Fall Risk Assessment

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Senior Physiotherapist, PWH
2008
Mobility at the expense of Stability

| Stable quadriped | Unstable biped |
Increase in Postural Sway with Age

Fall Risk Assessment

Content

- Patient interview
- Physical examination
- Functional mobility testing
  - Demonstration & practical
- Pilot screening in PW
Patient interview

- **History of fall**
  - Last 3 falls — when? What time? Where? Which room? What were they doing — turning? Getting up? Hanging clothes?
  - What do they think triggered the falls?

- **Effects off the fall**
  - LOC?
  - Injuries — fractures / lesions / bruises?
  - How did they get up from the floor? If not, what did they do?
Patient interview

- Call for help
  - Alarm available? Where was it?
  - OR shout? Bang on floor?
  - Confidence of mobilisation after the falls?
Physical examination

- **Joint mobility and muscle strength**
  - Knee – quadriceps
  - Ankle – dorsiflexes, plantarflexes

- **Integrated testing**
  - Get up from seat – height of seat without hands support
  - Get up and down on their toes on both legs or one leg
Physical examination

- Abnormalities of balance and gait suggesting patients at high risk of falling

- Take ≥5 steps to turn round
- Prolong double leg stance (>10%)
- Shuffling gait

Walking aid
## Functional mobility testing – Modified Functional Ambulation Categories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Lyer</td>
<td>Walk ✗/assist to sit/ sit without support &gt;1min ✗</td>
</tr>
<tr>
<td>II</td>
<td>Sitter</td>
<td>sit without support &gt;1min/ walk with 1 person ✗</td>
</tr>
<tr>
<td>III</td>
<td>Dependent walker</td>
<td>Walk with 1 person – level ground (continuous manual contact to support body weight)</td>
</tr>
<tr>
<td>IV</td>
<td>Assisted walker</td>
<td>Walk with 1 person – level ground (continuous or intermittent manual contact)</td>
</tr>
</tbody>
</table>
Functional mobility testing — Modified Functional Ambulation Categories

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<tr>
<th>Categories</th>
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<tbody>
<tr>
<td>V</td>
<td>Supervised</td>
<td>Walk with standby guarding from 1 person — level ground</td>
</tr>
<tr>
<td></td>
<td>walker</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Indoor</td>
<td>Transfer, turn &amp; walk on level ground independently, needs assistance on</td>
</tr>
<tr>
<td></td>
<td>walker</td>
<td>stairs/inclines</td>
</tr>
<tr>
<td>VII</td>
<td>Outdoor</td>
<td>Walk independently on level or non-level surfaces</td>
</tr>
<tr>
<td></td>
<td>walker</td>
<td></td>
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</table>

This classification does not take account of any aid used.
Functional mobility testing – Timed-up-and-go test

1. Stand up
2. Walk for 3 meters
3. Sit down
4. Turn around
5. Return for 3 meters

Walking aid and regular footwear is allowed, but no other physical assistance is given.
Functional mobility testing —
Timed-up-and-go test

- A reliable **time score**
- Good correlation with Barthel Index and Berg Balance Scale & gait speed
- **Predicts** patient’s ability to go outside alone safely
- Reflects patient’s **basic mobility skills** (chair transfer, toilet transfer)
- Reflects patient’s **extended mobility skills** (tub/shower transfers, walking 50 yards, climb stairs, going out alone)

## Functional mobility testing – Timed-up-and-go test

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Description</th>
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<tbody>
<tr>
<td>&lt;10 sec</td>
<td>Freely independent individual</td>
</tr>
<tr>
<td>&lt;20 sec</td>
<td>Independent with basic transfers (tub and shower), going outdoor and stairs ✓</td>
</tr>
<tr>
<td>20-29 sec</td>
<td>Great variance in balance, gait speed and functional capacity</td>
</tr>
<tr>
<td>≥ 30 sec</td>
<td>Need help with chair, toilet transfer &amp; stairs, unable to go alone, complementary examination necessary</td>
</tr>
</tbody>
</table>

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Functional mobility testing – Timed-up-and-go test (TUG)

Patients with hip fracture, operated and rehabilitated, performed TUG upon discharge

Repeat TUG upon 6 months follow-up

- 19 subjects (32%) had 1 or more falls
- TUG at discharge with cutoff point 24 significantly predicted falls during 6-month FU

Kristensen M T. Physical Therapy Jan 2007; 87, 1, 24-30
Functional mobility testing – Elderly Mobility Scale (EMS)

- Developed as core clinical assessment package in elderly medicine recommended by the Royal College of Physicians and British Geriatric Society (1992)
- Performance based test
- Applicable in busy medical professional clinics
### Functional mobility testing – Elderly Mobility Scale (EMS)

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Maximum score</th>
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<tr>
<td>Lying → sitting</td>
<td>2</td>
</tr>
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<td>Sitting → lying</td>
<td>2</td>
</tr>
<tr>
<td>Sitting → standing</td>
<td>3</td>
</tr>
<tr>
<td>Standing</td>
<td>3</td>
</tr>
<tr>
<td>Gait</td>
<td>3</td>
</tr>
<tr>
<td>Timed walk</td>
<td>3</td>
</tr>
<tr>
<td>Functional reach</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
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## Functional mobility testing – Elderly Mobility Scale (EMS)

### Outcome indicators

<table>
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<tr>
<th>Category</th>
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<tbody>
<tr>
<td>&lt;10 cm</td>
<td>Likely to need help with mobility and ADL</td>
</tr>
<tr>
<td>10-13 cm</td>
<td>Borderline, required some help with some mobility manoeuvres</td>
</tr>
<tr>
<td>≥ 14 cm</td>
<td>More likely to be independently in mobility</td>
</tr>
<tr>
<td>=20 cm</td>
<td>Discriminating those unlikely to have mobility deficit</td>
</tr>
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## Functional mobility testing –
### Elderly Mobility Scale (EMS)

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Functional mobility testing –
Functional reach test

Measure the distance

Hold the position for 3 sec.

Functional reach test

Hold the position for 3 sec.

Measure the distance
## Functional mobility testing — Functional reach test

<table>
<thead>
<tr>
<th>Norms</th>
<th>Men (in.)</th>
<th>Women (in.)</th>
</tr>
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<tbody>
<tr>
<td>20-40 yr</td>
<td>16.7 ± 1.9</td>
<td>14.6 ± 2.2</td>
</tr>
<tr>
<td>41-69 yr</td>
<td>14.9 ± 2.2</td>
<td>13.8 ± 2.2</td>
</tr>
<tr>
<td>70-87 yr</td>
<td>13.2 ± 1.6</td>
<td><strong>10.5 ± 3.5</strong></td>
</tr>
</tbody>
</table>

Behrman. *Archives of Physical Medicine & Rehabilitation* 2002, 83,538-42
Functional mobility testing – Functional reach test

25.4 cm

Criterion for falls risk

For those identified as at risk is highly likely at risk – to be referred for falls risk intervention

Not a sensitive instrument for identifying individuals at risk
Pilot screening of patients with hip fracture in PWH for fall risk after discharge from rehabilitation hospital

July to September, 2007
In Department of Physiotherapy

n= 14
Modified Functional Ambulation Categories

- Outdoor walker: 29% (Sitter: 7%, Assisted walker: 14%) (n=14)
- Indoor walker: 21%

Use of Walking Aid

- Wheelchair: 51%
- Quadripod: 21%
- Stick: 7%
- Nil: 14%

4 weeks after discharge from Rehabilitation hospital
Elderly Mobility Score

- n=14
- Maximum score = 20

Functional Reach

- n=12
- in cm.
  - < 25.4 cm = 11
  - ≥25.4 = 1
Pilot screening for fall risk 4 week after discharge

- **Mobility** status for all patients were well maintained during the discharged period prior to screening

- Patients and their relatives do have a number of questions to clarify upon their home stay period concerning mobility issue
  - Stairs? Outdoor activities? Change of walking aid?

- **Reassurance** very fruitful in maintaining and improving their physical mobility level
Thank you!!