

Online Supplement 1: Eligibility criteria – details, definitions, and rationale

Table of Contents

<i>Walking-Related Digital Mobility Outcome Definitions</i>	2
<i>Population Definitions</i>	5
Parkinson’s Disease.....	5
Multiple Sclerosis.....	5
Proximal Femoral Fracture.....	6
Chronic Obstructive Pulmonary Disease	6
<i>Clinically-Relevant Measures included in Research Question 2</i>	7
<i>Clinically-Relevant Outcomes Included in Research Question 3</i>	15
<i>Timed Walking Tests: Explicit Eligibility Criteria & Rationale</i>	16
<i>References</i>	17

Walking-Related Digital Mobility Outcome Definitions

The following set of gait and walking parameters will be included in the map and subsequent analysis produced in this scoping review. This list includes spatiotemporal parameters included in three well-known factor analyses of gait [1–3] (Table 1) and parameters associated with volume of walking which were prioritized by clinical and technical subject matter experts involved in the Mobilize-D project (Table 2). In keeping with the reflexive nature of scoping reviews, this list may be amended based on initial search findings as described in the study protocol.

Definitions adopted by the Mobilise-D Consortium:

- Human **walking** is a method of locomotion and is defined as initiating and maintaining a forward displacement of the centre of mass in an intended direction involving the use of the two legs which provide both support and propulsion. The feet are repetitively and reciprocally lifted and set down whereby at least one foot is in contact with the ground at all times.[4,5] **Walking** with walking aids is included in this definition. **Walking** is made up of **walking bouts** and is equivalent to taking steps/stepping forward (thus stepping in place does not constitute walking) and is defined as starting from initial contact for the initial step until ending with full floor contact of the foot making the last step.[6]
- A **step** is the interval between the initial contacts of the ipsi- and contralateral foot[4] and corresponds to the forward displacement of the foot together with a forward displacement of the trunk.[6]
- A **stride** is the interval between two successive initial contacts of the same foot. As such, a **stride** is equivalent to the gait cycle and every stride contains two **steps**. [4]

Table 1: Gait parameters included in the review

Gait Parameter (Unit)	Narrative Definition	Dimension
Spatial Parameters		
Step length (cm)	Typically defined as the anterior-posterior distance from the heel of one footprint to the heel of the opposite footprint.[3] For the purposes of this review, step length may also be measured between the toes or other identifiable markers on opposite footfalls.	Mean, variability, asymmetry
Stride length (cm)	Typically defined as the anterior-posterior distance between heels of two consecutive footprints of the same foot (left to left, right to right); two steps (e.g., a right step followed by a left step) comprise one stride or one gait cycle.[3] For the purposes of this review, stride length may also be measured between the toes or other identifiable markers on consecutive footfalls.	Mean, variability

Step width (cm)	The lateral distance from heel center of one footprint to the line of progression formed by two consecutive footprints of the opposite foot.[3] For the purposes of this review, step width may also be measured between the toes or other identifiable markers on opposite footfalls.	Mean, variability
Temporal Parameters		
Cadence (steps/min)	Cadence is the number of steps per minute, sometimes referred to as step rate or frequency[3]	Mean, variability
Step time (s)	Time elapsed from initial contact of one foot to initial contact of the opposite foot [3]	Mean, variability, asymmetry
Stride time (s)	Time elapsed between the initial contacts of two consecutive footfalls of the same foot [3]	Mean, variability
Stance time (s, % of gait cycle)	The stance phase is the weight bearing portion of each gait cycle initiated at heel contact and ending at toe off of the same foot; stance time is the time elapsed between the initial contact and the last contact of a single footfall [3]	Mean, variability, asymmetry
Swing time (s)	The swing phase is initiated with toe off and ends with initial contact of the same foot; swing time is the time elapsed between the last contact of the current footfall to the initial contact of the next footfall of the same foot [3]	Mean, variability, asymmetry
Single support time (s, % of gait cycle)	Single support occurs when only one foot is in contact with the ground; single support time is the time elapsed between the last contact of the opposite footfall to the initial contact of the next footfall of the same foot [3]	Mean, variability, asymmetry
Double support time (s, % of gait cycle)	Double support occurs when both feet are in contact with the ground simultaneously; double support time is the sum of the time elapsed during two periods of double support in the gait cycle [3]	Mean, variability
Spatiotemporal Parameters		
Gait/Walking Speed (cm/s)	Walking speed is the distance covered by the whole body within a certain time interval / per unit time of walking. It is measured in meters per second and is the magnitude of the velocity vector (velocity includes direction and magnitude of walking). [5]	Mean, variability
Stride Speed (cm/s)	Stride speed is the distance covered by the whole body within a single stride per unit time of walking.	Mean, variability

Table 2: Parameters Assessing Volume of Walking

Mobility Parameter	Definition
Daily Volume of Walking	
Walking time	The amount of time spent walking during a set period of time. Walking is made up of walking bouts and is equivalent to taking steps/stepping forward and is defined as starting from initial contact for the initial step until ending with full floor contact of the foot making the last step [6]
Step Count	The number of steps made during a set period of time, such as a day or walking bout. A <i>step</i> is the interval between the initial contacts of the ipsi- and contralateral foot.[4]
Number, duration, or distance of walking bouts	<p>A walking bout (WB) is a walking sequence containing at least two consecutive strides of both feet (e.g. R-L-R-L or L-R-L-R-L-R).</p> <p>Start and end of a walking bout are determined by a resting period or any other activity (non-walking period). The initial step of a WB follows a non-walking period and the final step precedes the next non-walking period.</p>

Population Definitions

Parkinson's Disease

Proposed definition

People who have received a confirmed diagnosis of Parkinson's Disease by a professional physician based on the relevant diagnostic criteria at the time of the study's publication. Studies including participants with any age range and disease severity level will be included in this review.

Relevant Diagnostic Criteria may include, but are not limited to:

- New International Parkinson Disease and Movement Disorder Society Diagnostic Criteria ([Postuma, Mov Dis 2015](#))
- Gelb's Criteria (National Institute of Neurological Disorders and Stroke) ([Gelb, JAMA Neurology, 1999](#))
- Queen's Square Brain Bank/UK Parkinson's Disease Society Brain Bank Diagnostic Criteria ([Hughes, J Neurol Neurosurg Psychiatry, 1992](#))

Population Exclusion Criteria

Studies of persons with atypical parkinsonian syndromes, drug-induced parkinsonism, or vascular parkinsonism are not included under these diagnostic criteria.

Multiple Sclerosis

Proposed definition

People who have received a confirmed diagnosis of Multiple Sclerosis (MS) by a professional physician based on the relevant diagnostic criteria at the time of the study's publication. Studies including participants with any age range, severity level or sub-type of Multiple Sclerosis will be included in this review.

Relevant Diagnostic criteria may include, but are not limited to:

- McDonald diagnostic criteria ([McDonald, Ann Neurol, 2001](#)), including the [2005](#), [2010](#), and [2017](#) revisions
- Poser diagnostic criteria ([Poser, Ann Neurol, 1983](#))
- MAGNIMS consensus guidelines: MRI criteria for the diagnosis of MS ([Filippi, Lancet Neurology, 2016](#))
- Defining the clinical course of multiple sclerosis; The 2013 revisions ([Lubin et al, 2014](#))

Population Exclusion Criteria

Studies of persons experiencing or exhibiting clinically isolated syndrome (CIS), Neuromyelitis Optica Spectrum Disorder (NMOSD), Myelin oligodendrocyte glycoprotein (MOG), or Acute disseminated encephalomyelitis (ADEM) will be excluded. No additional exclusion criteria will be applied.

Proximal Femoral Fracture

Proposed definition

We will include older people (≥ 65 years of age) who have received surgical treatment (fixation or arthroplasty) for a low-energy fracture of the proximal femur. Both (intracapsular (also termed subcapital and transcervical) fractures or extracapsular (also termed trochanteric, intertrochanteric, pertrochanteric and subtrochanteric) fractures will be included.

Relevant diagnostic criteria may include, but are not limited to:

- ICD-10 diagnosis S72.0, S72.1, S72.2 as diagnosed on X-rays of the hip and pelvis

Population Exclusion Criteria

Studies of persons that do not meet the proposed definition of the target population will be excluded. No additional exclusion criteria will be applied.

Chronic Obstructive Pulmonary Disease

Proposed definition:

People who have received a confirmed diagnosis of Chronic Obstructive Pulmonary Disease (COPD). In this context a “confirmed diagnosis” is defined as a diagnosis made by a professional physician based on the relevant diagnostic criteria at the time of the study’s publication. Studies including participants with any age range, severity level or sub-type of COPD will be included in this review.

Relevant diagnostic criteria may include, but are not limited to:

Patients with a diagnosis of chronic obstructive pulmonary disease (COPD), defined by spirometry. Any definition of COPD will be accepted as long as it is based on spirometry. For example, current guidelines recommend FEV1/FVC <0.7 and FEV1 in % predicted $<80\%$.

Population Exclusion Criteria

Studies of persons that do not meet the proposed definition of the target population will be excluded. No additional exclusion criteria will be applied.

Clinically-Relevant Measures included in Research Question 2

The following set of “clinically-relevant” measurements, summarized in [Table 1](#), will be included in the map and analysis associated with Research Question 1 in the Mobilise-D scoping review. The general measurements will be included in all disease-area sub-analyses, while disease-specific measurements will be included only in disease-specific analyses. In keeping with the reflexive nature of scoping reviews, this list may be amended based on initial search findings as described in the study protocol.

Definitions

For the purposes of our review, “measurements” will refer to instruments or tests that assess an aspect of a patient’s health at a single point in time, while “outcomes” refer to identified changes in health status that result from the handling of a health problem. We will define “clinically-relevant” measurements as those that are routinely and broadly used in either clinical practice or in major pharmaceutical or epidemiological studies.

Excluded Measurement Categories

We will exclude additional categories that are unlikely to provide additional information on the construct validity of gait and walking parameters, even if they are relevant to our included disease areas. However, some of these categories will be included in Research Question 3, allowing us to explore the relationship between these constructs and gait and walking parameters. These categories are:

- Sleep
- Life space
- Comorbidities
- Pain
- Frailty (Lack of common definition or method of testing frailty will limit any assessment of the DMOs’ construct validity)
- Hospital re-admissions and longitudinal outcome measures not assessable through cross-sectional study designs

Included Measurements

Included measurements are summarized as acronyms in [Table 3](#) and listed in the order which they appear with full titles in [Table 4](#).

Table 3: Summary of included clinically-relevant measurements by category and disease area. Disease areas include Parkinson's disease (PD), multiple sclerosis (MS), chronic obstructive pulmonary disease (COPD), and proximal femoral fracture (PFF). Instrument names are provided in full in Table 4.

Category		All disease areas	PD	MS	COPD	PFF
Disease Severity & Symptoms		CGI, PGI	(MDS)-UPDRS – total, I, II, III, IV H&Y, RDRS, UDysRS, FoGQ, nFoGQ	EDSS, FSS, MSFC, Number of relapses PDDS, GNDS, SNRS	GOLD A-D, MMRC, Dyspnea (VAS, Borg) # Exacerbations	Harris Hip Score Oxford Hip Score
Physiological Measurements				Number/volume of lesions Brain volume BWCS, BLCS, IVIS	FEV1, FVC FEV1/FVC Ratio	
Functional Status/ADL		Barthel Index Nottingham EADL IADL, LLFDI	Schwab & England MDS-UPDRS – II, SPDDS, SPES, PROMIS, Neuro-QoL	Schwab & England MSIS-29		
HRQoL		EQ-5D (5L or 3L), EQ-VAS, SF-36 (RAND), SF-12, HUI3, LSQ	PDQ-8, 10 or 39	MSQoL-54 MSQLI, FAMS	CAT, CRQ, SGRQ, CCQ Feeling Thermometer	
Depression & Anxiety		HADS, Beck, CES-D, GDS, SDS/Zung, PHQ (2, 8, or 9), MHI	LARS			
Cognition		MMSE, MoCA, SDMT PASAT, CANTAB, CAMCOG-R,	RBANS, ACE-R, PD-CRS, Trail Making Test, Digit Span Stroop Color and Word Test	ACE-R, PDQ, BICAMS	<i>Not relevant</i>	
Falls		FES-I, Incidence of falls				
Physical Function	Walking or Functional Assessments	6MWT, TUG, STS, SPPB		MSWS-12	ISWT, ESWT	CAS
	Motor Function & Balance	ABC, Berg Balance, FAB, BESTest, mini-BESTest Ambulation Index (AI)	360 degree (fast) turn test	9-HPT (MSFC) Disease Step		
	Physical Activity	IPAQ, PASE			PROactive	
	Strength	Quadriceps, Leg press, Grip				Hip abduction Knee extension
	Fatigue	FIS, mFIS, FSS, FACIT	PFS-16			

Table 4: Summary of included clinically-relevant measurements by category and disease area.

Disease area	Category	Acronym	Full Name(s)
A - All	01 - Disease Severity	CGI	Clinical Global Impression Score
A - All	01 - Disease Severity	PGI	Patient Global Impression Score
A - All	02 - Functional Status/ADL	Barthel	Barthel Index
A - All	02 - Functional Status/ADL	LLFDI	Late Life Function & Disability Instrument
A - All	02 - Functional Status/ADL	IADL	Lawton Instrumental Activities of Daily Living Scale
A - All	02 - Functional Status/ADL	EADL	Nottingham (Extended) Activities of Daily Living Scale
A - All	03 - HRQoL	EQ-5D (5L or 3L)	EuroQoL 5 Dimensions
A - All	03 - HRQoL	EQ-VAS	EuroQoL Visual Analog Scale
A - All	03 - HRQoL	HUI3	Health Utilities Index Mark 3
A - All	03 - HRQoL	LISAT-9, LSQ	Life Satisfaction Questionnaire
A - All	03 - HRQoL	SF-12, RAND	Short Form 12 Health Survey
A - All	03 - HRQoL	SF-36	Short Form 36 Health Survey
A - All	03 - HRQoL	SF-36 MCS	Short Form 36 Mental Component Scale
A - All	03 - HRQoL	SF-36 PCS	Short Form 36 Physical Component Scale
A - All	04 - Mental Health	BDI, Beck	Beck Depression Inventory
A - All	04 - Mental Health	CES-D	Center for Epidemiologic Studies Depression Scale
A - All	04 - Mental Health	GDS	Geriatric Depression Scale
A - All	04 - Mental Health	HADS	Hospital Anxiety and Depression Scale
A - All	04 - Mental Health	MHI	Mental Health Inventory
A - All	04 - Mental Health	PHQ	Patient Health Questionnaire 8 or 9
A - All	04 - Mental Health	SDS, Zung	Zung Self-Rating Depression Scale
A - All	05 - Cognition	CAMCOG-R	Cambridge Cognitive Assessment (Revised)
A - All	05 - Cognition	CANTAB	Cambridge Neuropsychological Test Automated Battery
A - All	05 - Cognition	MMSE	Mini-Mental State Examination
A - All	05 - Cognition	MoCA	Montreal Cognitive Assessment

A - All	05 - Cognition	PASAT	Paced Auditory Serial Addition Test
A - All	05 - Cognition	SDMT	Symbol Digit Modalities Test
A - All	06 - Falls	FES-I	Falls Self-Efficacy Scale - International
A - All	06 - Falls		Incidence of falls
A - All	07 - Walking or Functional Assessments	2MWT	2 Minute Walk Test
A - All	07 - Walking or Functional Assessments		4 to 10 meter walk (i.e., any straight walking test between 4-10 meters in length)
A - All	07 - Walking or Functional Assessments	6MWT	6 Minute Walk Test
A - All	07 - Walking or Functional Assessments	SPPB	Short Physical Performance Battery
A - All	07 - Walking or Functional Assessments	STS	Sit to Stand Test
A - All	07 - Walking or Functional Assessments	T25FW	Timed 25 Foot Walk
A - All	07 - Walking or Functional Assessments	TUG	Timed Up & Go
A - All	08 - Motor Function & Balance	ABC	Activities-Specific Balance Confidence Scale
A - All	08 - Motor Function & Balance	AI	Ambulation Index
A - All	08 - Motor Function & Balance	BESTest	Balance Evaluation Systems Test
A - All	08 - Motor Function & Balance	BBS	Berg Balance Scale
A - All	08 - Motor Function & Balance	FAB	Fullerton Advanced Balance Scale
A - All	08 - Motor Function & Balance	mini-BESTest	Mini-Balance Evaluation Systems Test
A - All	09 - Physical Activity	IPAQ	International Physical Activity Questionnaire
A - All	09 - Physical Activity	PASE	Physical Activity Scale for the Elderly
A - All	10 - Strength		Grip Strength
A - All	10 - Strength		Leg Press Strength

A - All	10 - Strength		Quadriceps Strength
A - All	11 - Fatigue	FIS, mFIS	(modified) Fatigue Impact Scale for Daily Use
A - All	11 - Fatigue	FSS	Fatigue severity scale
A - All	11 - Fatigue	MFIS	MS fatigue impact scale
B - Parkinson's	01 - Disease Severity	(MDS)-UPDRS - I	(Movement Disorder Society) Unified Parkinson's Disease Rating Scale, subscore I
B - Parkinson's	01 - Disease Severity	(MDS)-UPDRS - III	(Movement Disorder Society) Unified Parkinson's Disease Rating Scale, subscore III
B - Parkinson's	01 - Disease Severity	(MDS)-UPDRS - IV	(Movement Disorder Society) Unified Parkinson's Disease Rating Scale, subscore IV
B - Parkinson's	01 - Disease Severity	(MDS)-UPDRS Total	(Movement Disorder Society) Unified Parkinson's Disease Rating Scale, sum of all subscores (I, II, III, and IV)
B - Parkinson's	01 - Disease Severity	FOGQ	Freezing of Gait Questionnaire
B - Parkinson's	01 - Disease Severity	H&Y	Hoehn & Yahr Score
B - Parkinson's	01 - Disease Severity	nFOGQ	New Freezing of Gait Questionnaire
B - Parkinson's	01 - Disease Severity	RDRS	Rush Dyskinesia Rating Scale
B - Parkinson's	01 - Disease Severity	UDysRS	Unified Dyskinesia Rating Scale
B - Parkinson's	02 - Functional Status/ADL	(MDS)-UPDRS - II	(Movement Disorder Society) Unified Parkinson's Disease Rating Scale, subscore II
B - Parkinson's	02 - Functional Status/ADL	NeuroQoL	Neuro QoL Physical Function
B - Parkinson's	02 - Functional Status/ADL	PROMIS	Patient-Reported Outcome Measurement Information System (ADL test)
B - Parkinson's	02 - Functional Status/ADL	SE-ADL	Schwab & England Activities of Daily Living Scale
B - Parkinson's	02 - Functional Status/ADL	SPDDS	Self-Assessment Parkinson's Disease Disability Scale
B - Parkinson's	02 - Functional Status/ADL	SPES	Short Parkinson's Evaluation Scale
B - Parkinson's	03 - HRQoL	PDQ-39, PDQ-8, PDQ-10	Parkinson's Disease Questionnaire - 39 or 8 or 10
B - Parkinson's	04 - Mental Health	LARS	Lillie Apathy Rating Scale
B - Parkinson's	05 - Cognition	ACE-R	Addenbrooke's Cognitive Examination (Revised)

B - Parkinson's	05 - Cognition		Digit Span
B - Parkinson's	05 - Cognition	PD-CRS	Parkinson's Disease Cognitive Rating Scale
B - Parkinson's	05 - Cognition	RBANS	Repeatable battery for the assessment of neuropsychological status
B - Parkinson's	05 - Cognition	Stroop	Stroop Color and Word Test
B - Parkinson's	05 - Cognition	TMT	Trail Making Test
B - Parkinson's	08 - Motor Function & Balance		360 Degree (Fast) Turn Test
B - Parkinson's	11 - Fatigue	PFS-16	Parkinson's Fatigue Scale
C - Multiple Sclerosis	01 - Disease Severity	EDSS	Kurtzke Expanded Disability Status Scale
C - Multiple Sclerosis	01 - Disease Severity	FSS	Kurtzke Functional Systems Scores
C - Multiple Sclerosis	01 - Disease Severity	MSFC	Multiple Sclerosis Functional Composite
C - Multiple Sclerosis	01 - Disease Severity		Number of Relapses
C - Multiple Sclerosis	01 - Disease Severity	PDSS	Patient Determined Disease Steps
C - Multiple Sclerosis	01 - Disease Severity	GNDS	Guy's Neurological Rating Scale
C - Multiple Sclerosis	01 - Disease Severity	SNRS	Scripps Neurological Rating Scale
C - Multiple Sclerosis	02 - Functional Status/ADL	SE-ADL	Schwab & England Activities of Daily Living Scale
C - Multiple Sclerosis	02 - Functional Status/ADL	MSIS-29	Multiple Sclerosis Impact Scale - 29
C - Multiple Sclerosis	02 - Functional Status/ADL	MSQOL-54	MS Quality of Life - 54
C - Multiple Sclerosis	03 - HRQoL	MSQLI	MS Quality of Life Inventory
C - Multiple Sclerosis	03 - HRQoL	FAMS	Functional Assessment of Multiple Sclerosis
C - Multiple Sclerosis	03 - HRQoL	ACE-R	Addenbrooke's Cognitive Examination (Revised)
C - Multiple Sclerosis	05 - Cognition	PDQ	Perceived Deficits Questionnaire
C - Multiple Sclerosis	05 - Cognition	BICAMS	Brief International Cognitive Assessment for MS
C - Multiple Sclerosis	07 - Walking or Functional Assessments	MSWS-12	Multiple Sclerosis Walking Scale - 12
C - Multiple Sclerosis	08 - Motor Function & Balance	9-HPT	9-Hole Peg Test
C - Multiple Sclerosis	08 - Motor Function & Balance	DS	Disease Step

C - Multiple Sclerosis	12 - Physiological Measurements		Number of lesions
C - Multiple Sclerosis	12 - Physiological Measurements		Volume of lesions
C - Multiple Sclerosis	12 - Physiological Measurements		Brain volume
C - Multiple Sclerosis	12 - Physiological Measurements	BWCS	Bowel Control Scale
C - Multiple Sclerosis	12 - Physiological Measurements	BLCS	Bladder Control Scale
C - Multiple Sclerosis	12 - Physiological Measurements	IVIS	Impact of Visual Impairment Scale
D - COPD	1 - Disease Severity	GOLD A-D	Global Initiative for Chronic Obstructive Lung Disease Stages A-D
D - COPD	1 - Disease Severity	MMRC	Modified Medical Research Council Dyspnea Scale
D - COPD	1 - Disease Severity	Dyspnea VAS	Dyspnea Visual Analog Scale
D - COPD	1 - Disease Severity	Dyspnea Borg	Dyspnea Borg Scale
D - COPD	1 - Disease Severity		Number of Exacerbations
D - COPD	12 - Physiological Measurements	FEV1	Forced Expiratory Volume 1%
D - COPD	12 - Physiological Measurements	FVC	Functional Vital Capacity
D - COPD	12 - Physiological Measurements	FEV1/FVC	Forced Expiratory Volume to Functional Vital Capacity Ratio
D - COPD	03 - HRQoL	CAT	COPD Assessment Test
D - COPD	03 - HRQoL	CRQ	Chronic Respiratory Disease Questionnaire
D - COPD	03 - HRQoL	SGRQ	St. George's Respiratory Questionnaire
D - COPD	03 - HRQoL	CCQ	Clinical COPD Questionnaire
D - COPD	03 - HRQoL	FT	Feeling Thermometer
D - COPD	07 - Walking or Functional Assessments	ISWT	Incremental Shuttle Walk Test

D - COPD	07 - Walking or Functional Assessments	ESWT	Endurance Shuttle Walk Test
D - COPD	09 - Physical Activity	PROactive	PROactive instruments to measure physical activity
E - PFF	1 - Disease Severity	HHS	Harris Hip Score
E - PFF	1 - Disease Severity	OHS	Oxford Hip Score
E - PFF	7 - Walking or Functional Assessments	CAS	Cumulated Ambulation Score
E - PFF	10 - Strength		Hip abduction strength
E - PFF	10 - Strength		Knee Extension strength

Clinically-Relevant Outcomes Included in Research Question 3

The following set of “clinically-relevant” outcomes will be included in the map and analysis associated with Research Question 3 in the Mobilise-D scoping review. The general outcomes will be included in all population sub-analyses, while population-specific outcomes will be included only in population-specific analyses. In keeping with the reflexive nature of scoping reviews, this list may be amended based on initial findings as described in the protocol.

Definitions

In this review, “outcomes” refer to identified changes in health status that result from the handling of a health problem. “Clinically-relevant” measurements and outcomes are those that are routinely and broadly used in either clinical practice or in major pharmaceutical or epidemiological studies.

Table 5: Summary of Included Clinically-Relevant Outcomes

General Outcomes: All disease areas			
Disease/Disability Status or Progression			
Health-Related Quality of Life			
Mortality			
Healthcare Utilization (e.g., hospitalizations, readmissions, home care, costs, invasive procedures, etc.)			
Physical Function (e.g., exercise capacity, motor function, balance, strength)			
Functional Status (e.g., activities of daily living)			
Fatigue			
Cognition			
Mental Health (e.g., depression, anxiety, apathy)			
Falls			
Life Space			
Residential Status			
Use of Mobility Aids			
Disease-Specific Outcomes			
Parkinson’s Disease	Multiple Sclerosis	COPD	Hip Fracture
Development of Dyskinesia	Relapses	Exacerbations	Hip score
Development of Freezing of Gait	Lesions & Brain Volume	Lung Function	Bone mineral density
Dopaminergic medication use		Dyspnea/Breathlessness	Incidence of new fracture
Development of postural instability		Cardiovascular Events	
Dementia		Medication Usage	

Timed Walking Tests: Explicit Eligibility Criteria & Rationale

During pilots, these criteria were easily and consistently interpreted in most cases. However, specific challenges arose regarding the eligibility of timed clinical assessments that include periods of walking. Generally, we will include timed gait speed tests, such as the 10-meter walk, but will exclude tests that aggregate or assess constructs other than gait speed. However, studies may still be included if DMOs were specifically assessed during the walking portions of excluded tests. Detailed instructions related to questions that arose during pilots are provided in [Table 6](#).

Table 6: Instructions to reviewers for categorizing and interpreting traditional timed walking tests in this review

Test	How should the test be categorized/managed?
4 meter, 7 meter, 10 meter walk test Timed 25 foot walk 2 Minute Walk test Walk tests of any distance up to 100m	Timed tests should be categorized as gait speed and captured in our review. Studies reporting these measures within the context of our research questions are included. Though the 2MWT is also referred to as a measure of exercise capacity, we include it to be conservative because it is not necessarily a different length or time than other traditional gait speed tests in mobility-impaired populations. 100m is an arbitrary threshold for distance-based walking tests such that they are roughly the same as the 2MWT.
6 Minute Walk Test, Walk tests of any distance over 100m	The total walk time should not be interpreted as walking speed. However, if the test is instrumented, any DMO captured during these tests should be included. This is because long clinical walk tests such as the 6-Minute Walk Test measure constructs such as exercise capacity and endurance rather than walking speed[7–12] and are not representative of typical real-world walking bout duration.[13–15]
Timed Up and Go test	Any DMO measured during the walking portion of the test should be captured and included. The total time required to complete the Timed Up and Go should not be interpreted as walking speed. This is because the test also includes the time required to stand from seated position and return to a seated position.[16]
Incremental Shuttle Walk Test Endurance Shuttle Walk Test	Neither the ISWT nor the ESWT should be included as tests of gait speed in this review. Similar to the 6MWT, they are measures of exercise endurance rather than walking speed.[17,18] Further, they require that patients walk in time to audible cues, artificially altering cadence and gait speed. Therefore, no DMOs measured during these tests should be included in this review.
Tests conducted on a set-speed treadmill	Speeds set by the researcher should not be interpreted as a patient's self-selected or top gait speed. However, other DMOs collected during treadmill walking should be included.

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