Sheffield Hallam University
Knowledge Applied
Centre for Regional Economic and Social Research

Culturally sensitive social prescribing and frailty prevention: a co-produced community research project - Community Perspectives on Different Frailty Measures

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As part of this research project,[1] we captured community feedback on various frailty measures by inviting community researchers from Darnall Well Being to an interactive session to assist us in evaluating the effectiveness and acceptability of different frailty testing measures.

1. Selection of potential frailty measures

To select the frailty measures that would be tested, we first reviewed the academic literature to identify what was available and commonly used in General Practice and within the community. The following measures were identified:

- **Fried Phenotype** – Implements five different measures to assess physical frailty: unintentional weight loss; self-reported exhaustion; self-reported physical inactivity; poor handgrip strength (using a handgrip Dynamometer – described below) and slow walking speed (Gait Speed – described below).
- **Edmonton Frail Scale** – An index used to assess nine domains of frailty (cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence and functional performance), which identifies specific issues that require further follow up or assessment. This test implements a questionnaire in conjunction with the Timed Up and Go, which involves individuals beginning in a seated position, standing up, walking three meters, then turning around, walking back to the chair and sitting back down. The timer starts when the individual begins to stand up, and stops when they sit back down in the chair following completion.
- **Sit to Stand** – A test that records how many times someone can stand from a seated position and sit back down in 60 seconds. The same process can also be carried out timing only 30 seconds. The timer begins when the individual first stands, and stops after either a 30 second or 60 second period (test dependent). Participants heart rate is recorded for one minute prior to doing the test and for a further one minute following completion of the test.
- **Grip Strength** – Participants are seated comfortably with their elbow at 90 degrees and their forearm and wrist in a neutral position. They then squeeze a Dynamometer, repeating this two times for each hand. The best of the four total measurements is recorded. There is no time limit for this activity, it is done in the participants own time and they are allowed time to recover between attempts.
- **Gait Speed** – Participants begin from standing and walk at their normal pace (using an assistive device if needed) for a pre measured 1-metre acceleration zone, 4-metre testing zone and 1-metre deceleration zone. The timer is started after the first footfall reaches the 4-metre acceleration zone and stopped when the participants footfall reaches the end point of the 4-metre acceleration zone (crossing into the 1-metre deceleration one).

1 For more information about the project visit the CRESR website.

2. Method of Community Engagement

To test the selected frailty measures, community researchers were invited to a testing event session that was held at Darnall Well Being. This was the chosen location as it was somewhere that the community researchers were familiar with, having completed their community researcher training there. It was also local for participants and easily accessible. The community researchers were invited to attend the session by a Darnall Well Being Health & Wellbeing Manager who has built up high levels of rapport and trust within the local community.

In total, 13 participants were invited and attended the session, of these five were male and eight were female. They were of various ethnicities (six British Asian Pakistani, two White British, one Caribbean, one Kurdish, one Somali, one British Asian Bengali, one Liberian) and all had either personal lived experience, or caring experiences relating to frailty. All participants were compensated for their time in the form of a £20 high street shopping voucher. Additionally, to ensure their comfort, refreshments were provided.

3. Results

For the community measures testing event, it was decided that not all of the above identified frailty testing measures would be used. This was due to various factors including time restraints and the perceived appropriateness of some of the tests. The Fried Phenotype was excluded as it was very similar to the Edmonton Frail Scale that was deemed more appropriate for the older adult population in our community of interest. The

PASB-Q was also excluded from testing as it was considered more appropriate for sport and gym matters, rather than measuring frailty. The IPAQ was excluded as it is not validated for use in older adults aged 65+ and therefore was not considered to be useful for the purpose of this particular session. Also, the Minnesota Leisure Time Physical Activity Questionnaire and the PASE were very American orientated and it was believed that they were not relatable for our population of interest due to incorporating activities such as cross-country skiing, hunting, golf with a cart and softball. We based this decision upon our prior knowledge of the community researchers gained throughout the previous weeks during their community researcher training. The tests selected and included in the testing session were Edmonton Frail Scale, Sit to Stand, Gait Speed and Grip Strength (see Appendix 1 for more details). A summary of each test, the materials needed to conduct the test, key benefits, community researcher feedback and recommendations for use in social prescribing/community settings is provided in the table overleaf.

Measure	Materials Needed	Key Benefits	Community Researcher Feedback	Recommendation for using in Social Prescribing/ Community Settings
Edmonton Frail Scale (incorporating Timed Up and Go Test)	• Edmonton Frail Scale questionnaire. • Timed Up and Go instructions. • Chair (ideally around 45cm high with no arms, straight back and sturdy base). • Stopwatch or timer. • Tape measure or other measuring device.	• Quick and easy to administer. • Captures multidimensional aspects of frailty. • Enables an understanding of how individuals are positioned on the spectrum of frailty. • Identifies specific elements of frailty that require follow up care.	• This test was not viewed by the participants as useful in testing people's actual capabilities. • The clock test was considered problematic for those who had issues with literacy or who spoke English as an additional language, the participants anticipated that some people would struggle to understand what they were being asked to do. • The medication questions were considered problematic as participants may feel stressed during the test and forget the details. Also, if medication is forgotten by the participant, they may not actually know they have forgotten it and so the data collected may not be accurate. • It was considered positive that the physical test (Timed Up and Go) was carried out after the initial questionnaire as it allowed participants to feel more comfortable when they had already settled into the test by doing the prior activity.	Based on the feedback from the participants and observations of the researchers during the session the questionnaire component of this measure has significant issues. The participants found the questions confusing and ambiguous. They also observed that some of the questions were aimed at assessing vulnerability, not physical or cognitive frailty. **On this basis we do not recommend its use in a social prescribing/community setting.**
Sit to Stand (30 seconds and 60 seconds)	• Sit to Stand instructions. • Chair (ideally around 45cm high with no arms, straight back and sturdy base). • Stopwatch or timer. • Heart rate monitor/pulse oximeter (if available).	• Quick and easy to administer. • A good indicator of strength, balance and flexibility. • Accurately assesses falls risks.	• Initially, this test was carried out over a 60 second period which the participants did not view as acceptable or realistic. • A 30 second timeframe was considered more acceptable and following testing did not appear to negatively impact upon results. • There were concerns expressed by the participants that people who are frail may not be able to successfully complete the test which could be 'depressing' for them.	This test was acceptable to participants when timed over 30 seconds. It was easy to administrate, even in a room with little space. **We recommend this test for use in a social prescribing/ community setting.**

Measure	Materials Needed	Key Benefits	Community Researcher Feedback	Recommendation for using in Social Prescribing/ Community Settings
Gait Speed	• Gait Speed instructions. • Chair (ideally around 45cm high with no arms, straight back and sturdy base). • Stopwatch or timer. • Tape measure or other measuring device.	• Quick and easy to administer. • Reliable measure of functional capacity. • An indicator of overall health and life expectancy.	• Participants viewed this test as positive and easy to complete for those who are mobile. • However, similar to the Sit to Stand, concerns were raised relating to those who are not physically able to complete the test and therefore may experience negative mental reactions. • Also there were concerns relating to space, a large area is needed to carry out this test which may be an issue.	This test was acceptable to participants and easy to administrate. However it require quite a large area of space for the test. **We recommend this test for use in a social prescribing/ community setting if sufficient space is available.**
Grip Strength	• Grip Strength instructions . • Chair (ideally around 45cm high with no arms, straight back and sturdy base). • Dynamometer.	• Quick and easy to administer. • A reliable predictor of muscle strength, muscle mass, bone mineral density and nutritional status. • An accurate predictor of physical and mental decline.	• This test was seen as useful by participants who were very positive about its use and acceptability. • Participants valued the reliability and objectivity of the test, finding that getting a ‘number’ reading was reassuring and gave them a target to aim for. • There were concerns that this test could be affected by other conditions such as Stroke or Multiple Sclerosis in which participants might struggle to complete the test.	This test was by far the most popular with the group. It is easy to administrate and doesn’t require any space. **We recommend this test for use in a social prescribing/ community setting.**

4. Discussion

The aim of this stage of the research project was to conduct a frailty measures testing event, in which community researchers evaluated the effectiveness and acceptability of different frailty measures. Participants tested the above mentioned frailty measures and shared their thoughts and opinions, giving feedback and case study examples of how these tests could be applicable to themselves and also to other people they knew who were experiencing frailty. Overall, the group preferred the use of objective, physical measures such as Grip Strength, Sit to Stand and Gait Speed. Of these preferential measures, the 30 second Sit to Stand and Grip Strength were considered most useful for frailty testing in community settings based on their ease of useability and objective nature. The Edmonton Frail Scale was disliked by our community researchers, specifically the cognitive test, for its subjective nature that could be influenced by a participant's levels of literacy and understanding, and the questions that appeared to test vulnerability, not frailty.

5. Conclusion

The 30 second Sit to Stand and Grip Strength are quick and easy objective measures, that have good acceptability and require minimal training to administer. Therefore, their use is recommended by our community researchers for frailty testing in social prescribing and community settings. Additionally, these two tests could be used in conjunction with one another to give a clearer indication of physical frailty. It is important to note that the two favoured tests selected by our community researchers were physical tests that do not incorporate any considerations relating to cognitive frailty. It could perhaps be inferred that amongst our community researchers, physical decline is more commonly associated with frailty than cognitive decline. Reasons for this are currently unclear and would require further investigation.

Appendix 1 – Further information about frailty measures

Edmonton Frail Scale Questionnaire

The Edmonton Frail Scale

NAME : _____

d.o.b. : _____ **DATE :** _____

Frailty domain	Item	0 point	1 point	2 points
Cognition	Please imagine that this pre-drawn circle is a clock. I would like you to place the numbers in the correct positions then place the hands to indicate a time of 'ten after eleven'	No errors	Minor spacing errors	Other errors
General health status	In the past year, how many times have you been admitted to a hospital?	0	1–2	≥2
	In general, how would you describe your health?	'Excellent', 'Very good', 'Good'	'Fair'	'Poor'
Functional independence	With how many of the following activities do you require help? (meal preparation, shopping, transportation, telephone, housekeeping, laundry, managing money, taking medications)	0–1	2–4	5–8
Social support	When you need help, can you count on someone who is willing and able to meet your needs?	Always	Sometimes	Never
Medication use	Do you use five or more different prescription medications on a regular basis?	No	Yes	
	At times, do you forget to take your prescription medications?	No	Yes	
Nutrition	Have you recently lost weight such that your clothing has become looser?	No	Yes	
Mood	Do you often feel sad or depressed?	No	Yes	
Continence	Do you have a problem with losing control of urine when you don't want to?	No	Yes	
Functional performance	I would like you to sit in this chair with your back and arms resting. Then, when I say 'GO', please stand up and walk at a safe and comfortable pace to the mark on the floor (approximately 3 m away), return to the chair and sit down'	0–10 s	11–20 s	One of : >20 s , or patient unwilling , or requires assistance
Totals	Final score is the sum of column totals			

Scoring :
0 - 5 = Not Frail
6 - 7 = Vulnerable
8 - 9 = Mild Frailty
10-11 = Moderate Frailty
12-17 = Severe Frailty

TOTAL /17

Administered by : _____

ASSESSMENT

Timed Up & Go (TUG)

Patient _____

Date _____

Time ☐ AM ☐ PM

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

NOTE: Always stay by the patient for safety.

① Instruct the patient:

When I say "Go," I want you to:

1. Stand up from the chair.
2. Walk to the line on the floor at your normal pace.
3. Turn.
4. Walk back to the chair at your normal pace.
5. Sit down again.

② On the word "Go," begin timing.

③ Stop timing after patient sits back down.

④ Record time.

Time in Seconds: _____

An older adult who takes ≥12 seconds to complete the TUG is at risk for falling.

OBSERVATIONS

Observe the patient's postural stability, gait, stride length, and sway.

Check all that apply:

- ☐ Slow tentative pace
- ☐ Loss of balance
- ☐ Short strides
- ☐ Little or no arm swing
- ☐ Steadying self on walls
- ☐ Shuffling
- ☐ En bloc turning
- ☐ Not using assistive device properly

These changes may signify neurological problems that require further evaluation.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

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

2017

STEADI Stopping Elderly Accidents, Deaths & Injuries

ASSESSMENT

30-Second Chair Stand

Purpose: To test leg strength and endurance
Equipment: A chair with a straight back without arm rests (seat 17" high), and a stopwatch.

Patient _____

Date _____

Time _____ ☐ AM ☐ PM

NOTE: Stand next to the patient for safety.

① Instruct the patient:

1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed, at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight, and keep your arms against your chest.
5. On **"Go,"** rise to a full standing position, then sit back down again.
6. Repeat this for 30 seconds.

② On the word "Go," begin timing.

If the patient must use his/her arms to stand, stop the test. Record "0" for the number and score.

③ Count the number of times the patient comes to a full standing position in 30 seconds.

If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

④ Record the number of times the patient stands in 30 seconds.

Number: _____ Score: _____

SCORING

Chair Stand
Below Average Scores

AGE	MEN	WOMEN
60-64	< 14	< 12
65-69	< 12	< 11
70-74	< 12	< 10
75-79	< 11	< 10
80-84	< 10	< 9
85-89	< 8	< 8
90-94	< 7	< 4

A below average score indicates a risk for falls.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

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2017

STEADI Stopping Elderly Accidents, Deaths & Injuries

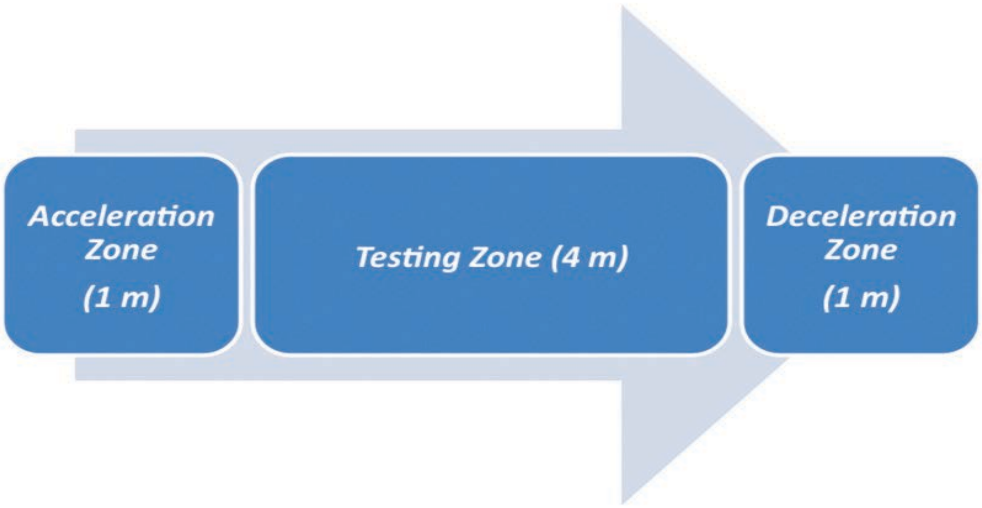
BCGuidelines.ca
Guidelines & Protocols Advisory Committee

Gait Speed Test (4-metre)

Instructions:

The test can be performed with any patient able to walk 4 metres using the instructions below:

1. Instruct the patient to walk at their normal pace. Patients may use an assistive device, if needed.
2. Ask the patient to walk down a hallway through a 1-metre zone for acceleration, a central 4-metre "testing" zone, and a 1-metre zone for deceleration (the patient should not start to slow down before the 4-metre mark).
3. Start the timer with the first footfall after the 0-metre line.
4. Stop the timer with the first footfall after the 4-metre line.



Time taken to walk 4 meters:
Gait speed in metres per second:

SCORING: Gait speed of longer than 5 seconds to walk 4 metres (<0.8 m/s) suggests an increased risk of frailty and the need for further clinical review.

Instructions adapted from:

- Braden H. Self-selected gait speed: A critical clinical outcome. Lower Extremity Review [Internet]. 2012 Nov [cited 2017 Apr 7]. Available from: http://lermagazine.com/article/self-selected-gait-speed-a-critical-clinical-outcome
- CGA Toolkit [Internet]. Gait Speed Test. Resources for the Comprehensive Geriatric Assessment based

HANDGRIP STRENGTH TEST PROCEDURES

Supplies

- Hydraulic Hand Dynamometer

Definition & Purpose

Handgrip strength is a simple and commonly used test of a person's general strength level.

Measurement

1. Have participant sit comfortably with the shoulder adducted and neutrally rotated, with the elbow towards/against the body and flexed at 90 degrees, and the forearm and wrist in a neutral position.

2. Place the hand dynamometer in the participant's hand, while you use the wrist safety strap and gently support the base to prevent accidental dropping and damage to the instrument.

3. Let the participant arrange the instrument so that it fits comfortably in the hand. Adjust the handle if necessary for a comfortable grip. Make sure that the handle clip is located at the lower (furthest) post from the gauge. If the handle is not in the correct position, results will be inaccurate.

4. Reset the indicator needle by rotating it to zero

5. Request that the participant squeeze with maximum strength. The needle will automatically record the highest force exerted. Grip force should be applied smoothly, without rapid wrenching or jerking motion. Minimal wrist extension (30 degrees or less) is permissible as maximum grip is achieved. Wrist extension greater than 30 degrees should be noted with results.

6. Test each hand twice and record the best effort rating (i.e., Excellent, Very Good, etc.) of each on the participant's handout and on the aggregate form. Do not forget to reset the indicator needle before each and every effort.

Interpreting Results

Rating	Males (kg)	Females (kg)
Excellent	> 64	> 38
Very Good	56 – 64	34 – 38
Above Average	52 – 56	30 – 34
Average	48 – 52	26 – 30
Below Average	44 – 48	22 -26
Poor	40 – 44	20 – 22
Very Poor	< 40	< 20

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