Mobility Staging Across Dementia

Test Administration and Scoring Manual



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MSAD TOOL OVERVIEW

The Mobility Staging Tool for Advanced Dementia (MSAD) was developed at Toronto Rehabilitation Institute – University Health Network, Toronto, Canada for staging severity of mobility impairment in individuals with dementia. The information included in the MSAD tool was derived from a comprehensive review of mobility assessment tools, and a consensus exercise involving academic and clinical experts in mobility and dementia who identified key factors that impact on mobility in people with dementia (Van Ooteghem et al 2018, 2019).

MSAD is designed to describe the functional mobility stage of an individual with dementia. It is a **5-point scale** in which MSAD-0 denotes no mobility impairment, and the remaining four points represent various stages of functional mobility impairment from least (Stage 1) to most (Stage 4) impaired.

"W" is a **modifier** used to denote individuals who move around their environment primarily by manual (self-propelled) or electric wheelchair.

The functional mobility rating is sub-classified using an alpha sub-score from A to C that expresses the degree to which specific mobility impairments impact on the performance and safety of an individual's overall mobility. In assigning a global MSAD rating, the 8 modifiers of mobility impairment are individually scored. These modifiers are: postural control, gait, agitation, impulsivity, visuospatial abilities, pain, fall history, and ability to use a mobility aid such as a cane or walker.

The **Global Mobility Rating** is derived based on a set of scoring rules as described on the right.

Mobility Impairment Rating

0 1 2 3 4

Wheelchair modifier Rating

0W 1W 2W 3W

Modifiers of Mobility Impairment Rating

A B C

Overall Mobility Rating

0 1A 1B 1C W 2A 2B 2C W 3A 3B 3C W 4A 4B 4C W

TEST ADMINISTRATION

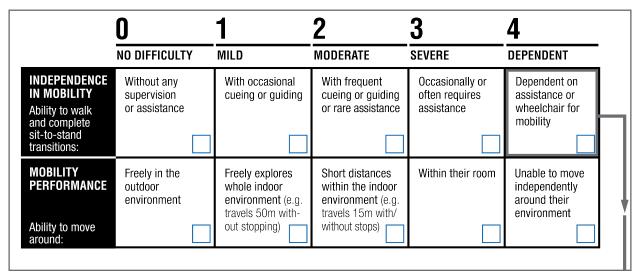
The MSAD tool is designed to be largely observational, to capture how someone is moving naturally in their environment. It helps to spend some time observing the individual as they mobilize. These observations may be supplemented with clinical knowledge of the individual, for example, with information about his/her fall history.

PART 1

Mobility Impairment Stage

Part I of this tool is designed to categorize the functional ability of the individual with dementia into one of four levels, by examining two facets of mobility - the extent to which the individual requires assistance with walking and postural transitions (**Independence in Mobility**), and the individual's ability to move easily through different environments or settings (**Mobility Performance**).

To complete this section, consider the **past week.** Score based on the degree to which the individual required help with mobility, and the extent to which they were able, *with this help*, to move around the environment in order to complete their activities of daily living.



Part I on page 1 of MSAD tool, see Appendix for full tool

INDEPENDENCE IN MOBILITY

"Cueing or Guiding" refers to directions or instructions that you might provide to someone to help him/her execute a mobility task. Examples could include reminders to use the handrail or armrests, or to be cautious when standing. It could also include giving instructions about using a gait aid, or gently taking someone's elbow or hand to direct them, rather than to provide physical support.

"Assistance" refers to any physical support, however brief, required to complete a mobility task Examples could include helping someone stand or sit by allowing him/her to hold your arm or hand, or any assistance with lifting or repositioning.





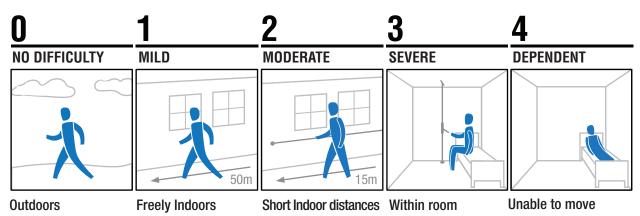
MOBILITY PERFORMANCE

Mobility performance refers to whether someone is able to move around their environment. It should be scored in the context of the individual's level of independence. That is, a measure of his/her mobility performance with whatever cueing, guiding, or assistance that is needed. The score is based on how they have performed in their current environment in the previous week.

The hierarchy here is from an ability to move outdoors (rating of 0), to any distance indoors (rating of 1), to shorter distances indoors (rating of 2), to within a room (rating of 3), to the inability to move around at all (rating of 4).

Moving "freely", either in the outdoor environment or throughout the indoor environment refers to whether someone is capable of moving **50m without needing to stop or rest**. If an individual has not had an opportunity to go outdoors this week, but you are confident that he or she could have safely performed outdoor walking in the past week (such as taken a walk around the block), you can rate them Stage 0 (No difficulty).

"Short distances within the indoor environment" refers to whether someone is capable of moving 15m with or without needing to stop or rest.



Mobility performance scoring hierarchy



Part II of the staging tool considers factors that modify or impact functional mobility impairment. It has been designed to account for the many different ways that mobility is impaired in dementia. For example, an individual could be highly independent, yet very impulsive; or they may be very limited in their mobility-related functional capacity, but be highly restless.

The modifiers included in the MSAD have been selected based on factors determined to be high priority for inclusion according to academic and clinical experts in mobility and dementia (Van Ooteghem et al, 2019). Each factor is divided into three categories. Each factor should be scored individually and only one category per factor may be selected. The text guides the rater to identify the extent to which this single factor is impacting on an individual's mobility, but it is possible that more than one category may apply to someone. Additional detail, provided below, may inform a final decision. The aim is to make a decision about whether overall, this factor has minimal, moderate, or significant impact on mobility. In situations where the rater cannot decide between two categories for a factor, the higher (more impaired) category should be chosen.

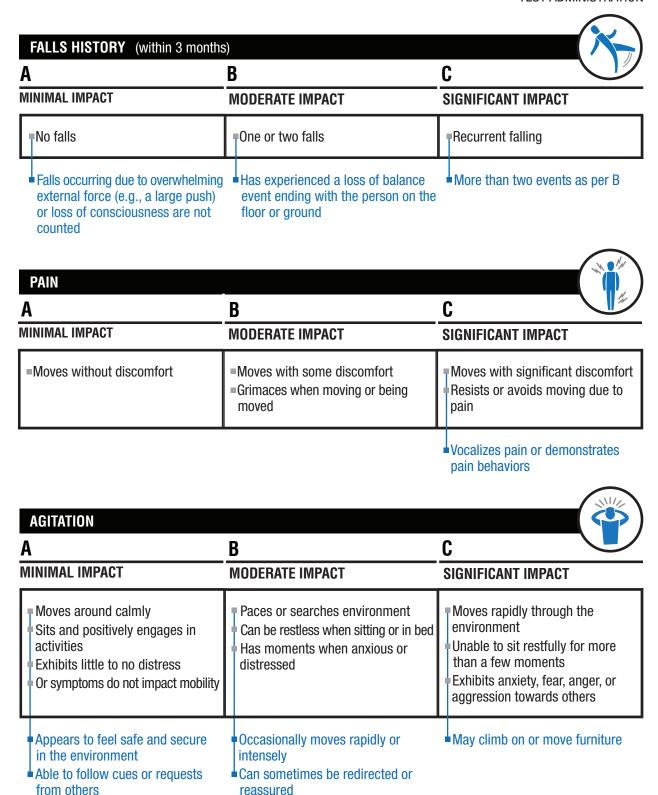
In completing part II, consider your observations of the person over the past week.

In addition to the features included in the tool, please refer to the following additional features/descriptions to help distinguish the categories.

	A	В	C	
	MINIMAL IMPACT ON MOBILITY	MODERATE IMPACT ON MOBILITY	SIGNIFICANT IMPACT ON MOBILITY	
FALLS HISTORY (within 3 months)	■ No falls	One or two falls	Recurrent falling	
PAIN	Moves without discomfort	Moves with some discomfort Grimaces when moving or being moved	Moves with significant discomfort Resists or avoids moving due to pain	
AGITATION	Moves around calmly Sits and positively engages in activities Exhibits little to no distress Or symptoms do not impact mobility	Paces or searches environment Can be restless when sitting or in bed Has moments when anxious or distressed	Moves rapidly through the environment Unable to sit restfully for more than a few moments Exhibits anxiety, fear, anger, or aggression towards others	
IMPULSIVITY	Does not move impulsively Usually considers need for safety when moving	Occasionally moves impulsively or rushes with little consideration for safety	Often moves impulsively Often rushes or performs risky activities with no consideration for safety	
VISUOSPATIAL ABILITIES	No or minimal visual impairment or neglect Able to visually navigate the environment	Some visual impairment or neglect Occasionally misjudges distances or bumps into obstacles	Significant visual impairment or neglect Unable to safely navigate the environment with vision	
Do not score if impairment stage 4				
POSTURAL CONTROL	Stands erect or nearly erect Able to recover from loss of balance within one or two steps	Moderately stooped or leaning Sometimes reacts to loss of balance but not consistent Sometimes appears dizzy or sways when standing	Significantly stooped or leaning Poor response to loss of balance Has episodes of dropping suddenly from standing	
GAIT	Walks steadily and fluidly with a normal pattern and rhythm Good balance when walking or turning	Some loss of usual walking pattern and rhythm Some imbalance when walking or turning	Abnormal walking pattern and rhythm Loses balance when turning Parkinsonian gait	
ABILITY TO USE Mobility AID(S)	No aid required or uses aid appropriately	Uses aid appropriately but inconsistently	Uses aid inappropriately or refuses to use prescribed aid Aid a hazard at times	

Part II on page 2 of MSAD tool, see Appendix for full tool

MSAD 6 Updated July 2025



IMPULSIVITY C B MINIMAL IMPACT **MODERATE IMPACT** SIGNIFICANT IMPACT Does not move impulsively Occasionally moves impulsively or Often moves impulsively rushes with little consideration for Usually considers need for safety Often rushes or performs risky safety when moving activities with no consideration for safety Occasional impulsive behavior Often moves impulsively as per may include sitting without being examples in B close enough to a chair, standing before wheelchair brakes are applied, walking without help even if unsafe to do so **VISUOSPATIAL ABILITIES** B MINIMAL IMPACT **MODERATE IMPACT** SIGNIFICANT IMPACT No or minimal visual impairment Some visual impairment or neglect Significant visual impairment or or neglect neglect Occasionally misjudges distances Able to visually navigate the or bumps into obstacles Unable to safely navigate the environment environment with vision Occasional or mild difficulty judging **■**Often or significant difficulty as per B distances and avoiding obstacles as demonstrated by bumping into walls and door frames, or missing

chair when trying to sit

clearance, gait apraxiaParkinsonian gait: slow with shuffling or freezing

POSTURAL CONTROL (Do not score if impairment stage 4) C B MINIMAL IMPACT **MODERATE IMPACT** SIGNIFICANT IMPACT Stands erect or nearly erect Moderately stooped or leaning Significantly stooped or leaning Able to recover from loss of Sometimes reacts to loss of Poor response to loss of balance balance within one or two steps Has episodes of dropping suddenly balance but not consistent from standing Sometimes appears dizzy or sways when standing Can stand 2 minutes without help Can stand for 30 seconds without Unable to stand for 30 seconds without help Does not need any assistance to maintain balance May at times use railings to steady Needs mobility aid or assistance to themselves maintain balance Consistently able to recover from loss of balance within a few steps Able to recover from imbalance Relies on furniture, walls, railings but not consistently to maintain balance Only mildly stooped or leaning ■Absent or ineffective reactive balance response **GAIT** (Do not score if impairment stage 4) C Α B MINIMAL IMPACT **MODERATE IMPACT** SIGNIFICANT IMPACT Walks steadily and fluidly with a Some loss of usual walking pattern Abnormal walking pattern and normal pattern and rhythm and rhythm rhythm Good balance when walking or Some imbalance when walking or Loses balance when turning turning turning Parkinsonian gait Walks with consistent and Walks with some variability in step Abnormal step length, width, direction, or limb movement appropriate step length and width length and width ■Pace is consistent during straight-Some variability in pace Considerable variation in pace. tentative or hesitant, and/or very line walking Tentative or hesitant, and/or quick fast and careless or incautious at times Grossly abnormal gait features: for example, legs scissoring, poor foot

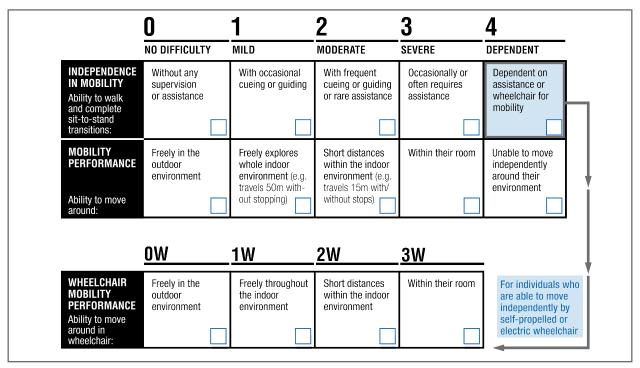
ABILITY TO USE MOBILITY AID(S) (Do not score if impairment stage 4) B **MINIMAL IMPACT MODERATE IMPACT** SIGNIFICANT IMPACT Uses aid appropriately but ■No aid required or uses aid Uses aid inappropriately or inconsistently refuses to use prescribed aid appropriately Aid a hazard at times Forgets to use aid Lacks cognitive abilities to use aid Accepts the aid when reminded Needs frequent direction and assistance to use aid properly Refuses to use aid at times

SCORING

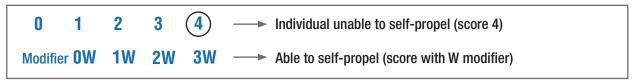


Mobility Impairment Stage

If someone scores 4 (dependent) on Independence in Mobility, and he/she drives or propels a wheelchair independently, score based on Mobility Performance for wheelchair users, adding the W modifier. If the individual is unable to self-propel, score as stage 4.



Part I on page 1 of MSAD tool, see Appendix for full tool



Scoring examples. Score on page 1 of MSAD tool

Otherwise, the final score for this section is the score reflecting the greatest degree of impairment out of the two categories of Independence in Mobility and Mobility Performance.

PART 2

Modifiers of Mobility Impairment

The overall scoring for this section is based on the number of Bs and Cs present, following this sequence:

- •If two or more factors score C, the overall alpha-score is C.
- •If two or more factors score B or B+C, the overall alpha-score is B.
- •If none of the above criteria are met, the overall alpha-score is A.

If **2+** factors score **C**, overall score is **C**

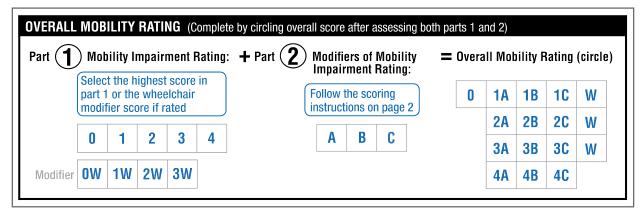
If **2+** factors score B or B+C, overall score is **B**

(If neither of above criteria are met, overall score is A

Scoring part II, pg. 2 of MSAD tool

Overall Mobility Rating

The global mobility rating score or mobility stage is represented by the numeric score obtained in Part I + the alpha-score obtained in Part II (e.g. stage 3B). If an individual moves primarily by wheelchair, this rating is appended with a "W" (e.g. stage 3B(W)).



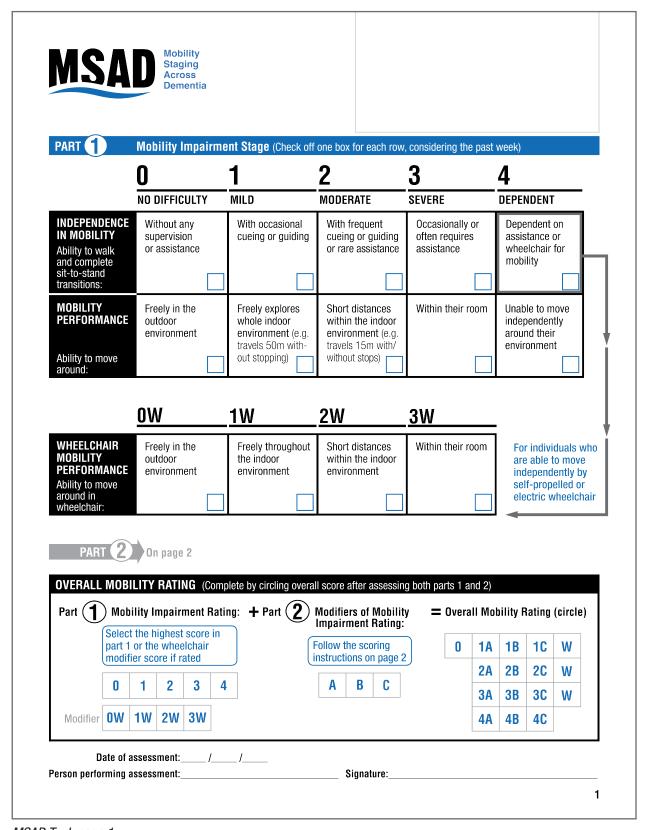
Global Mobility Rating scored on pg.1 of MSAD tool, see Appendix for full tool

REFERENCES

Van Ooteghem K, Musselman K, Mansfield A, Gold D, Marcil MN, Keren R, Tartaglia MC, Flint AJ, Iaboni A. Key factors for the assessment of mobility in advanced dementia: A consensus approach. Accepted for publication in Alzheimer's and Dementia: Translational Research and Clinical Interventions. July 2019.

Van Ooteghem K, Musselman K, Gold D, Marcil MN, Keren R, Tartaglia MC, Flint AJ, Iaboni A. Evaluating mobility in advanced dementia: A scoping review and feasibility analysis. The Gerontologist. 2018;23(11):1018-33; https://doi.org/10.1093/geront/gny068.

APPENDIX



MSAD Tool, page 1



	MINIMAL IMPACT ON MOBILITY	MODERATE IMPACT ON MOBILITY	C SIGNIFICANT IMPACT ON MOBILIT
FALLS HISTORY (within 3 months)	No falls	One or two falls	Recurrent falling
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