

# Fall Risk Assessment

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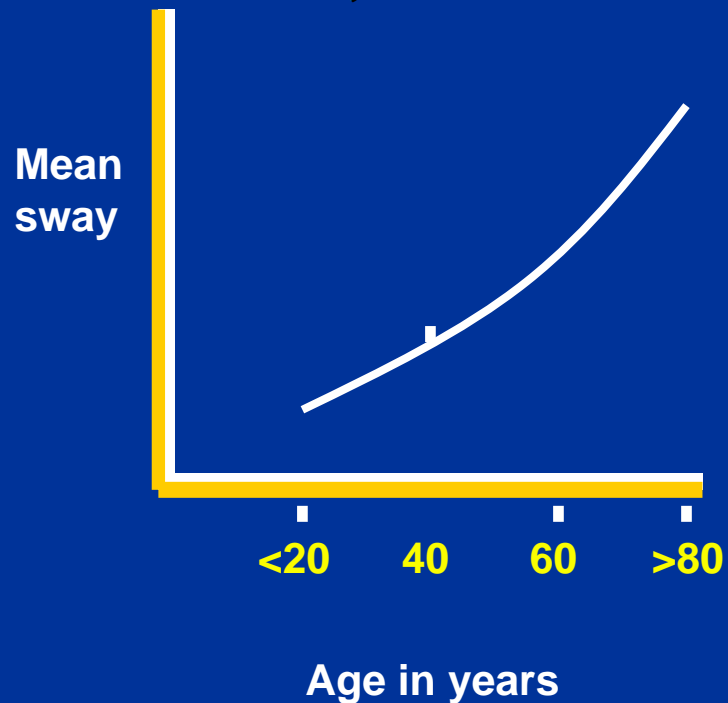
# Mobility at the expense of Stability

Stable quadruped

Unstable biped

# Increase in Postural Sway with Age

Brocklehurst JC et al. Clinical correlates of sway in old age: sensory modalities. Age Ageing 1982;11:1-10.



# 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

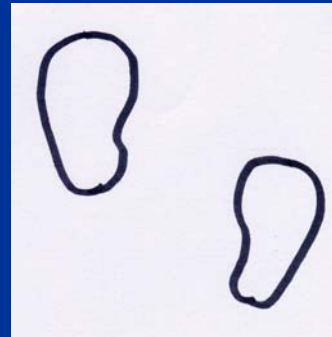
- Joint mobility and muscle strength
  - Knee – quadriceps
  - Ankle – dorsiflexes, plantarflexes
- Integrated testing
  - **Get up from seat** – height of seat without hands support
  - **Get up and down on their toes** on both legs or one leg



# Physical examination

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

Take  $\geq 5$  steps  
to turn round



Prolong double  
leg stance ( $>10\%$ )

Shuffling  
gait



# Walking aid

# Functional mobility testing – Modified Functional Ambulation Categories

Categories	Stage	Definition
I	Lyer	Walk ✕ /assist to sit/ sit without support >1min ✕
II	Sitter	sit without support >1min/ walk with 1 person ✕
III	Dependent walker	Walk with 1 person – level ground (continuous manual contact to support body weight)
IV	Assisted walker	Walk with 1 person – level ground (continuous or intermittent manual contact)

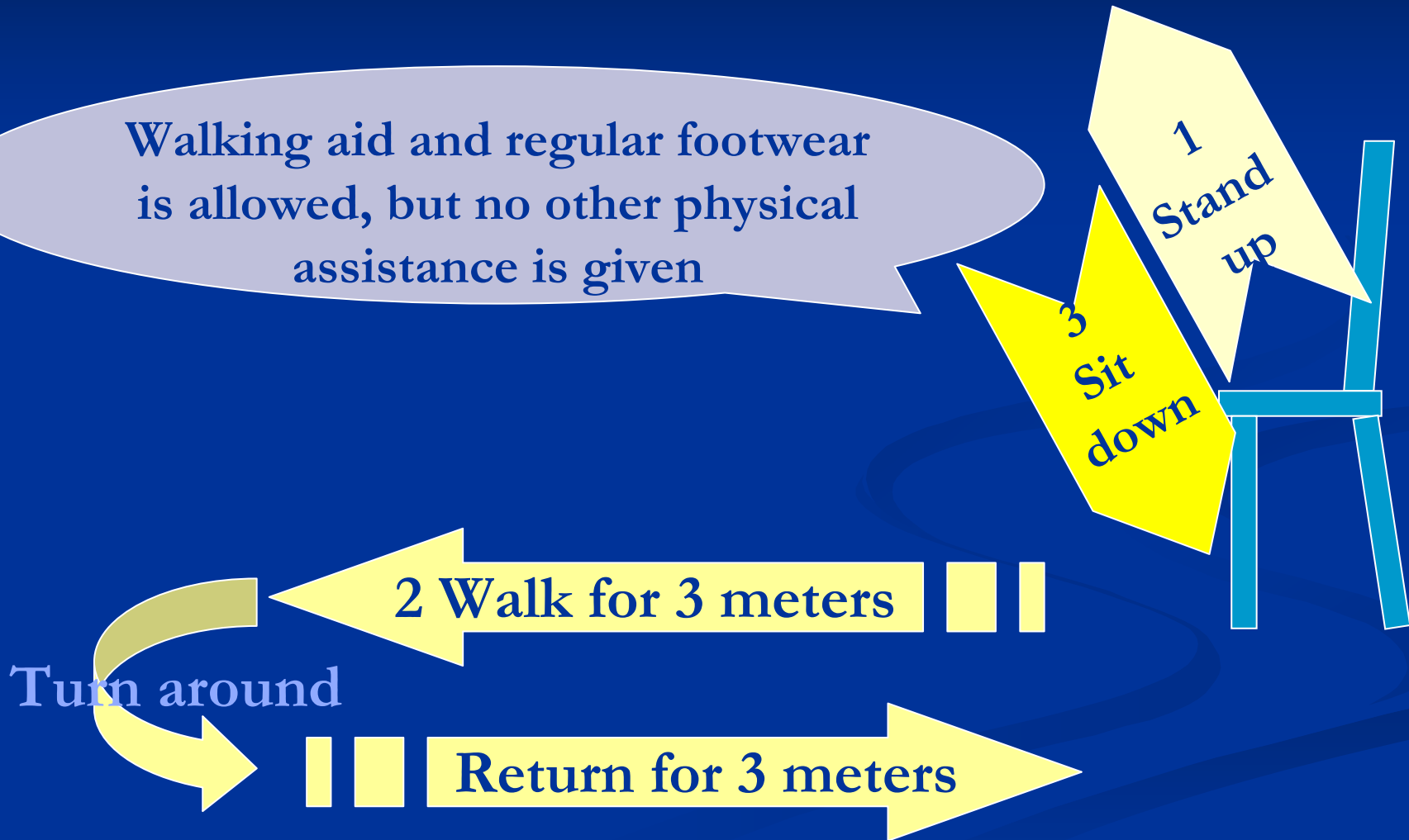
# Functional mobility testing – Modified Functional Ambulation Categories

Categories	Stage	Definition
V	Supervised walker	Walk with standby guarding from 1 person – level ground
VI	Indoor walker	Transfer, turn & walk on level ground independently, needs assistance on stairs/inclines
VII	Outdoor walker	Walk independently on level or non-level surfaces

This classification does not take account of any aid used.

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

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

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

# 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

# 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)

Tasks	Maximum score
Lying → sitting	2
Sitting → lying	2
Sitting → standing	3
Standing	3
Gait	3
Timed walk	3
Functional reach	4
Total	20

# Functional mobility testing – Elderly Mobility Scale (EMS)

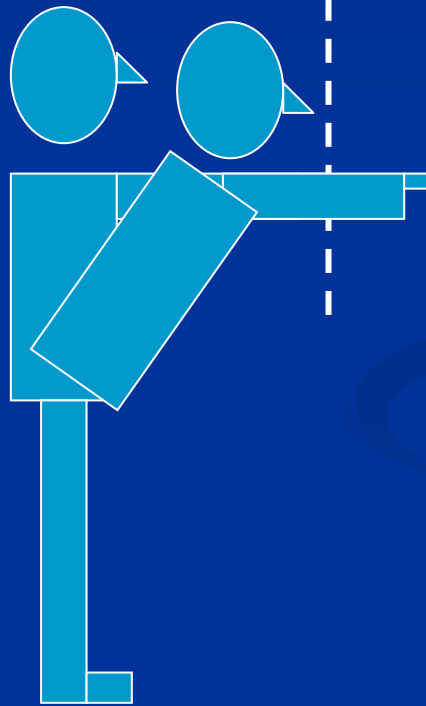
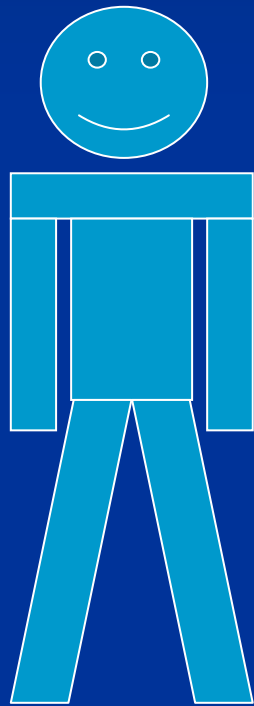
## Outcome indicators

<10 cm	Likely to need help with mobility and ADL
10-13 cm	Borderline, required some help with some mobility manoeuvres
$\geq 14$ cm	More likely to be independently in mobility
$\geq 20$ cm	Discriminating those unlikely to have mobility deficit

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# Functional mobility testing – Functional reach test



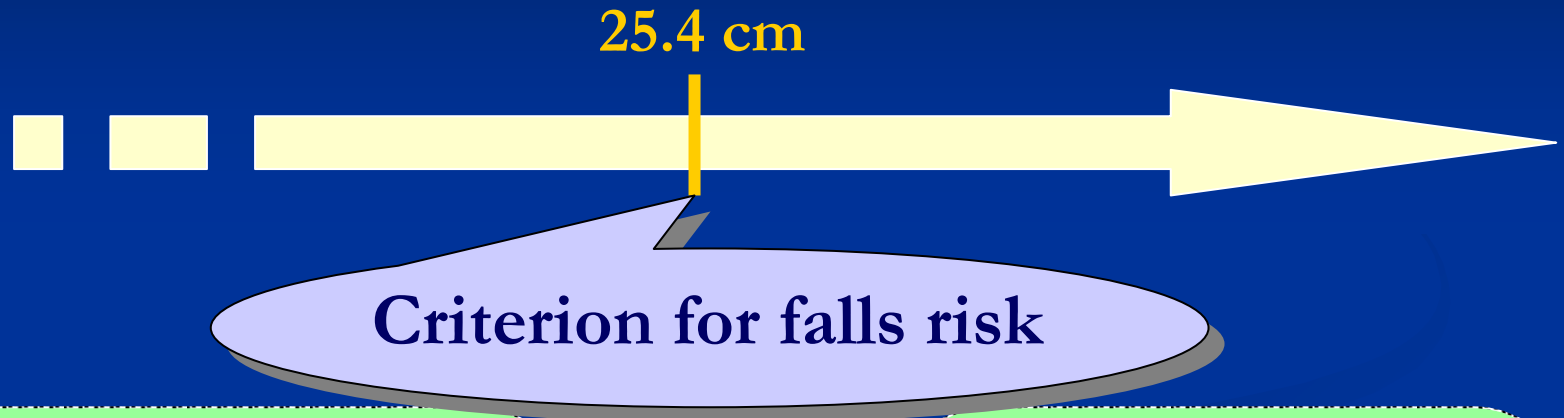
Measure the  
distance

Hold the  
position for  
3 sec.

# Functional mobility testing – Functional reach test

Norms	Men (in.)	Women (in.)
20-40 yr	16.7 ± 1.9	14.6 ± 2.2
41-69 yr	14.9 ± 2.2	13.8 ± 2.2
70-87 yr	13.2 ± 1.6	10.5 ± 3.5

# Functional mobility testing – Functional reach test



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**

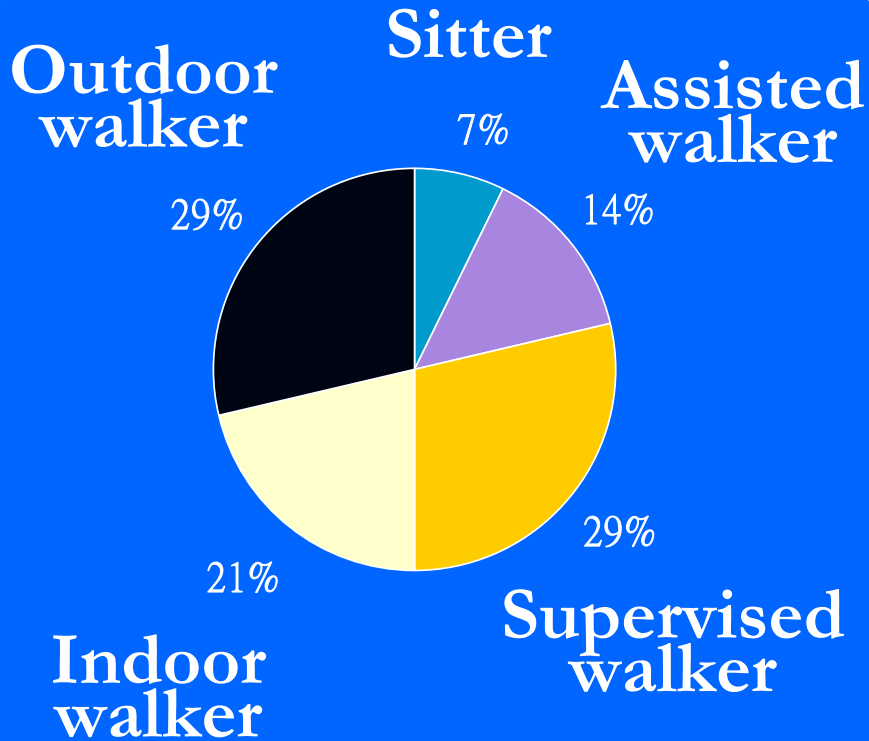
after discharge from rehabilitation hospital

July to September, 2007

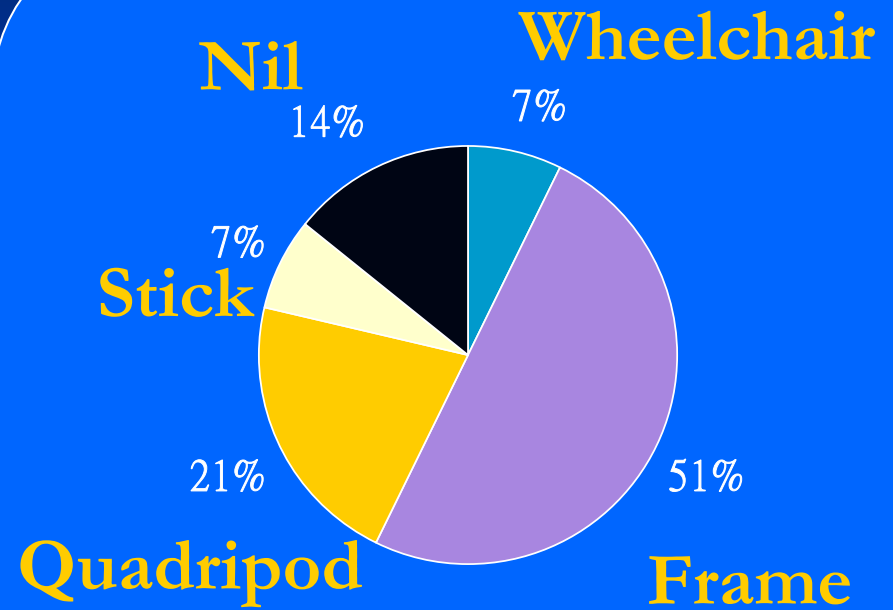
In Department of Physiotherapy

n= 14

# Modified Functional Ambulation Categories



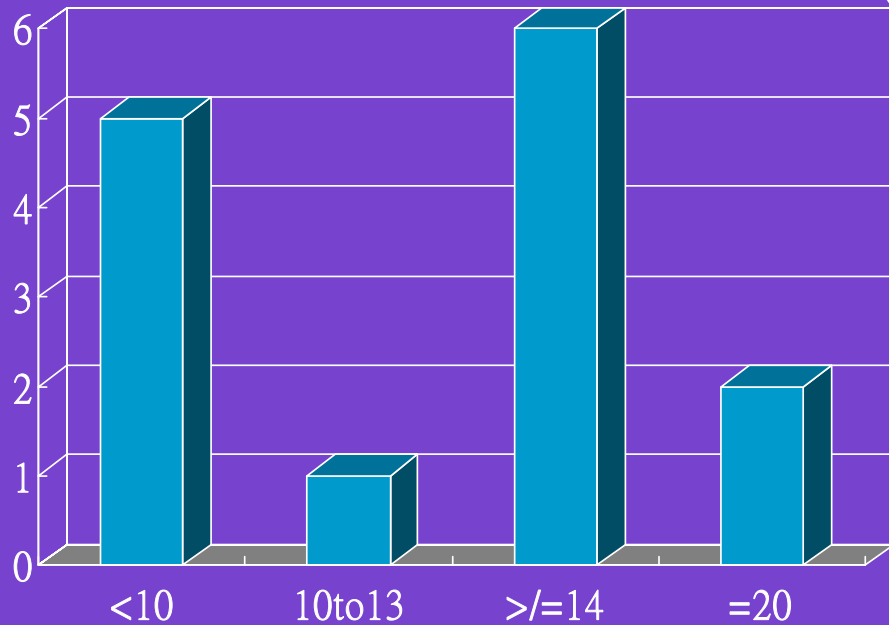
# Use of Walking Aid



n=14

4 weeks after discharge from Rehabilitation hospital

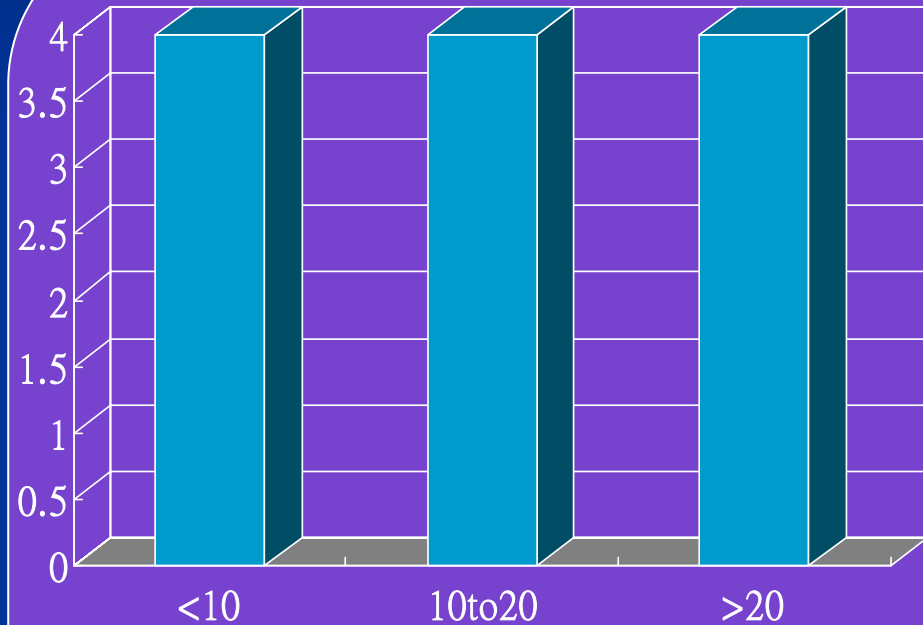
## Elderly Mobility Score



**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!!!