28	0.02
Speed	−0.36	0.003
Average stride time	0.20	0.09

Conclusions: Long turning time may be correlated with increased fall risk, but turning time is only weakly correlated with indices of gait and balance. Further research is needed in order to clarify whether turning has an independent contribution to fall risk.

15.16 Six weeks intensive treadmill training improves gait and quality of life in patients with Parkinson's disease

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Introduction: Gait disturbances are common among patients with Parkinson's disease (PD), leading to falls and functional dependence and impinging on quality of life (QOL). Treadmill walking may act as an external cue to improve gait pacing, thereby producing a more rhythmic and less variable gait and enhanced mobility and QOL.

Methods: 9 patients with PD (mean age: 70 yrs) were studied before and 1–3 days after they participated in a treadmill training program. Patients walked on the treadmill for 30 minutes each session, 4 sessions per week, for 6 weeks. QOL was assessed using the PDQ-39 (Parkinson's Disease Questionnaire). Motor performance and mobility were evaluated by measuring gait speed, stride time variability, swing time variability, the motor part of the UPDRS and the Short Physical Performance Battery (SPPB). These measures have been associated with fall risk and QOL.

Results: We found general improvement after the treadmill intervention. Motor UPDRS scores decreased (improved) from 29 to 22 ($p < 0.043$). Gait speed increased from 1.11 to 1.26 m/s ($p < 0.014$). Swing time variability was lower (better) in all but one patient, changing from 3.0% to 2.3% ($p < 0.06$). Scores on the SPPB improved from 9.9 to 11.1 ($p < 0.008$). Total PDQ-39 scores were reduced (improved) from 32 to 22 ($p < 0.014$).

Discussion and Conclusions: These results suggest that a treadmill can be used as a powerful tool to improve gait, reduce fall risk, and increase QOL in patients with PD. Treadmill training has the added advantage of specifically reinforcing walking rhythmicity and the stride-to-stride consistency of gait.

15.17 Compensatory step deficits in Parkinson's disease: an inability to select motor programs

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Introduction: As Parkinson's disease (PD) progresses, subjects with PD often fail to step in response to a perturbation or their steps are undersized. We sought to understand the mechanisms underlying abnormal compensatory stepping responses in PD subjects.

Methods: We analyzed the anticipatory postural adjustments (APAs) and compensatory step characteristics of 10 PD subjects and 5 young, healthy subjects in response to backward platform translations. Healthy subjects responded to translations in 3 conditions: