

## Background

The mini-BESTest was originally developed for measuring functional balance in adults.

There is a lack of studies exploring test-retest reliability of the mini-BESTest in large samples of people with multiple sclerosis (MS).

## Objectives

To investigate test-retest reliability of the mini-BESTest total and section sum scores, and individual items, in people with mild to moderate overall MS disability.

# Test-retest reliability of the mini-BESTest in people with mild to moderate multiple sclerosis

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## Methods

Fifty-four people with mild (n=28) and moderate (n=26) overall MS-disability according to the Expanded Disability Status scale (EDSS) were included.

Test-retest reliability of the mini-BESTest was evaluated by repeated measurements one week apart.

| Characteristic                         | Mild MS (n=28) | Moderate MS (n=26) |
|--|----------------|--------------------|
| Sex, n (%)                             |                |                    |
| Women                                  | 19 (68)        | 19 (73)            |
| Men                                    | 9 (32)         | 7 (27)             |
| Age, years, mean (SD)                  | 45.5 (9.4)     | 54.1 (8.2)         |
| Height, m, mean (SD)                   | 1.72 (.1)      | 1.72 (.1)          |
| Weight, kg, mean (SD)                  | 72.4 (12.7)    | 77.5 (16.5)        |
| Overall MS-disability, EDSS, mean (SD) | 3.0 (.5)       | 4.5 (.5)           |
| Course, n (%)                          |                |                    |
| Relapsing remitting                    | 26 (93)        | 15 (58)            |
| Progressive                            | 2 (7)          | 11 (42)            |
| Years since diagnosis, mean (SD)       | 11.5 (8.1)     | 12.2 (8.7)         |

SD=standard deviation; EDSS=Expanded Disability Status Scale.

## Conclusions

The mini-BESTest has good to excellent test-retest reliability and small measurement errors in people with mild to moderate MS.

Knowledge of limits of agreement and smallest detectable change contribute to interpretability of the mini-BESTest total score, which enhance the clinical usefulness for evaluation of balance control.

The mini-BESTest is **recommended for use** in people with mild to moderate MS.

## Results

### Total sum scores

Test-retest reliability was good to excellent in the whole sample as well as in the subgroups.

| Sample              | ICC (95% CI)  | SEM | SDC |
|---------------------|---------------|-----|-----|
| Whole sample (n=54) | .88 (.80–.93) | 1.5 | 4.1 |
| Mild MS (n=28)      | .83 (.62–.92) | 1.3 | 3.5 |
| Moderate MS (n=26)  | .80 (.60–.90) | 1.7 | 4.7 |

ICC=intraclass correlation coefficient with 95% confidence intervals (95% CI) shown in parentheses; SEM=standard error of measurement; SDC=smallest detectable change.

### Section sum scores

Test-retest reliability were fair to good, or excellent.

| Mini-BESTest sections     | QWK (95% CI)  |
|---------------------------|---------------|
| Anticipatory              | .80 (.69–.92) |
| Reactive postural control | .62 (.43–.82) |
| Sensory orientation       | .72 (.56–.88) |
| Dynamic gait              | .83 (.75–.91) |

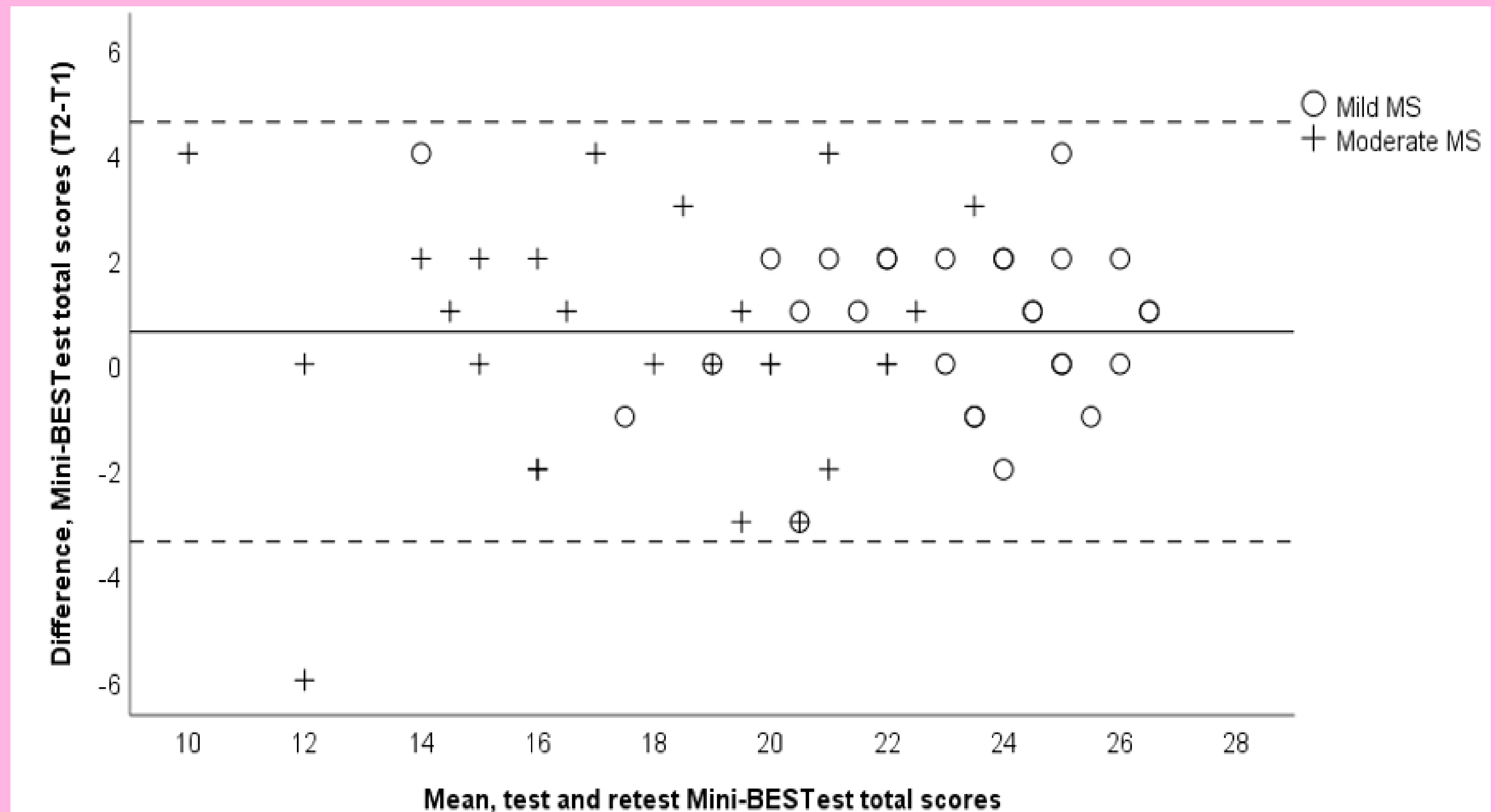
Data calculated on the whole sample (n=54); QWK=quadratic weighted kappa values with 95% confidence intervals (95% CI) shown in parentheses.

### Item scores

All items but one showed fair to good or excellent test-retest reliability.

### Bland–Altman plot test and retest occasions (n=54)

The mean of the mini-BESTest total sum scores from test (T1) and retest (T2) occasions are plotted against the difference between total sum scores from T2 and T1 for each participant.



Solid line – mean difference; Dashed lines – limits of agreement.

