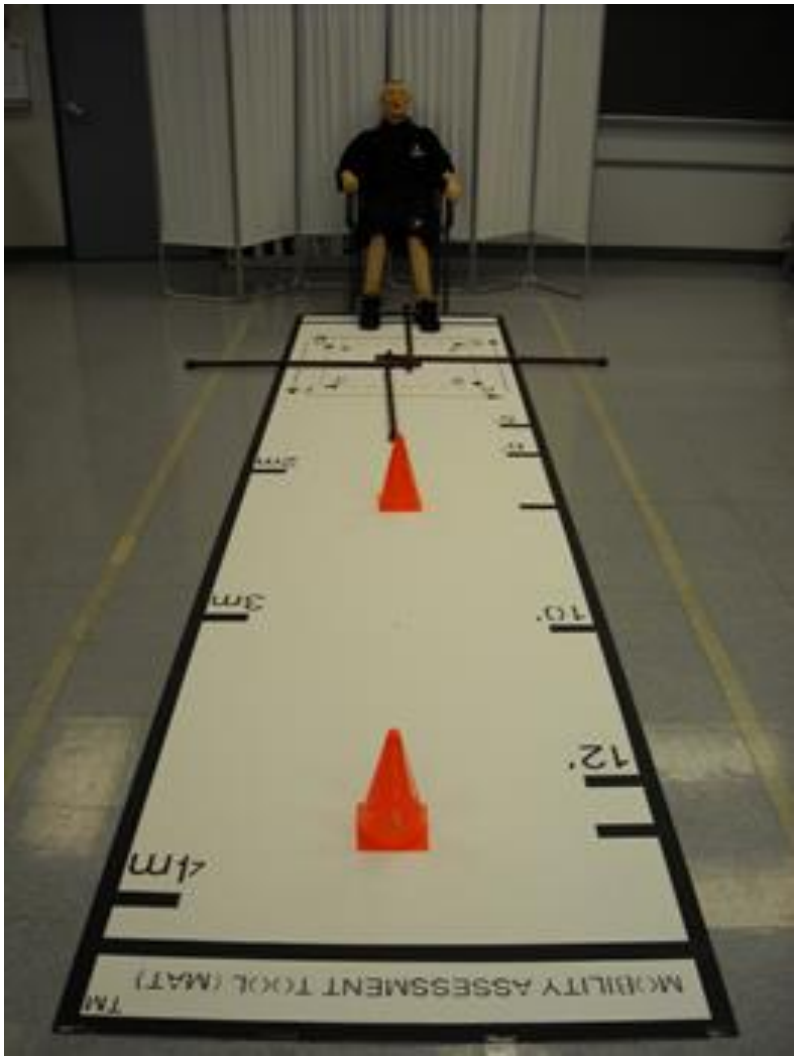
# Clinical Application of The Mobility Assessment and Treatment Device with Clinical Utilization Method

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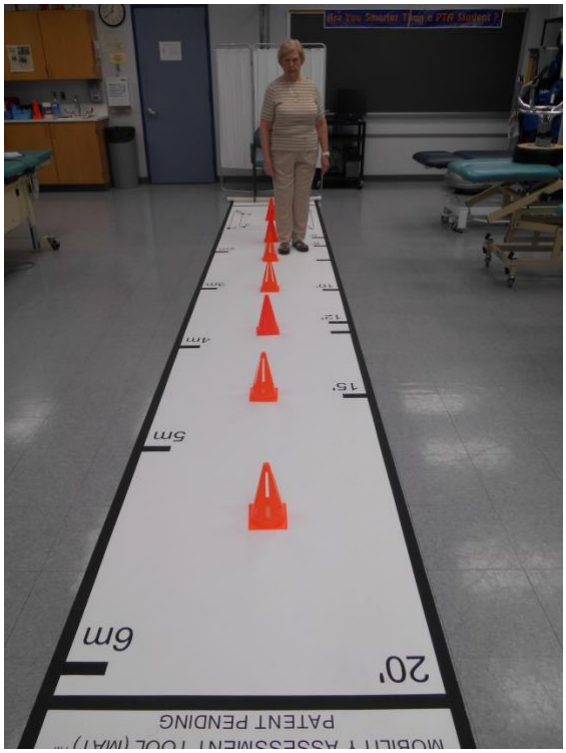
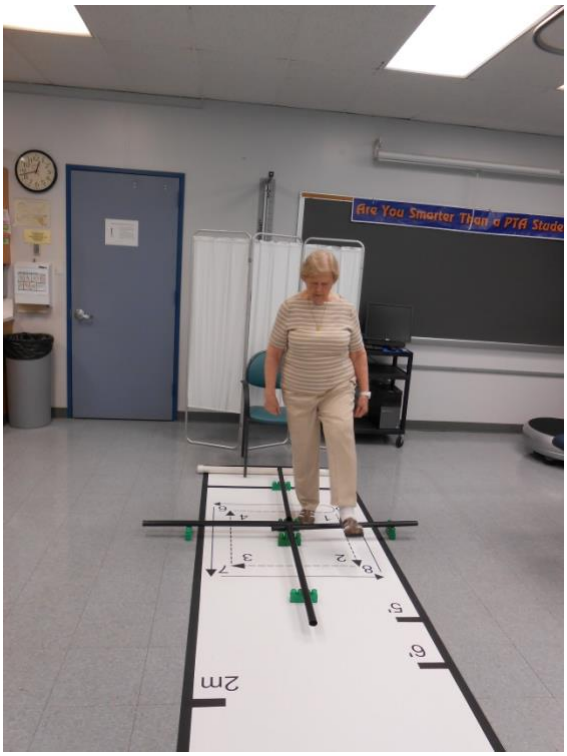
**Practice Setting : Education & Outpatient**

**Innovation Name : The Mobility Assessment and Treatment Device with Clinical Utilization Method**

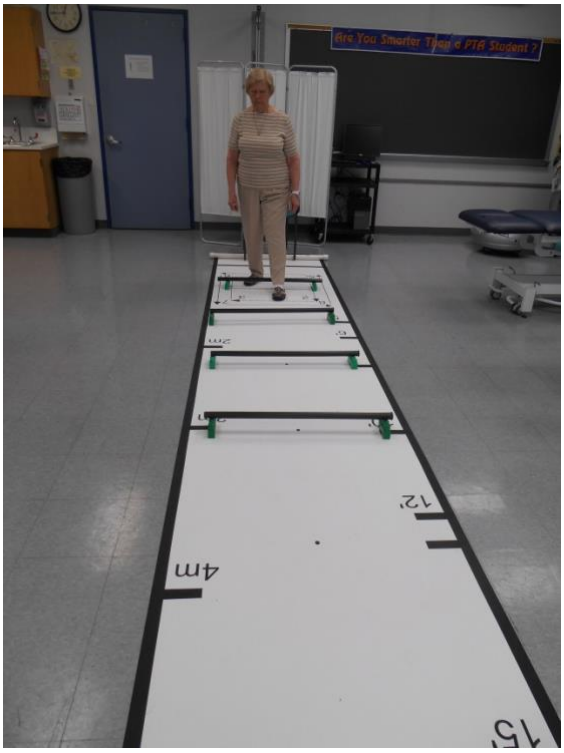
## Serpentine Cone Ambulation




## Four Square Test Elevated Tubes




## Forward Ambulation Elevated Tubes




## Four Square Test Weighted Vest

## DESCRIPTION OF THERAPEUTIC TREATMENT ACTIVITIES USING THE MOBILITY ASSESSMENT AND TREATMENT DEVICE

- By using plastic cones placed on the Mobility Assessment and Treatment Device at set distances, the patient navigates a serpentine pattern performing weight shift on both sides of the body.

- By using Legos®, Mega Bloks®, or similar objects as a means to elevate the plastic tubes (golf club sleeves), pieces of PVC or wooden canes which requires the patient to elevate lower extremity stimulating joint range of motion and muscle activity. The activity may be incorporated on the Mobility Assessment and Treatment Device using the Four Square pattern and the Timed Up and Go layout.

- By using a weighted vest to perform activities on the Mobility Assessment and Treatment Device the difficulty of the task can be enhanced with resistance training.

- By holding an object (glass of water or hand weight) in the hand(s) to perform activities on the Mobility Assessment and Treatment Device the coordination is challenged.

  Note: By combining the therapeutic activities described above an obstacle course can be set-up on the Mobility Assessment and Treatment Device.

*The time to complete the therapeutic activity, number of repetitions and the functional degree of difficulty can be monitored and recorded to document patient progress.

## TEST DESCRIPTIONS AND TIMES

| TEST | TIME/DISTANCE | FUNCTIONAL APPLICATION | REFERENCE(S) |
|---|---|---|---|
| **TIMED UP & GO (TUG)** | The test requires patient to rise from sit to stand, walk 10 ft (3m), turn around and return to chair and return to sitting position. | Greater than or equal to 13.5 sec is predictive of falls (sensitivity 80%, specificity 100%) Greater than or equal to 30 sec corresponds with functional dependence in persons with pathology | Shumway-Cook et al., 2000 |
| **FOUR SQUARE STEP TEST (FSST)** | A time of 15 seconds or greater in patients 65 or older when completing a clockwise and counter-clockwise pattern is predictive. | A FSST cut off score of 15 seconds was identified to differentiate multiple fallers from non-multiple fallers. In multiple fallers, FSST revealed sensitivity of 89% and a specificity of 85% with a positive predictive value of 86%. | Dite &Temple, 2002 |
| **FOUR SQUARE STEP TEST (FSST)** | A time of 12 seconds or greater in patients with chronic balance and/or vestibular dysfunction when completing a clockwise and counter-clockwise pattern is predictive. | FSST is a reliable and valid tool for measuring difficulty performing multidirectional movements in people with balance deficit secondary to vestibular disorders. A sensitivity of 80% and a specificity of 92% to identify those individuals with one or more falls. | Whitney et al., 2007 |
| **FOUR SQUARE STEP TEST (FSST)** | A time of 24 seconds or greater with patient following transtibial amputation when completing a clockwise and counter-clockwise pattern is predictive. | FSST has a sensitivity of 92% and a specificity of 93% for predicting patients at risk for multiple falls | Dite, 2007 |

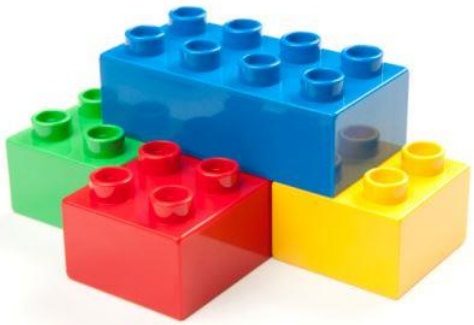
| TEST | TIME/DISTANCE | FUNCTIONAL APPLICATION | REFERENCE(S) |
|---|---|---|---|
| **FIGURE OF 8 (F8W)** | In this test, 2 cones are placed 5 feet apart with a patient in the middle. The patient is instructed to walk in a figure 8 pattern around the cones and end at the start position. The therapist times the patient and records the time to complete the task. An observational rated scoring scale of 0 to 3 is used to assign a value for smoothness and change of pace. | Many clinical assessments of walking involve straight-path walking. However, activities of daily living require the ability to perform curved-path walking. During curved-path walking the stride length is asymmetrical between inner leg (shorter) and outer leg (longer). Additionally, increased body mass is transferred to the inner foot and stance time is increased. A pilot study of 51 community dwelling adults revealed the F8W is a valid measure of walking skill among older adults with mobility disability and may provide information complementary to gait speed. | Hess, Brach, Pira & Van Swearingen, 2010 |
| **FIVE TIMES SIT TO STAND (5XSST)** | 11.4 seconds (60 to 69 years)<br>12.6 seconds (70 to 79 years)<br>14.8 seconds (80 to 89 years) | ❖ Used to evaluate improvement in physical performance pre and post exercise programs<br>❖ Predictor of fall risk in community dwelling older adults | Binder, 1994<br>Singh, 1997<br>Campbell, 1989<br>Nevitt, 1989<br>Bohannon,2006 |

| | | | |
|---|---|---|---|
| | | ❖ Mean scores from meta-analysis of 13 papers of five time sit to stand | |
| **TEST** | TIME/DISTANCE | FUNCTIONAL APPLICATION | REFERENCE(S) |
| **Gait Speed** | The velocity determined is over a 20 foot (6m) distance. | Less than 1.8 ft/sec = risk for recurrent falls (sensitivity 72%, specificity 74%)<br><br>Less than 1.9 ft/sec = would benefit from PT evaluation and possible treatment (sensitivity 80%, specificity 89%) | Van Swearingon,1998<br><br>Harada, 1995 |

## Functional Mobility Assessment

| Name:<br><br>Age: | Initial Assessment<br>Date:<br>Leading Leg: L R | Reassessment<br>Date:<br>Leading Leg: L R |
|---|---|---|
| Vital Signs | Blood Pressure /<br>Pulse<br>Pulse Oximetry: % | Blood Pressure /<br>Pulse<br>Pulse Oximetry: % |
| Four Square Step Test (FSST) | Time 1 _____ seconds<br>Time 2 _____ seconds | Time 1 _____ seconds<br>Time 2 _____ seconds |
| Timed Up and Go (TUG) | Time 1 _____ seconds<br>Time 2 _____ seconds | Time 1 _____ seconds<br>Time 2 _____ seconds |
| Figure of 8 Test (F8W) | Time 1 _____ seconds<br>Time 2 _____ seconds | Time 1 _____ seconds<br>Time 2 _____ seconds |

# OPTIONAL ACCESSORIES



**OPTIONAL ACCESSORIES:** Plastic orange sport cones, plastic golf bag sleeve/tube, Lego® or Mega® Blocks, weight vest, MAT canvas carrying bag or plastic container

**CLEANING**

In general: Keep the screen surface rolled up in its protective case when not in use. This protects the surface from dirt, dust and smoke. Before re-rolling, examine the surface front and back to make sure it is free of any foreign matter that might stain or mar the surface.

The Matte White fabric may be cleaned using a very light stroke with art gum or a very soft brush. If necessary, the surface may be washed with a very mild soap and water and a very soft cloth or sponge. Use very little water. Do not allow it to soak the fabric. It is difficult to avoid streaking so care should be exercised. Allow to dry before the Mobility Assessment and Treatment Device is re-rolled. Do not use solvents. If this fails, replace the fabric.

**Storage:** The Mobility Assessment and Treatment Device may be stored either rolled or flat on the floor in between use.

**Rolled Storage Options:**

- Roll around 45-52 inch long of 1 ½ inch PVC with end caps
- Store in plastic golf bag sleeve/tube or MAT canvas carrying bag or plastic container

# Mobility Matters

Est. 2009

mobilitymatters2us@gmail.com

## Patient Information

Name _____

Date Of Birth _____ Gender ◯ Male ◯ Female ◯ Other

Phone Number _____ Email _____

Address _____

_____

Medical History _____

Current Medications _____

Date of last physical _____

## Vital Signs

Resting Pulse _____

Resting Blood Pressure _____

Pulse Oximetry _____

| | Yes | No |
|---|---|---|
| Arrhythmia | ◯ | ◯ |
| Atrial Fibriallation | ◯ | ◯ |
| Heart rate changes | ◯ | ◯ |
| Orthostatic Hypotension | ◯ | ◯ |
| Hypertension | ◯ | ◯ |

## Hearing

Date of last hearing test _____

Do you wear hearing aids? Right ◯ Left ◯ Both ◯

## Vision

Date of last eye exam _____

Wears glasses ◯ Wears contacts ◯

| | Yes | No |
|---|---|---|
| Cateracts | ◯ | ◯ |
| Glaucoma | ◯ | ◯ |
| Macular Degeneration | ◯ | ◯ |

## Neurological

| | Yes | No |
|---|---|---|
| Diabetes | ◯ | ◯ |
| Multiple Sclerosis | ◯ | ◯ |
| Neuropathy | ◯ | ◯ |
| Parkinson's Disease | ◯ | ◯ |
| Stroke | ◯ | ◯ |

## Lifestyle

| | Yes | No |
|---|---|---|
| Lives alone | ◯ | ◯ |
| Drives self | ◯ | ◯ |
| Does not leave home | ◯ | ◯ |
| Leaves home multiple times per week | ◯ | ◯ |
| Leaves home 1-2 times per week | ◯ | ◯ |

Mobility Matters

Est. 2009

mobilitymatters2us@gmail.com

## Falls

Has there been a recent fall? Yes ◯ No ◯

If yes, when: _____

Has there been a fall or falls this year? Yes ◯ No ◯

If yes, when: _____

Does the patient express concerns or worries about feeling unsteady when walking or standing? Yes ◯ No ◯

If yes, when: _____

## Additional Information

_____

_____

_____

_____

_____

_____

_____

_____

_____

## Office Use Only

Appointment Date _____ Appointment Time _____

Provider: _____

Confirmation ◯ Yes ◯ No

**Notes**

_____

_____

_____

CHECKLIST

# Fall Risk Factors

Patient _____

Date _____

Time _____ ☐ AM ☐ PM

| Fall Risk Factor Identified | Present? | | Notes |
|---|---|---|---|
| **FALLS HISTORY** | | | |
| Any falls in past year? | ☐ Yes | ☐ No | |
| Worries about falling or feels unsteady when standing or walking? | ☐ Yes | ☐ No | |
| **MEDICAL CONDITIONS** | | | |
| Problems with heart rate and/or arrhythmia | ☐ Yes | ☐ No | |
| Cognitive impairment | ☐ Yes | ☐ No | |
| Incontinence | ☐ Yes | ☐ No | |
| Depression | ☐ Yes | ☐ No | |
| Foot problems | ☐ Yes | ☐ No | |
| Other medical problems | ☐ Yes | ☐ No | |
| | | | |
| **MEDICATIONS (PRESCRIPTIONS, OTCs, SUPPLEMENTS)** | | | |
| Psychoactive medications | ☐ Yes | ☐ No | |
| Opioids | ☐ Yes | ☐ No | |
| Medications that can cause sedation or confusion | ☐ Yes | ☐ No | |
| Medications that can cause hypotension | ☐ Yes | ☐ No | |
| **GAIT, STRENGTH & BALANCE** | | | |
| Timed Up and Go (TUG) Test ≥12 seconds | ☐ Yes | ☐ No | |
| 30-Second Chair Stand Test:<br>Below average score based on age and gender | ☐ Yes | ☐ No | |
| 4-Stage Balance Test:<br>Full tandem stance <10 seconds | ☐ Yes | ☐ No | |
| **VISION** | | | |
| Acuity <20/40 OR no eye exam in >1 year | ☐ Yes | ☐ No | |
| **POSTURAL HYPOTENSION** | | | |
| A decrease in systolic BP ≥20 mm Hg, or a diastolic BP of ≥10 mm Hg, or lightheadedness, or dizziness from lying to standing | ☐ Yes | ☐ No | |
| **OTHER RISK FACTORS (SPECIFY BELOW)** | | | |
| | ☐ Yes | ☐ No | |
| | | | |

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

STEADI Stopping Elderly Accidents, Deaths & Injuries

2017

Name:_____ DATE:_____ DOB:_____

## THE LOWER EXTREMITY FUNCTIONAL SCALE

We are interested in knowing whether you are having any difficulty at all with the activities listed below because of your lower limb Problem for which you are currently seeking attention. Please provide an answer for **each** activity.

**Today, do you or would you have any difficulty at all with:**

| | Activities | Extreme Difficulty or Unable to Perform Activity | Quite a Bit of Difficulty | Moderate Difficulty | A Little Bit of Difficulty | No Difficulty |
|---|---|---|---|---|---|---|
| 1 | Any of your usual work, housework, or school activities. | 0 | 1 | 2 | 3 | 4 |
| 2 | Your usual hobbies, re creational or sporting activities. | 0 | 1 | 2 | 3 | 4 |
| 3 | Getting into or out of the bath. | 0 | 1 | 2 | 3 | 4 |
| 4 | Walking between rooms. | 0 | 1 | 2 | 3 | 4 |
| 5 | Putting on your shoes or socks. | 0 | 1 | 2 | 3 | 4 |
| 6 | Squatting. | 0 | 1 | 2 | 3 | 4 |
| 7 | Lifting an object, like a bag of groceries from the floor. | 0 | 1 | 2 | 3 | 4 |
| 8 | Performing light activities around your home. | 0 | 1 | 2 | 3 | 4 |
| 9 | Performing heavy activities around your home. | 0 | 1 | 2 | 3 | 4 |
| 10 | Getting into or out of a car. | 0 | 1 | 2 | 3 | 4 |
| 11 | Walking 2 blocks. | 0 | 1 | 2 | 3 | 4 |
| 12 | Walking a mile. | 0 | 1 | 2 | 3 | 4 |
| 13 | Going up or down 10 stairs (about 1 flight of stairs). | 0 | 1 | 2 | 3 | 4 |
| 14 | Standing for 1 hour. | 0 | 1 | 2 | 3 | 4 |
| 15 | Sitting for 1 hour. | 0 | 1 | 2 | 3 | 4 |
| 16 | Running on even ground. | 0 | 1 | 2 | 3 | 4 |
| 17 | Running on uneven ground. | 0 | 1 | 2 | 3 | 4 |
| 18 | Making sharp turns while running fast. | 0 | 1 | 2 | 3 | 4 |
| 19 | Hopping. | 0 | 1 | 2 | 3 | 4 |
| 20 | Rolling over in bed. | 0 | 1 | 2 | 3 | 4 |
| | **Column Totals:** | | | | | |

**Minimum Level of Detectable Change (90% Confidence): 9 points** **SCORE: ____/ 80**

**Please submit the sum of responses.**

*Reprinted from Binkley, J., Stratford, P., Lott, S., Riddle, D., & The North American Orthopaedic Rehabilitation Research Network, The Lower Extremity Functional Scale: Scale development, measurement properties, and clinical application, Physical Therapy, 1999, 79, 4371-383, with permission of the American Physical Therapy Association.*