Validation of the Late-Life Function and Disability instrument in people with Parkinson's Disease

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CHALLENGE

Mobility and function are commonly affected in Parkinson's disease (PD), creating a need for validated assessment tools. The Late-Life Function and Disability Instrument (LLFDI) may provide such a measure, but its validity in PD is unknown. Mobilise-D has developed wearable-derived digital mobility outcomes (DMOs) to quantify real-world walking, enabling assessment of whether LLFDI scores also reflect everyday mobility.

APPROACH & METHODOLOGY

LLFDI validity was assessed against established clinical measures, known groups, and wearable-derived DMOs using correlation and group-comparison analyses.

FACTS & FIGURES

Start date:	01/04/2019
End date:	30/06/2024
IHI funding:	€25,395,897
EFPIA in kind:	€24,515,667
Other:	€0
Total Cost:	€49,911,564
Project website:	mobilise-d.eu
Social media:	@Mobilise-D

RESULTS

The LLFDI showed significant known-group differences across all (sub) domains (Fig. 1) and significant associations with clinical assessments supporting the construct validity of the LLFDI in PD. Moreover, significant associations with DMOs were observed (Fig. 2).

Figure 1. LLFDI median scores and 95% confidence intervals for known-groups

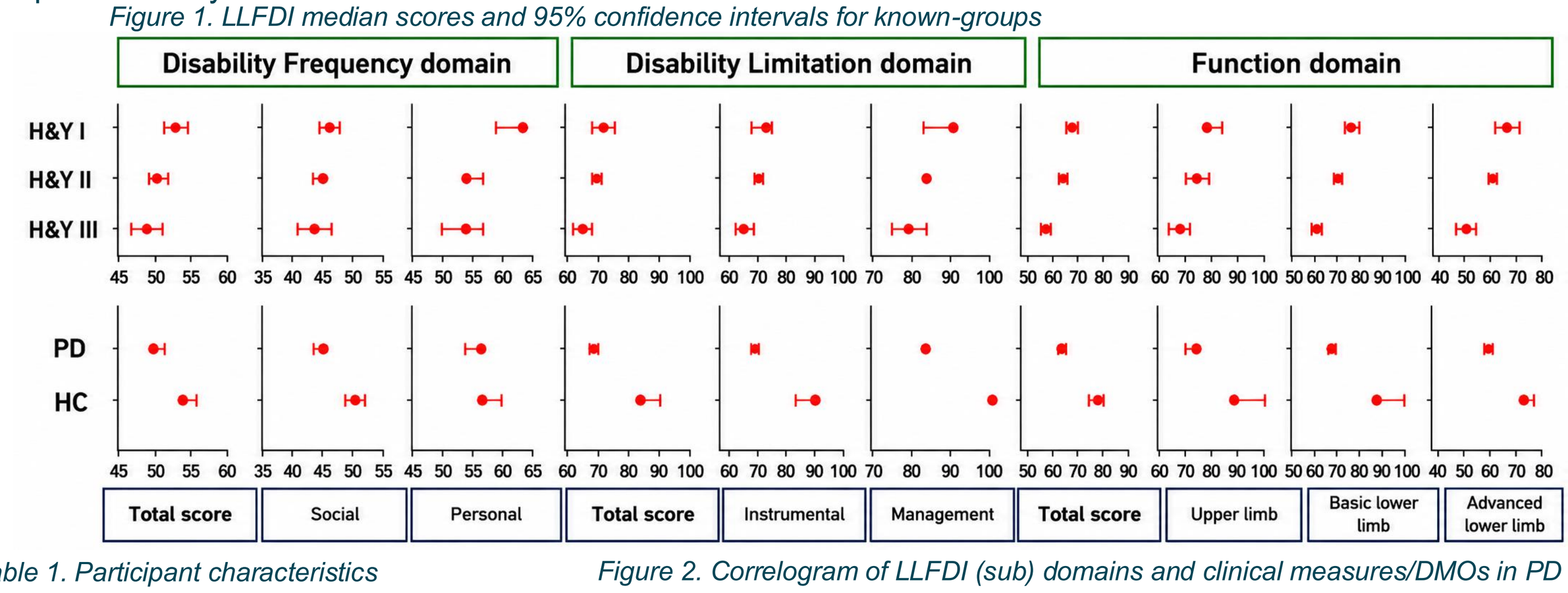


Table 1. Participant characteristics

Characteristic	PD (n=596)	HC (n=231)	Sig. (*p*)
Age (years)	65.6 ± 9.5	66.6 ± 8.4	.128
Sex (female)	210 (35.2%)	79 (34.1%)	.296
Height (cm)	172.2 ± 9.9	172.9 ± 9.6	.385
Mass (kg)	78.7 ± 15.5	77.9 ± 14.6	.540
6MWD (m)	440.6 ± 95.3	512.0 ± 80.9	**<.001**
TUG (s)	9 (4, 32)	8 (5, 14)	**<.001**
Mini-BESTest	24 (8, 28)	25 (15, 28)	**<.001**
SPPB	10 (3,12)	10 (5, 12)	**<.001**
Disease duration (years)	7.0 ± 5.1	-	-

Figure 2. Correlogram of LLFDI (sub) domains and clinical measures/DMOs in PD

		Established clinical measures						Digital Mobility Outcomes					
								Amount		Pace			
		6MWD	TUG (higher = worse)	MDS-UPDRS II (higher = worse)	MDS-UPDRS III (higher = worse)	Mini-BESTest	SPPB	Walking duration (h/day)	WB Step Count	Walking speed in longer WBs (>30 s)	P90 walking speed in WBs >10s	P90 walking speed in longer WBs (>30 s)	Stride length in longer WBs (>30 s)
Disability Frequency domain	Total score	.26*	−.22*	−.25*	−.26*	.27*	.26*	.20*	.21*	.14*	.17*	.18*	.13*
	Social subdomain	.26*	−.21*	−.20*	−.25*	.25*	.20*	.17*	.17*	.11*	.14*	.15*	.10*
	Personal subdomain	.13*	−.14*	−.22*	−.17*	.18*	.26*	.17*	.17*	.12*	.12*	.14*	.11*
Disability Limitation domain	Total score	.21*	−.21*	−.46*	−.17*	.26*	.21*	.21*	.22*	.21*	.22*	.24*	.19*
	Instrumental subdomain	.21*	−.21*	−.45*	−.16*	.26*	.21*	.23*	.24*	.21*	.22*	.24*	.19*
	Management subdomain	.14*	−.14*	−.36*	−.16*	.19*	.16*	.08	.09*	.14*	.15*	.16*	.13*
Function domain	Total score	.51*	−.45*	−.62*	−.27*	.52*	.38*	.30*	.32*	.36*	.39*	.42*	.35*
	Upper limb subdomain	.26*	−.25*	−.59*	−.22*	.29*	.20*	.14*	.14*	.19*	.21*	.23*	.19*
	Basic lower limb subdomain	.43*	−.39*	−.65*	−.27*	.47*	.37*	.24*	.25*	.30*	.33*	.35*	.29*
	Advanced lower limb subdomain	.57*	−.49*	−.50*	−.24*	.53*	.37*	.34*	.37*	.41*	.44*	.47*	.38*

COLLABORATIVE VALUE OF IMI

The Innovative Medicines Initiative 2 (IMI2) was fundamental to Mobilise-D, bringing together more than 300 professionals from 34 universities, hospitals and industry organisations. This enabled multidisciplinary expertise to be combined within a single programme.

CAREER IMPACT

My involvement in the Mobilise-D project has provided access to large clinical datasets and enabled me to contribute to scientific outputs addressing meaningful research questions in Parkinson's disease. It has also encouraged me to develop a more focused understanding of statistical methods. In addition, it has allowed me to build professional networks with leading researchers in the field of digital mobility and Parkinson's disease.

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