The Mini–BESTest to assess balance and gait ability in high functioning people after stroke

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1. Background

Walking in daily life requires the ability to adapt gait speed, to react to unexpected changes, and to perform dual tasks. People after stroke who can walk independently without physical assistance still experience difficulties with maintaining balance in these situations. The Mini Balance Evaluation Systems Test (Mini–BESTest) can be a suitable test to assess balance and gait ability in high functioning people after stroke.

Mini–BESTest – dynamic gait

1. Change in gait speed
2. Walk with head turns
3. Walk with pivot turns
4. Step over obstacles
5. Timed–Up & Go with dual task

2. Objectives

1. To determine relationships between the Mini–BESTest, Mini–BESTest – dynamic gait and the Timed–Up & Go (TUG) and six–minute walking test (6–MWT) in people after stroke who can walk independently.
2. To determine responsiveness of the Mini–BESTest and the Mini–BESTest – dynamic gait following an outpatient rehabilitation program.

3. Methods

- Observational study with measurements at the start and end of an outpatient rehabilitation program.
- Outcome measures: Mini–BESTest, Mini–BESTest – dynamic gait domain, TUG, and 6–MWT.
- Convergent validity was assessed using Spearman correlations coefficients at start of rehabilitation.
- Responsiveness was determined based on effect size (ES), standardize response mean (SRM) and correlations between change scores.

4. Results

104 participants were included, 80 completed start and end measurements. Median duration between start and end measurements was 6 (IQR 5–8) weeks.

Relationships between Mini–BESTest, TUG, and 6–MWT

	Start rehabilitation		Change scores	
Start rehabilitation	TUG	6–MWT	TUG	6–MWT
Mini–BESTest	–0.688*	0.534*	–	–
Mini–BESTest – dynamic gait	–0.607*	0.507*	–	–
Change scores				
Mini–BESTest	–	–	–0.164	0.198
Mini–BESTest – dynamic gait	–	–	–0.230*	–0.042

Responsiveness of Mini–BESTest and Mini–BEST – dynamic gait

	Start of rehabilitation mean (SD)	Change between start and end of rehabilitation mean (SD)	ES	SRM
Mini–BESTest	20.73 (5.15)	2.32 (2.44)*	0.45	0.95
Mini–BESTest –dynamic gait	7.20 (2.10)	1.11 (1.23)*	0.53	0.90
TUG	11.26 (6.94)	–1.38 (3.04)*	0.20	0.45
6–MWT	368.88 (115.02)	56.55 (54.34)*	0.49	1.04

*p–value < 0.05.

5. Conclusions

- The mini–BESTest and the Mini–BESTest – dynamic gait have a higher responsiveness than the TUG and comparable responsiveness with the 6–MWT.
- The Mini–BESTest and the Mini–BESTest – dynamic gait measure other unique aspects of balance when compared with the TUG and 6–MWT.

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