

**Table S1.** Characteristics of Included Studies

Author (Year)	Country (Continent)	Setting	Inclusion/Exclusion criteria	N	Type of validity or reliability being tested	Criterion Standard(s)	Female (N, %)	PDDS score
de David <sup>22</sup> (2019)	Brazil (South America)	Hospital (neurology)	<p><i>Inclusion:</i></p> <ul style="list-style-type: none"> <li>- confirmed MS diagnosis according to the 2010 McDonald criteria</li> <li>- age &gt;18 years</li> <li>- ambulatory with or without an assistive device</li> <li>- willingness to voluntarily complete testing</li> </ul> <p><i>Exclusion:</i></p> <ul style="list-style-type: none"> <li>- exacerbation in the past 90 days</li> <li>- additional neurological disease</li> <li>- 1 or more concomitant comorbidities</li> </ul>	63	<ul style="list-style-type: none"> <li>- criterion validity</li> <li>- construct validity</li> <li>- internal consistency reliability</li> <li>- test-retest reliability</li> </ul> <p><i>After translation to Portuguese</i></p>	EDSS	48 (76.2%)	Median (IQR) 1 (0-3)
Kahraman <sup>23</sup> (2021)	Turkey (Asia)	MS outpatient clinic	<p><i>Inclusion:</i></p> <ul style="list-style-type: none"> <li>- definite diagnosis of MS</li> <li>- writing and reading ability in Turkish</li> <li>- age ≥18 years</li> </ul> <p><i>Exclusion:</i></p> <ul style="list-style-type: none"> <li>- having a relapse in the past 30 days</li> <li>- other chronic neurological disease</li> <li>- pregnancy</li> </ul>	100	<ul style="list-style-type: none"> <li>- criterion validity</li> <li>- construct validity</li> <li>- content validity</li> <li>- test-retest reliability</li> </ul> <p><i>After translation to Turkish</i></p>	EDSS	71 (71%)	Median (IQR) 1 (0-3)
Lavorgna <sup>24</sup> (2017)	Italy (Europe)	MS center neurology clinic	<p><i>Inclusion:</i></p> <ul style="list-style-type: none"> <li>- confirmed MS diagnosis according to 2010 McDonald criteria</li> </ul>	96	<ul style="list-style-type: none"> <li>- construct validity</li> <li>- test-retest reliability</li> </ul>	EDSS	67 (69.8%)	Median (IQR) 2 (0-3)

			<ul style="list-style-type: none"> <li>- age &gt;18 years</li> <li>- capacity for independent ambulation or ambulation with an assistive device</li> <li>- willingness to voluntarily complete testing</li> </ul> <p><i>Exclusion:</i></p> <ul style="list-style-type: none"> <li>- exacerbation in the past 90 days</li> <li>- additional neurological disease or <math>\geq 1</math> comorbidities</li> </ul>		<i>After translation to Italian</i>			
Learmonth <sup>25</sup> (2013)	USA (North America)	MS center	<p><i>Inclusion:</i></p> <ul style="list-style-type: none"> <li>- neurologist confirmed diagnosis of MS according to 2005 McDonald criteria</li> <li>- capacity for ambulation with or without an assistive device</li> <li>- willingness to voluntarily complete testing</li> </ul> <p><i>Exclusion:</i></p> <ul style="list-style-type: none"> <li>- relapse in the past 30 days</li> </ul>	96	<ul style="list-style-type: none"> <li>- criterion validity</li> <li>- construct validity</li> </ul>	EDSS	77 (80%)	Median (IQR) 3 (0-6)
Solà-Valls <sup>26</sup> (2019)	Spain (Europe)	MS unit at hospital clinic	<p><i>Inclusion:</i></p> <ul style="list-style-type: none"> <li>- age <math>\geq 18</math> years</li> <li>- clinically definite MS according to 2010 McDonald criteria</li> <li>- no relapses within prior 30 days</li> </ul>	103	<ul style="list-style-type: none"> <li>- criterion validity</li> <li>- construct validity</li> <li>- content validity</li> <li>- test-retest reliability</li> <li>- interrater agreement</li> </ul> <p><i>After translation to Spanish</i></p>	EDSS telephone EDSS	69 (67%)	Median 0.5 (range, 0-7)

**Table S2.** Findings Regarding Validity and Reliability of Patient-Determined Disease Steps Scale

Author (Year)	Comparators	Criterion validity (correlation, 95% CI)	Convergent construct validity (correlation, 95% CI)	Divergent construct validity (correlation, 95% CI)	Internal consistency reliability (95% CI)	Test-retest interval	Test-retest reliability (95% CI)
de David <sup>22</sup> (2019)	EDSS T25FW TUG 6MWT 9HPT SDMT	PDDS-EDSS (0.723, $P < .05$ )  Agreement on mild/moderate/severe disability $\kappa = 0.58$ , $P < .0001$	T25FW: 0.72 (0.54, 0.84) TUG: 0.76 (0.62, 0.87) 6MWT: -0.74 (-0.84, -0.56) 9HPT dominant: 0.45 (0.24, 0.62) 9HPT nondominant: 0.50 (0.26, 0.69) SDMT: -0.114 (-0.40, 0.18) Age: 0.25 (-0.02, 0.48)	BMI 0.17 (-0.07, 0.40)  Duration -0.05 (-0.33, 0.20)	N/A	15 days (n = 31)	ICC: 0.911, (0.685, 0.918)
Kahraman <sup>23</sup> (2021)	EDSS T25FW TUG MSWS-12 6MWT BICAMS 9HPT Musiqol	PDDS-EDSS 0.61 (0.47, 0.72) $P < .001$	Age 0.47 (0.30, 0.61) Duration 0.43 (0.26, 0.58) T25FW 0.626 (0.48, 0.73) TUG 0.49 (0.31, 0.64) 6MWT -0.61 (-0.72, -0.47) MSWS-12 0.66 (0.54, 0.76) 9HPT 0.44 (0.26, 0.59) SDMT -0.27 (-0.44, -0.07) CVLTII -0.15 (-0.34, 0.05) BVMTR -0.27 (-0.48, -0.11) Musiqol -0.27 (-0.44, -0.07)	Education $r = -0.17$ (-0.36, 0.03)	N/A	7 to 14 days (n = 30)	ICC: 0.99 (0.99, 0.99)
Lavorgna <sup>24</sup> (2017)	EDSS T25FW TUG 6MWT 9HPT	PDDS-EDSS 0.711 (0.596, 0.798) $P < 0.0001$	T25FW (#1): 0.556 (0.40, 0.68) T25FW (#2): 0.587 (0.44, 0.71) TUG: 0.479 (0.31, 0.62)	Education -0.14 (-0.33, 0.06)	N/A	15 days (n = 28)	ICC: 0.95 (0.90, 0.98)

	SDMT PASAT		6MWT: -0.633 (-0.74, -0.50) 9HPT dominant: 0.394 (0.21, 0.55) 9HPT nondominant: 0.495 (0.33, 0.63) SDMT: -0.402 (-0.56, -0.22) PASAT 3": -0.24 (-0.42, -0.04) PASAT 2": -0.247 (-0.43, -0.05) Age: 0.333 (0.14, 0.50)				
Learmonth <sup>25</sup> (2013)	EDSS T25FW TUG 6MWT MSWS-12 LL-FDI (BLEF, ALEF, UEF) Accelerometry SDMT PASAT	PDDS-EDSS 0.783 (0.691, 0.850) <i>P</i> = 0.0001	T25FW: 0.627 (0.488, 0.735) TUG: 0.717 (0.603, 0.802) 6MWT: -0.704 (-0.793, -0.586) MSWS-12: 0.801 (0.715, 0.863) BLEF: -0.748 (-0.825, -0.644) ALEF: -0.739 (-0.818, -0.632) Steps/day: -0.740 (-0.819, -0.633)	Age: 0.280 (0.084, 0.455) Education: -0.274 (-0.450, -0.078) Income: -0.301 (-0.473, -0.107) SDMT: -0.409 (-0.563, 0.227) PASAT: -0.244 (-0.424, -0.046) UEF: -0.445 (-0.593, -0.268)	N/A	N/A	N/A
Solà-Valls <sup>26</sup> (2019)	EDSS T25FW	Conventional PDDS-EDSS 0.79, <i>P</i> < 0.001	T25FW 0.62, <i>P</i> < .001 Age 0.37, <i>P</i> < .001 Disease duration 0.45, <i>P</i> < .001	N/A	Cronbach's $\alpha$ = 0.96	Mean 12 (5) days (n = 36)	Phone PDDS: 0.90, <i>P</i> < 0.001;

		Telephone PDDS-EDSS 0.88, $P < .001$					ICC = 0.97 (0.94, 0.99)
		Conventional and telephone PDDS 0.88, $P < .001$					

6MWT, 6-Minute Walk Test; 9HPT, Nine-Hole Peg Test; ALEF, Advanced Lower Extremity Function; BICAMS, Brief International Cognitive Assessment for Multiple Sclerosis; BLEF, Basic Lower Extremity Function; EDSS, Expanded Disability Status Scale; ICC, intraclass correlation coefficient; LL-FDI, Late-Life Function and Disability Instrument; MSFC, Multiple Sclerosis Functional Composite; MSQLI, Multiple Sclerosis Quality of Life Inventory; MSWS-12, Multiple Sclerosis Walk Scale-12; N/A, not available; PASAT, Paced Auditory Serial Addition Test; PDDS, Patient-Determined Disease Steps; SDMT, Symbol Digit Modalities Test; T25FW, Timed 25-Foot Walk; TUG, Timed Up and Go; UEF, Upper Extremity Function.

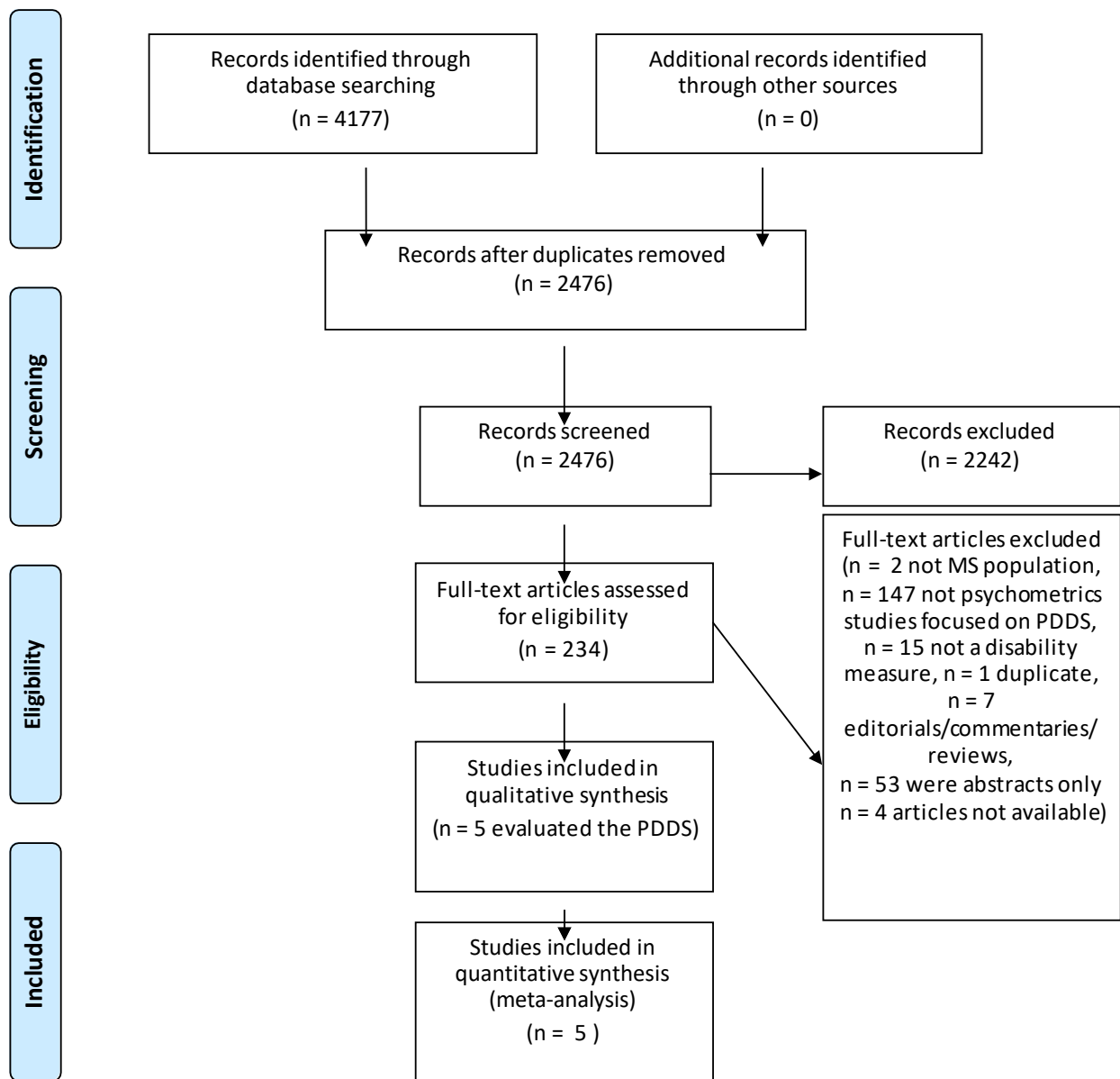
**Table S3.** COSMIN Risk of Bias Checklist

Property	De David	Kahraman	Lavorgna	Learmonth	Solà-Valls
Test-retest reliability	A	V	A	N	A
Content validity	N	A	N	N	N
Criterion validity	V	V	A	V	A
Construct validity	V	V	V	V	V

V, very good; A, adequate; D, doubtful; I, inadequate; N, not applicable

COSMIN, Consensus-based Standards for the Selection of Health Measurement Instruments.

Figure S1. Flow Diagram for Study Selection



PDDS, Patient-Determined Disease Steps; MS, multiple sclerosis.

## Appendix S1.

### Full Search Strategies

#### Embase

Date Searched: 7/28/2020

Applied Database Supplied Limits: none

Number of Results: 1,359

#### Full Search Strategy:

('multiple sclerosis'/exp OR 'chariot disease':ti,ab,kw OR ((multiple OR disseminated OR insular OR multiplex) NEAR/3 sclerosis):ti,ab,kw) AND ('disability scale'/exp OR 'expanded disability status scale'/exp OR 'multiple sclerosis functional composite'/exp OR 'multiple sclerosis functional composite score'/exp OR 'multiple sclerosis functional composite scale'/exp OR 'multiple sclerosis impact scale 29'/exp OR 'disability rating scale'/exp OR 'disability rating index'/exp OR 'modified fatigue impact scale'/exp OR 'patient determined disease steps'/exp OR 'patient determined disease steps scale'/exp OR 'multiple sclerosis walking scale 12'/exp OR 'multiple sclerosis walking scale'/exp OR 'severity of illness index'/exp OR ('patient reported expanded disability status scale' OR 'Expanded Disability Status Scale' OR 'expanded disability status score' OR 'Kurtzke expanded disability status scale' OR 'multiple sclerosis functional composite' OR 'multiple sclerosis impact scale' OR 'performance scales for disability assessment' OR 'modified fatigue impact scale' OR 'patient determined disease steps' OR 'multiple sclerosis walking scale' OR 'severity of illness index' OR 'severity of disease index'):ti,ab,kw OR (PREDSS OR MSFC OR 'EDSS score' OR 'MSIS-29' OR PDDS OR 'MSWS-12'):ti,ab) AND ('validity'/exp OR 'validation process'/exp OR (valid\* OR validated):ti,ab,kw) AND ('validation study'/mj OR 'reproducibility'/exp OR reproducib\*:ti,ab OR 'psychometry'/exp OR psychometr\*:ti,ab OR clinimetr\*:ti,ab OR clinometr\*:ti,ab OR 'observer variation'/exp OR 'observer variation':ti,ab OR 'discriminant analysis'/exp OR reliab\*:ti,ab OR valid\*:ti,ab OR coefficient:ti,ab OR 'internal consistency':ti,ab OR (cronbach\*:ti,ab AND (alpha:ti,ab OR alphas:ti,ab)) OR 'item correlation':ti,ab OR 'item correlations':ti,ab OR 'item selection':ti,ab OR 'item selections':ti,ab OR 'item reduction':ti,ab OR 'item reductions':ti,ab OR agreement:ti OR precision:ti OR imprecision:ti OR 'precise values':ti OR 'test-retest':ti,ab OR (test:ti,ab AND retest:ti,ab) OR (reliab\*:ti,ab AND (test:ti,ab OR retest:ti,ab)) OR stability:ti,ab OR interrater:ti,ab OR inter-rater:ti,ab OR intrarater:ti,ab OR 'intra-rater':ti,ab OR intertester:ti,ab OR 'inter-tester':ti,ab OR intratester:ti,ab OR 'intra-tester':ti,ab OR interobserver:ti,ab OR 'inter-observer':ti,ab OR intraobserver:ti,ab OR 'intra-observer':ti,ab OR intertechnician:ti,ab OR intertechnician:ti,ab OR intratechnician:ti,ab OR 'intra-technician':ti,ab OR interexaminer:ti,ab OR 'inter-examiner':ti,ab OR intraexaminer:ti,ab OR 'intra-examiner':ti,ab OR interassay:ti,ab OR 'inter-assay':ti,ab OR intraassay:ti,ab OR 'intra-assay':ti,ab OR interindividual:ti,ab OR 'inter-individual':ti,ab OR intraindividual:ti,ab OR 'intra-individual':ti,ab OR interparticipant:ti,ab OR 'inter-participant':ti,ab OR intraparticipant:ti,ab OR 'intra-participant':ti,ab OR kappa:ti,ab OR kappas:ti,ab OR 'coefficient of variation':ti,ab OR repeatab\*:ti OR ((replicab\*:ti OR repeated:ti) AND (measure:ti OR measures:ti OR findings:ti OR result:ti OR results:ti OR test:ti OR tests:ti)) OR generaliza\*:ti,ab OR generalisa\*:ti,ab OR concordance:ti,ab OR (intraclass:ti,ab AND correlation\*:ti,ab) OR discriminative:ti,ab OR 'known group':ti,ab OR 'factor analysis':ti,ab OR 'factor analyses':ti,ab

OR 'factor structure':ti,ab OR 'factor structures':ti,ab OR dimensionality:ti,ab OR subscale\*:ti,ab OR 'multitrait scaling analysis':ti,ab OR 'multitrait scaling analyses':ti,ab OR 'item discriminant':ti,ab OR 'interscale correlation':ti,ab OR 'interscale correlations':ti,ab OR ((error:ti,ab OR errors:ti,ab) AND (measure\*:ti,ab OR correlat\*:ti,ab OR evaluat\*:ti,ab OR accuracy:ti,ab OR accurate:ti,ab OR precision:ti,ab OR mean:ti,ab)) OR 'individual variability':ti,ab OR 'interval variability':ti,ab OR 'rate variability':ti,ab OR 'variability analysis':ti,ab OR (uncertainty:ti,ab AND (measurement:ti,ab OR measuring:ti,ab)) OR 'standard error of measurement':ti,ab OR sensitiv\*:ti,ab OR responsive\*:ti,ab OR (limit:ti,ab AND detection:ti,ab) OR 'minimal detectable concentration':ti,ab OR interpretab\*:ti,ab OR (small\*:ti,ab AND (real:ti,ab OR detectable:ti,ab) AND (change:ti,ab OR difference:ti,ab)) OR 'meaningful change':ti,ab OR 'minimal important change':ti,ab OR 'minimal important difference':ti,ab OR 'minimally important change':ti,ab OR 'minimally important difference':ti,ab OR 'minimal detectable change':ti,ab OR 'minimal detectable difference':ti,ab OR 'minimally detectable change':ti,ab OR 'minimally detectable difference':ti,ab OR 'minimal real change':ti,ab OR 'minimal real difference':ti,ab OR 'minimally real change':ti,ab OR 'minimally real difference':ti,ab OR 'ceiling effect':ti,ab OR 'floor effect':ti,ab OR 'Item response model':ti,ab OR IRT:ti,ab OR Rasch:ti,ab OR 'Differential item functioning':ti,ab OR DIF:ti,ab OR 'computer adaptive testing':ti,ab OR 'item bank':ti,ab OR 'cross-cultural equivalence':ti,ab)

### **Ovid Medline**

Date Searched: 7/28/2020

Applied Database Supplied Limits: none

Number of Results: 836

### Full Search Strategy:

(exp Multiple Sclerosis/ or exp Multiple Sclerosis, Relapsing-Remitting/ OR chariot disease.mp. OR ((disseminated OR insular OR multiple OR multiplex) ADJ3 sclerosis).mp.) AND (exp Disability Evaluation/ OR exp "Severity of Illness Index"/ OR (patient reported expanded disability status scale OR Expanded Disability Status Scale OR expanded disability status score OR Kurtzke expanded disability status scale OR multiple sclerosis functional composite OR multiple sclerosis impact scale OR performance scales for disability assessment OR modified fatigue impact scale OR patient determined disease steps OR multiple sclerosis walking scale OR severity of illness index OR severity of disease index).mp. OR (PREDSS OR MSFC OR EDSS score OR MSIS-29 OR PDDS OR MSWS-12).ti,ab.) AND (exp Validation Study/ OR (valid\* OR validated).mp.) AND (Validation Study/ OR exp "Reproducibility of Results"/ OR reproducib\*.mp. OR Psychometrics/ OR psychometr\*.ti,ab. OR clinimetr\*.ti,ab. OR clinometr\*.ti,ab. OR Observer Variation/ OR observer variation.ti,ab. OR Discriminant Analysis/ OR reliab\*.ti,ab. OR valid\*.ti,ab. OR coefficient.ti,ab. OR internal consistency.ti,ab. OR (cronbach\*.ti,ab. AND (alpha.ti,ab. OR alphas.ti,ab.)) OR item correlation.ti,ab. OR item correlations.ti,ab. OR item selection.ti,ab. OR item selections.ti,ab. OR item reduction.ti,ab. OR item reductions.ti,ab. OR agreement.ti. OR precision.ti. OR imprecision.ti. OR precise values.ti. OR test-retest.ti,ab. OR (test.ti,ab. AND retest.ti,ab.) OR (reliab\*.ti,ab. AND (test.ti,ab. OR retest.ti,ab.)) OR stability.ti,ab. OR interrater.ti,ab. OR inter-rater.ti,ab. OR intrarater.ti,ab. OR



intra-rater.ti,ab. OR intertester.ti,ab. OR inter-tester.ti,ab. OR intratester.ti,ab. OR intra-tester.ti,ab. OR interobserver.ti,ab. OR inter-observer.ti,ab. OR intraobserver.ti,ab. OR intra-observer.ti,ab. OR intertechnician.ti,ab. OR intertechnician.ti,ab. OR intratechnician.ti,ab. OR intra-technician.ti,ab. OR interexaminer.ti,ab. OR inter-examiner.ti,ab. OR intraexaminer.ti,ab. OR intra-examiner.ti,ab. OR interassay.ti,ab. OR inter-assay.ti,ab. OR intraassay.ti,ab. OR intra-assay.ti,ab. OR interindividual.ti,ab. OR inter-individual.ti,ab. OR intraindividual.ti,ab. OR intra-individual.ti,ab. OR interparticipant.ti,ab. OR inter-participant.ti,ab. OR intraparticipant.ti,ab. OR intra-participant.ti,ab. OR kappa.ti,ab. OR kappas.ti,ab. OR kappas.ti,ab. OR coefficient of variation.ti,ab. OR repeatab\*.ti. OR ((replicab\*.ti. OR repeated.ti.) AND (measure.ti. OR measures.ti. OR findings.ti. OR result.ti. OR results.ti. OR test.ti. OR tests.ti.)) OR generaliza\*.ti,ab. OR generalisa\*.ti,ab. OR concordance.ti,ab. OR (intraclass.ti,ab. AND correlation\*.ti,ab.) OR discriminative.ti,ab. OR known group.ti,ab. OR factor analysis.ti,ab. OR factor analyses.ti,ab. OR factor structure.ti,ab. OR factor structures.ti,ab. OR dimensionality.ti,ab. OR subscale\*.ti,ab. OR multitrait scaling analysis.ti,ab. OR multitrait scaling analyses.ti,ab. OR item discriminant.ti,ab. OR interscale correlation.ti,ab. OR interscale correlations.ti,ab. OR ((error.ti,ab. OR errors.ti,ab.) AND (measure\*.ti,ab. OR correlat\*.ti,ab. OR evaluat\*.ti,ab. OR accuracy.ti,ab. OR accurate.ti,ab. OR precision.ti,ab. OR mean.ti,ab.)) OR individual variability.ti,ab. OR interval variability.ti,ab. OR rate variability.ti,ab. OR variability analysis.ti,ab. OR (uncertainty.ti,ab. AND (measurement.ti,ab. OR measuring.ti,ab.)) OR sensitiv\*.ti,ab. OR responsive\*.ti,ab. OR (limit.ti,ab. AND detection.ti,ab.) OR minimal detectable concentration.ti,ab. OR interpretab\*.ti,ab. OR (small\*.ti,ab. AND (real.ti,ab. OR detectable.ti,ab.)) AND (change.ti,ab. OR difference.ti,ab.)) OR meaningful change.ti,ab. OR minimal important change.ti,ab. OR minimal important difference.ti,ab. OR minimally important change.ti,ab. OR minimally important difference.ti,ab. OR minimal detectable change.ti,ab. OR minimal detectable difference.ti,ab. OR minimally detectable change.ti,ab. OR minimally detectable difference.ti,ab. OR minimal real change.ti,ab. OR minimal real difference.ti,ab. OR minimally real change.ti,ab. OR minimally real difference.ti,ab. OR ceiling effect.ti,ab. OR floor effect.ti,ab. OR Item response model.ti,ab. OR IRT.ti,ab. OR Rasch.ti,ab. OR Differential item functioning.ti,ab. OR DIF.ti,ab. OR computer adaptive testing.ti,ab. OR item bank.ti,ab. OR cross-cultural equivalence.ti,ab.)

### **Scopus**

Date Searched: 7/28/2020

Applied Database Supplied Limits: none

Number of Results: 810

Full Search Strategy:

((TITLE-ABS-KEY("chariot disease")) OR (TITLE-ABS-KEY((multiple OR disseminated OR insular OR multiplex) W/3 sclerosis))) AND ((TITLE-ABS-KEY("patient reported expanded disability status scale" OR "Expanded Disability Status Scale" OR "expanded disability status score" OR "Kurtzke expanded disability status scale" OR "multiple sclerosis functional composite" OR "multiple sclerosis impact scale" OR "performance scales for disability assessment" OR "modified fatigue impact scale" OR "patient determined disease steps" OR "multiple sclerosis walking scale" OR "severity of illness index" OR "severity of disease

index")) OR (TITLE-ABS(PREDSS OR MSFC OR "EDSS score" OR "MSIS-29" OR PDDS OR "MSWS-12")) AND ((TITLE-ABS-KEY(valid\* OR validated))) AND ((TITLE-ABS(reproducib\* OR psychometr\* OR clinimetr\* OR clinometr\* OR "observer variation" OR reliab\* OR valid\* OR coefficient OR "internal consistency")) OR (TITLE-ABS(cronbach\* AND (alpha OR alphas))) OR (TITLE-ABS("item correlation" OR "item correlations" OR "item selection" OR "item selections" OR "item reduction" OR "item reductions")) OR (TITLE(agreement OR precision OR imprecision OR "precise values")) OR (TITLE-ABS("test-retest")) OR (TITLE-ABS(test AND retest)) OR (TITLE-ABS(reliab\* AND (test OR retest))) OR (TITLE-ABS(stability OR interrater OR inter-rater OR intrarater OR intra-rater OR intertester OR inter-tester OR intratester OR intra-tester OR interobserver OR inter-observer OR intraobserver OR intra-observer OR intertechnician OR intertechnician OR intratechnician OR intra-technician OR interexaminer OR inter-examiner OR intraexaminer OR intra-examiner OR interassay OR inter-assay OR intraassay OR intra-assay OR interindividual OR inter-individual OR intraindividual OR intra-individual OR interparticipant OR inter-participant OR intraparticipant OR intra-participant OR kappa OR kappas OR "coefficient of variation")) OR (TITLE(repeat\*)) OR (TITLE((replicab\* OR repeated) AND (measure OR measures OR findings OR result OR results OR test OR tests))) OR (TITLE-ABS(generaliza\* OR generalisa\* OR concordance)) OR (TITLE-ABS(intraclass AND correlation\*)) OR (TITLE-ABS(discriminative OR "known group" OR "factor analysis" OR "factor analyses" OR "factor structure" OR "factor structures" OR dimensionality OR subscale\* OR "multitrait scaling analysis" OR "multitrait scaling analyses" OR "item discriminant" OR "interscale correlation" OR "interscale correlations")) OR (TITLE-ABS((error OR errors) AND (measure\* OR correlat\* OR evaluat\* OR accuracy OR accurate OR precision OR mean))) OR (TITLE-ABS("individual variability" OR "interval variability" OR "rate variability" OR "variability analysis")) OR (TITLE-ABS(uncertainty AND (measurement OR measuring))) OR (TITLE-ABS("standard error of measurement" OR sensitiv\* OR responsive\*)) OR (TITLE-ABS(limit AND detection)) OR (TITLE-ABS("minimal detectable concentration" OR interpretab\*)) OR (TITLE-ABS(small\* AND (real OR detectable) AND (change OR difference))) OR (TITLE-ABS("meaningful change" OR "minimal important change" OR "minimal important difference" OR "minimally important change" OR "minimally important difference" OR "minimal detectable change" OR "minimal detectable difference" OR "minimally detectable change" OR "minimally detectable difference" OR "minimal real change" OR "minimal real difference" OR "minimally real change" OR "minimally real difference" OR "ceiling effect" OR "floor effect" OR "Item response model" OR IRT OR Rasch OR "Differential item functioning" OR DIF OR "computer adaptive testing" OR "item bank" OR "cross-cultural equivalence")))

## **The Cochrane Library**

Date Searched: 7/28/2020

Applied Database Supplied Limits: none

Number of Results

- Cochrane Central Register of Controlled Trials 143
- Cochrane Database of Systematic Reviews 2

Full Search Strategy:

[mh "Multiple Sclerosis"] or [mh "Multiple Sclerosis, Relapsing-Remitting"] OR "chariot disease":ti,ab,kw OR ((disseminated OR insular OR multiple OR multiplex) NEAR/3 sclerosis):ti,ab,kw) AND ([mh "Disability Evaluation"] OR [mh "Severity of Illness Index"] OR ("patient reported expanded disability status scale" OR "Expanded Disability Status Scale" OR "expanded disability status score" OR "Kurtzke expanded disability status scale" OR "multiple sclerosis functional composite" OR "multiple sclerosis impact scale" OR "performance scales for disability assessment" OR "modified fatigue impact scale" OR "patient determined disease steps" OR "multiple sclerosis walking scale" OR "severity of illness index" OR "severity of disease index"):ti,ab,kw OR (PREDSS OR MSFC OR "EDSS score" OR "MSIS29" OR PDDS OR "MSWS12"):ti,ab) AND ([mh "Validation Study"] OR (valid\* OR validated):ti,ab,kw) AND ([mh "Validation Study"] OR [mh "Reproducibility of Results"] OR reproducib\*:ti,ab OR [mh Psychometrics] OR psychometr\*:ti,ab OR clinimetr\*:ti,ab OR clinometr\*:ti,ab OR [mh "Observer Variation"] OR "observer variation":ti,ab OR [mh "Discriminant Analysis"] OR reliab\*:ti,ab OR valid\*:ti,ab OR coefficient:ti,ab OR "internal consistency":ti,ab OR (cronbach\*:ti,ab AND (alpha:ti,ab OR alphas:ti,ab)) OR "item correlation":ti,ab OR "item correlations":ti,ab OR "item selection":ti,ab OR "item selections":ti,ab OR "item reduction":ti,ab OR "item reductions":ti,ab OR agreement:ti OR precision:ti OR imprecision:ti OR "precise values":ti OR "test retest":ti,ab OR (test:ti,ab AND retest:ti,ab) OR (reliab\*:ti,ab AND (test:ti,ab OR retest:ti,ab)) OR stability:ti,ab OR interrater:ti,ab OR intrarater:ti,ab OR "intrarater":ti,ab OR intertester:ti,ab OR "intertester":ti,ab OR intratester:ti,ab OR "intratester":ti,ab OR interobserver:ti,ab OR "interobserver":ti,ab OR intraobserver:ti,ab OR "intraobserver":ti,ab OR intertechnician:ti,ab OR intertechnician:ti,ab OR intratechnician:ti,ab OR "intratechnician":ti,ab OR interexaminer:ti,ab OR "interexaminer":ti,ab OR intraexaminer:ti,ab OR "intraexaminer":ti,ab OR interassay:ti,ab OR "interassay":ti,ab OR intraassay:ti,ab OR "intraassay":ti,ab OR interindividual:ti,ab OR "interindividual":ti,ab OR intraindividual:ti,ab OR "intraindividual":ti,ab OR interparticipant:ti,ab OR "interparticipant":ti,ab OR intraparticipant:ti,ab OR "intraparticipant":ti,ab OR kappa:ti,ab OR kappas:ti,ab OR "coefficient of variation":ti,ab OR repeatab\*:ti OR ((replicab\*:ti OR repeated:ti) AND (measure:ti OR measures:ti OR findings:ti OR result:ti OR results:ti OR test:ti OR tests:ti)) OR generaliza\*:ti,ab OR generalisa\*:ti,ab OR concordance:ti,ab OR (intraclass:ti,ab AND correlation\*:ti,ab) OR discriminative:ti,ab OR "known group":ti,ab OR "factor analysis":ti,ab OR "factor analyses":ti,ab OR "factor structure":ti,ab OR "factor structures":ti,ab OR dimensionality:ti,ab OR subscale\*:ti,ab OR "multitrait scaling analysis":ti,ab OR "multitrait scaling analyses":ti,ab OR "item discriminant":ti,ab OR "interscale correlation":ti,ab OR "interscale correlations":ti,ab OR ((error:ti,ab OR errors:ti,ab) AND (measure\*:ti,ab OR correlat\*:ti,ab OR evaluat\*:ti,ab OR accuracy:ti,ab OR accurate:ti,ab OR precision:ti,ab OR mean:ti,ab)) OR "individual variability":ti,ab OR "interval variability":ti,ab OR "rate variability":ti,ab OR "variability analysis":ti,ab OR (uncertainty:ti,ab AND (measurement:ti,ab OR measuring:ti,ab)) OR "standard error of measurement":ti,ab OR sensitiv\*:ti,ab OR responsive\*:ti,ab OR (limit:ti,ab AND detection:ti,ab) OR "minimal detectable concentration":ti,ab OR interpretab\*:ti,ab OR (small\*:ti,ab AND (real:ti,ab OR detectable:ti,ab) AND (change:ti,ab OR difference:ti,ab)) OR "meaningful change":ti,ab OR "minimal important

change”:ti,ab OR “minimal important difference”:ti,ab OR “minimally important change”:ti,ab OR “minimally important difference”:ti,ab OR “minimal detectable change”:ti,ab OR “minimal detectable difference”:ti,ab OR “minimally detectable change”:ti,ab OR “minimally detectable difference”:ti,ab OR “minimal real change”:ti,ab OR “minimal real difference”:ti,ab OR “minimally real change”:ti,ab OR “minimally real difference”:ti,ab OR “ceiling effect”:ti,ab OR “floor effect”:ti,ab OR “Item response model”:ti,ab OR IRT:ti,ab OR Rasch:ti,ab OR “Differential item functioning”:ti,ab OR DIF:ti,ab OR “computer adaptive testing”:ti,ab OR “item bank”:ti,ab OR “crosscultural equivalence”:ti,ab)

### **Cumulative Index to Nursing and Allied Health Literature Plus**

Date Searched: 7/28/2020

Applied Database Supplied Limits: none

Number of Results: 1,027

#### Full Search Strategy:

1. (MH "Multiple Sclerosis+") OR “chariot disease” OR ((multiple OR disseminated OR insular OR multiplex) N3 sclerosis)
2. (MH "Severity of Disability") OR (MH "Disability Evaluation+") OR (MH "International Classification of Functioning, Disability, and Health") OR (MH "Scales") OR (MH "Severity of Illness Indices+") OR (“patient reported expanded disability status scale” OR “Expanded Disability Status Scale” OR “expanded disability status score” OR “Kurtzke expanded disability status scale” OR “multiple sclerosis functional composite” OR “multiple sclerosis impact scale” OR “performance scales for disability assessment” OR “modified fatigue impact scale” OR “patient determined disease steps” OR “multiple sclerosis walking scale” OR “severity of illness index” OR “severity of disease index”) OR (PREDSS OR MSFC OR “EDSS score” OR “MSIS-29” OR PDSS OR “MSWS-12”)
3. (M "Validity+") OR (MH "Validation Studies") OR (valid\* OR validated)
4. (MH "Validation Studies") OR (MH "Reproducibility of Results") OR reproducib\* OR (MH "Psychometrics") OR psychometr\* OR clinimetr\* OR clinometr\* OR “observer variation” OR (MH "Discriminant Analysis") OR reliab\* OR valid\* OR coefficient OR “internal consistency” OR (cronbach\* AND (alpha OR alphas)) OR “item correlation” OR “item correlations” OR “item selection” OR “item selections” OR “item reduction” OR “item reductions” OR agreement OR precision OR imprecision OR “precise values” OR test–retest OR (test AND retest) OR (reliab\* AND (test OR retest)) OR stability OR interrater OR inter-rater OR intrarater OR intra-rater OR intertester OR inter-tester OR intratester OR intra-tester OR interobserver OR inter-observer OR intraobserver OR intra-observer OR intertechnician OR intertechnician OR intratechnician OR intra-technician OR interexaminer OR inter-examiner OR intraexaminer OR intra-examiner OR interassay OR inter-assay OR intraassay OR intra-assay OR interindividual OR inter-

individual OR intraindividual OR intra-individual OR interparticipant OR inter-participant OR intraparticipant OR intra-participant OR kappa OR kappas OR “coefficient of variation” OR repeatab\* OR ((replicab\* OR repeated) AND (measure OR measures OR findings OR result OR results OR test OR tests)) OR generaliza\* OR generalisa\* OR concordance OR (intraclass AND correlation\*) OR discriminative OR “known group” OR “factor analysis” OR “factor analyses” OR “factor structure” OR “factor structures” OR dimensionality OR subscale\* OR “multitrait scaling analysis” OR “multitrait scaling analyses” OR “item discriminant” OR “interscale correlation” OR “interscale correlations” OR ((error OR errors) AND (measure\* OR correlat\* OR evaluat\* OR accuracy OR accurate OR precision OR mean)) OR “individual variability” OR “interval variability” OR “rate variability” OR “variability analysis” OR (uncertainty AND (measurement OR measuring)) OR “standard error of measurement” OR sensitiv\* OR responsive\* OR (limit AND detection) OR “minimal detectable concentration” OR interpretab\* OR (small\* AND (real OR detectable) AND (change OR difference)) OR “meaningful change” OR “minimal important change” OR “minimal important difference” OR “minimally important change” OR “minimally important difference” OR “minimal detectable change” OR “minimal detectable difference” OR “minimally detectable change” OR “minimally detectable difference” OR “minimal real change” OR “minimal real difference” OR “minimally real change” OR “minimally real difference” OR “ceiling effect” OR “floor effect” OR “Item response model” OR IRT OR Rasch OR “Differential item functioning” OR DIF OR “computer adaptive testing” OR “item bank” OR “cross-cultural equivalence”

5. #1 AND #2 AND #3 AND #4 (1027 results)

**ClinicalTrials.gov**

Date Searched: 7/28/2020

Number of Results: 0

Full Search Strategy:

“multiple sclerosis” AND (“disability scales” OR “severity of illness index”) AND (valid\* OR validated)