

BACK TO BASICS - Falls in the elderly

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MEDICLINIC



South African
Geriatrics Society

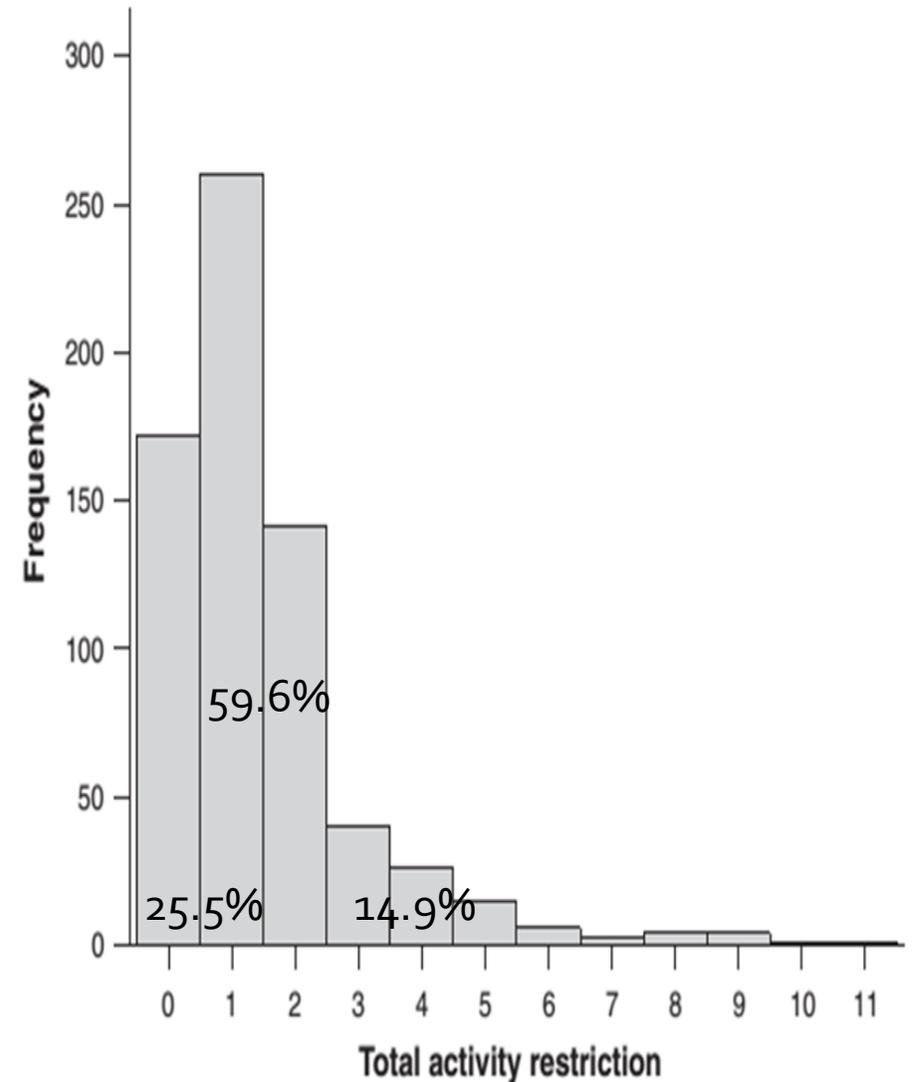
INCIDENCE

- 30-40% of community-dwelling older people (>65 yrs) per year
 - Up to 70% in cognitively impaired individuals
- >50% for those older than 80 yrs
- 60% of people with a previous fall in the past year will have another fall
- 10% result in major injury and 5% result in fractures

INCIDENCE

- 1/3 develop a fear of falling syndrome with related functional decline – downward spiral triggered

Restriction in activity over the past 3 years in patients reporting fear of falling



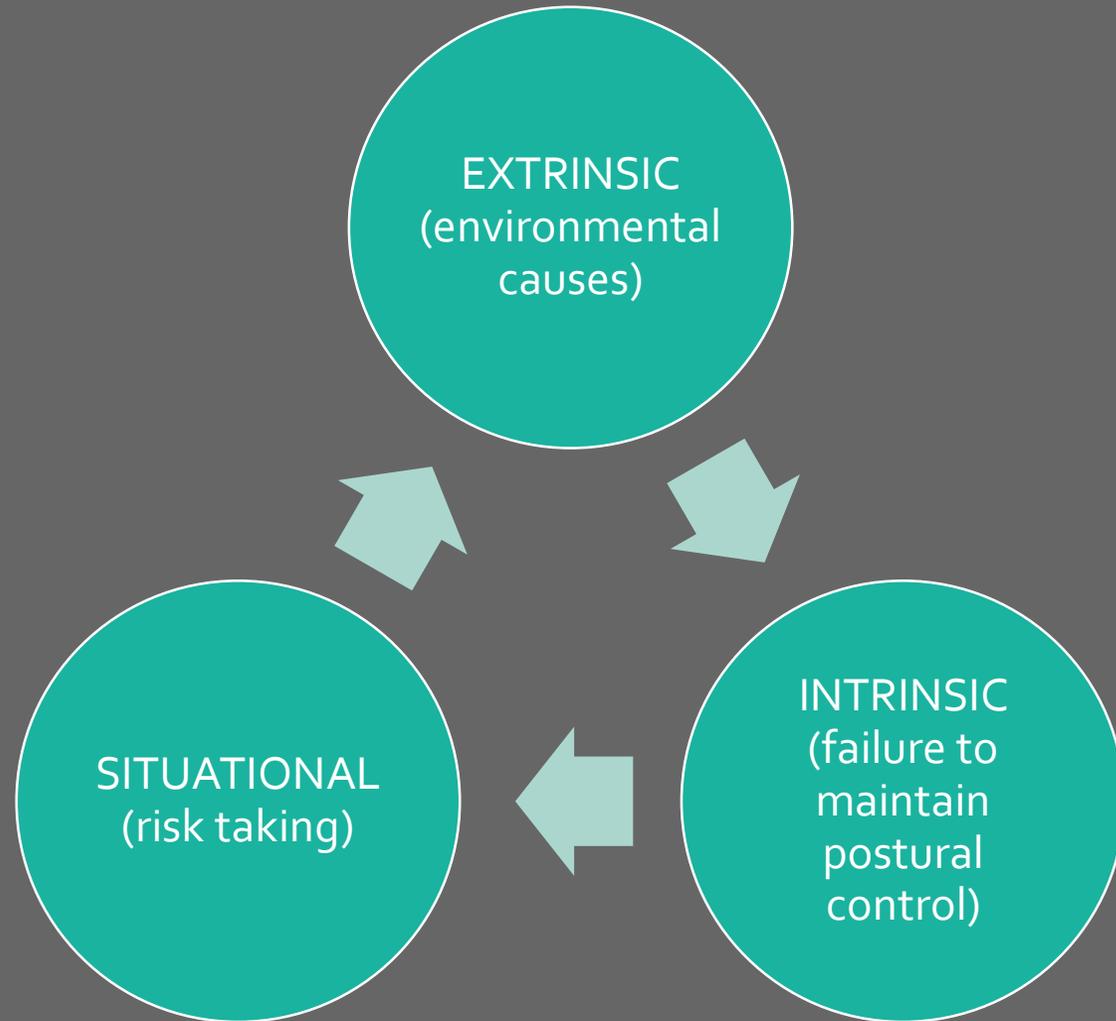


CAUSES

Usually due to impairment in multiple domains that overwhelm the ability to compensate

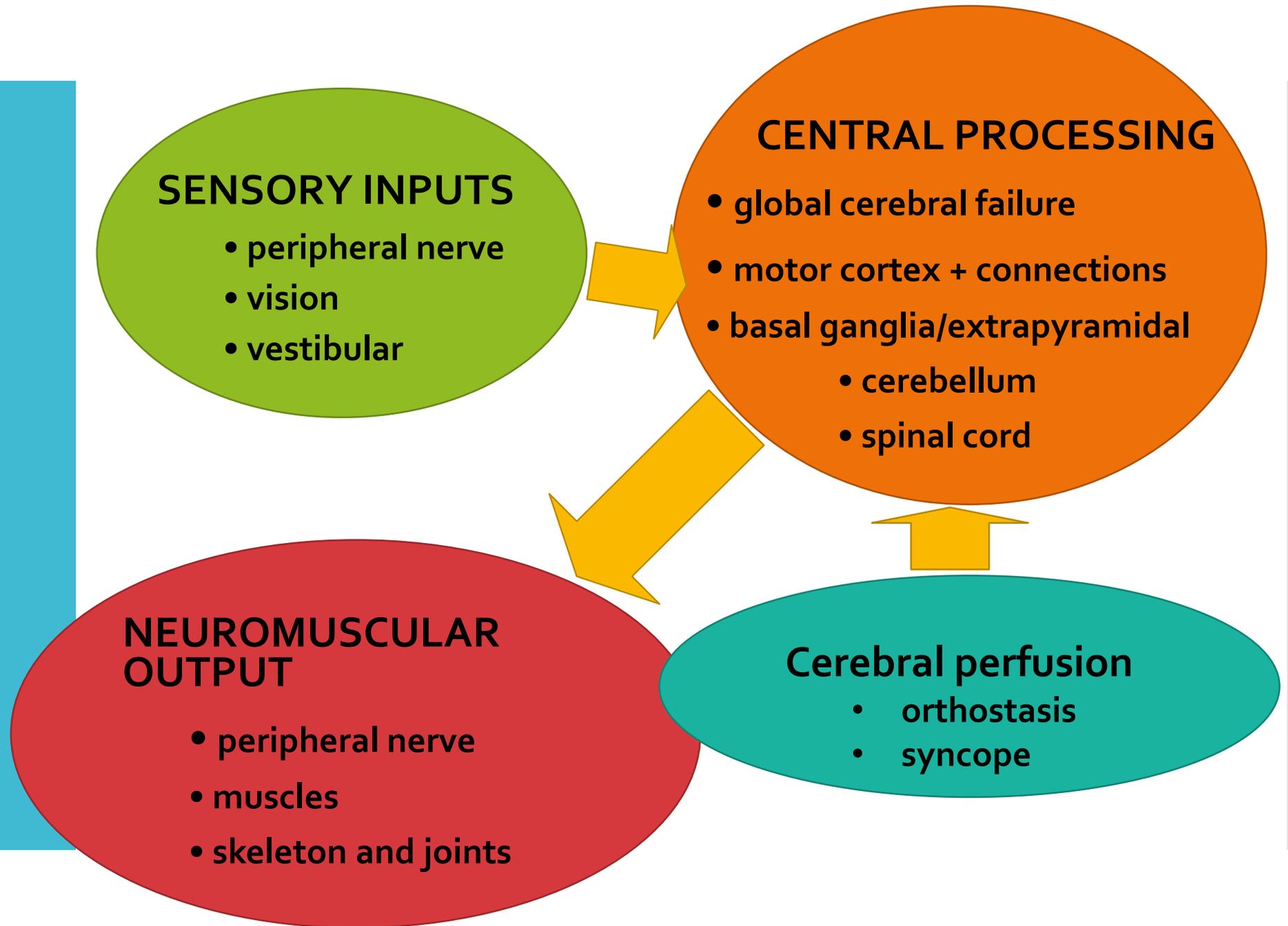
CAUSES

- Stiffening of connective tissue
 - > decreased range of joint motion
- Loss of muscle mass
 - > reduced muscle strength
- Slowing of nerve conduction
 - > prolonged reaction time
- Decreased visual acuity
 - > impaired depth perception
- Impaired proprioception
 - > increased postural sway
- Forward displacement center gravity
 - > impaired “righting” reflexes



CAUSES

CAUSES



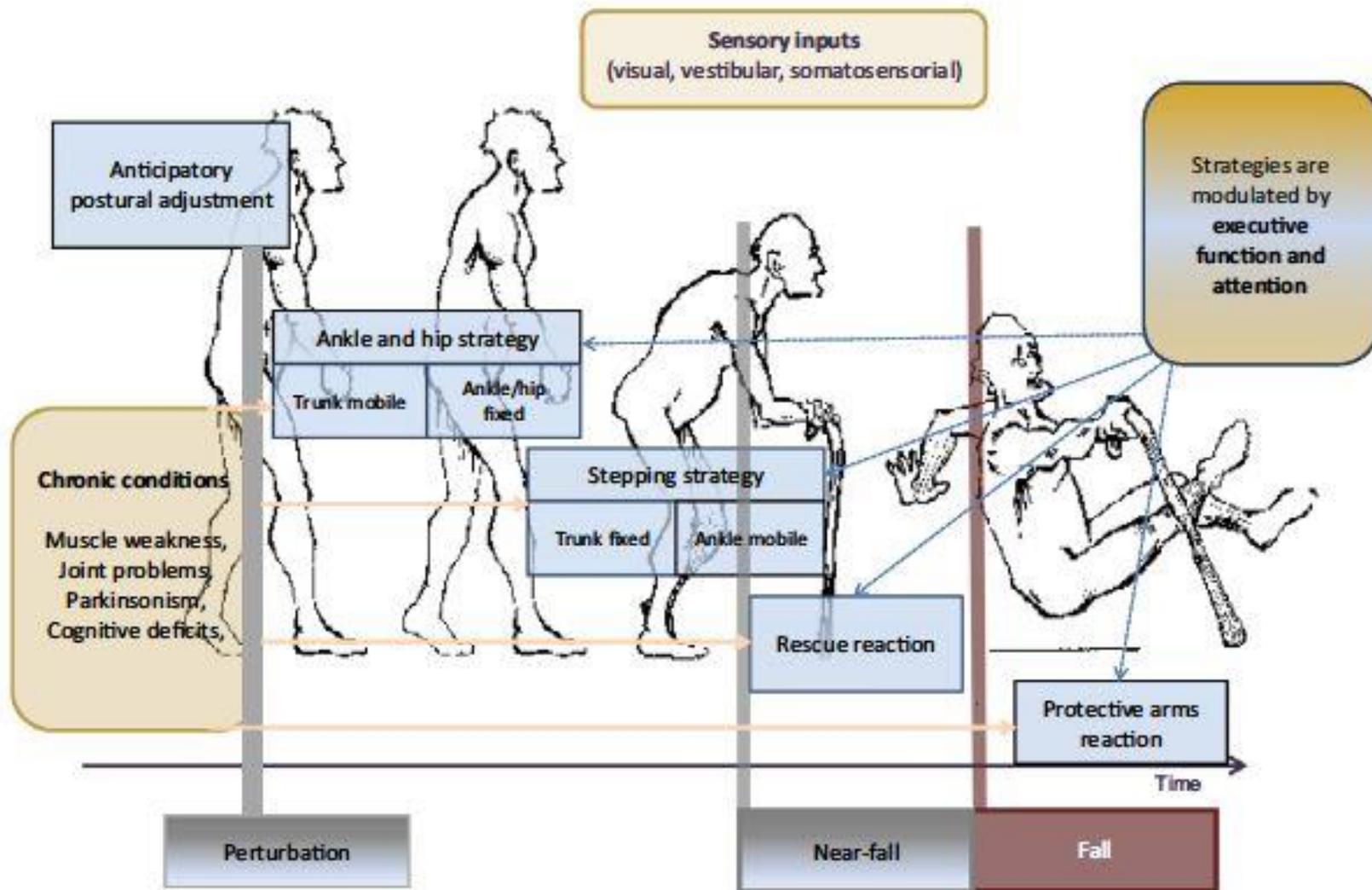


Figure 1. Schematization of rapid succession of strategies aimed at preserving body stability after a single perturbation. Note the role of cognitive processes modulating the three classic rescue strategies. Modified from Fasano et al.¹⁹ [Color figure can be viewed at wileyonlinelibrary.com]

CAUSES OF FALLS

INTRINSIC RISK FACTORS

- gait and balance impairment
- Peripheral neuropathy
- Vestibular dysfunction
- Muscle weakness
- Vision impairment
- Medical illness
- Advanced age
- Impaired ADL
- Orthostatic hypotension
- Dementia
- Drugs

SPECIFIC CAUSES - drugs

DRUG CLASS	ODDS RATIO	95%CI
Antihypertensives	1.24	1.01-1.50
Diuretics	1.07	1.01-1.14
B-blockers	1.01	0.86-1.17
Sedatives and hypnotics	1.47 	1.35-1.62
Neuroleptics and antipsychotics	1.59 	1.37-1.83
Antidepressants	1.68 	1.47-1.91
Benzodiazepines	1.57 	1.43-1.72
Narcotics	0.96	0.78-1.18
NSAID's	1.21	1.01-1.44

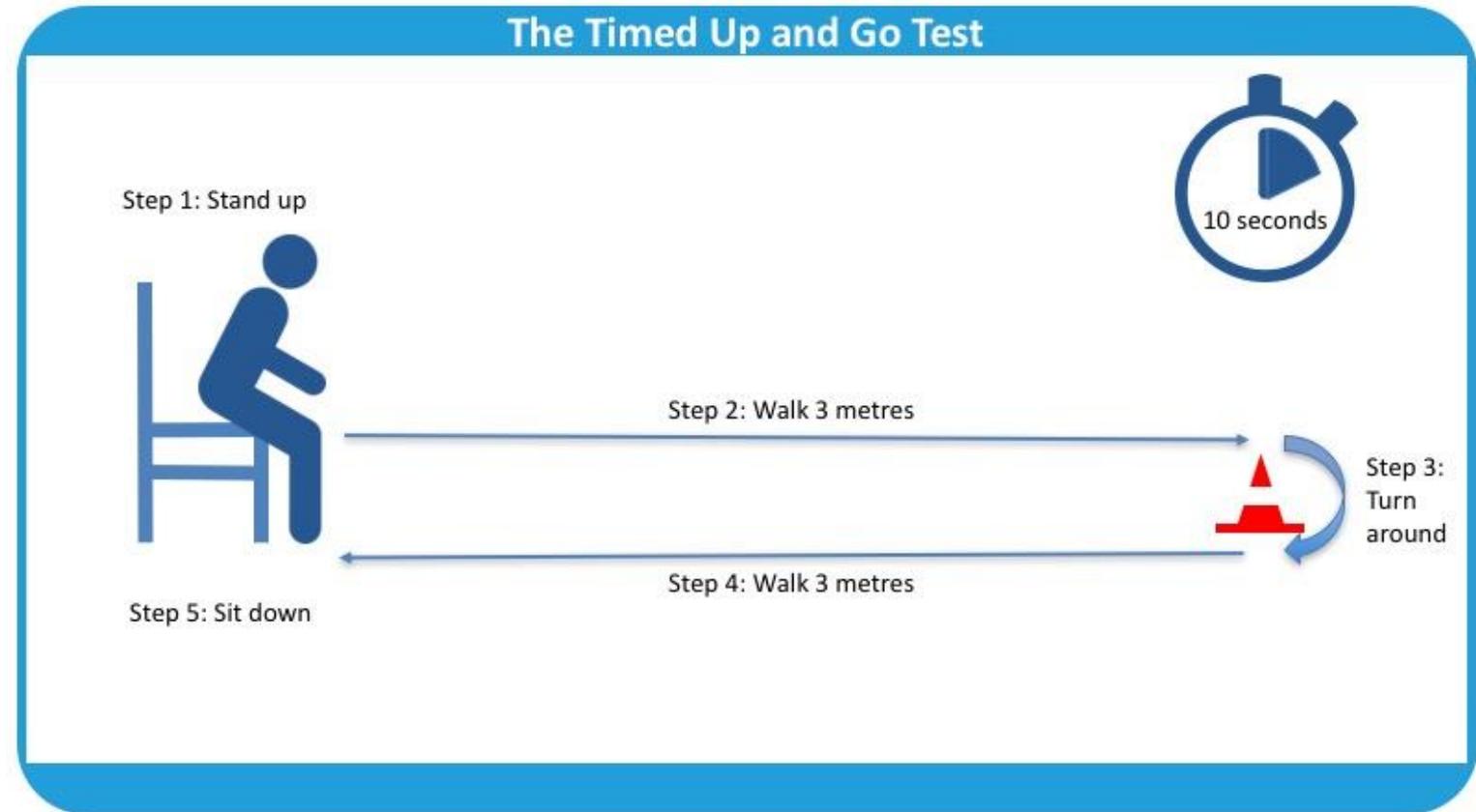
CAUSES OF FALLS

- EXTRINSIC RISK FACTORS
 - Environmental hazards
 - Poor footwear
 - Restraints

HOW TO ASSESS THE RISKS

- Full history
 - Falls related: how many falls and how did they happen?
 - Medication review
 - Use of alcohol and assistive devices?
 - Medical problems including pain, incontinence and osteoporosis risks
- Clinical examination
 - Supine and standing blood pressure
 - Vision and hearing
 - Cognitive assessment
 - Functional assessment
 - Full neurological, cardiovascular and musculoskeletal examination (including ECG)

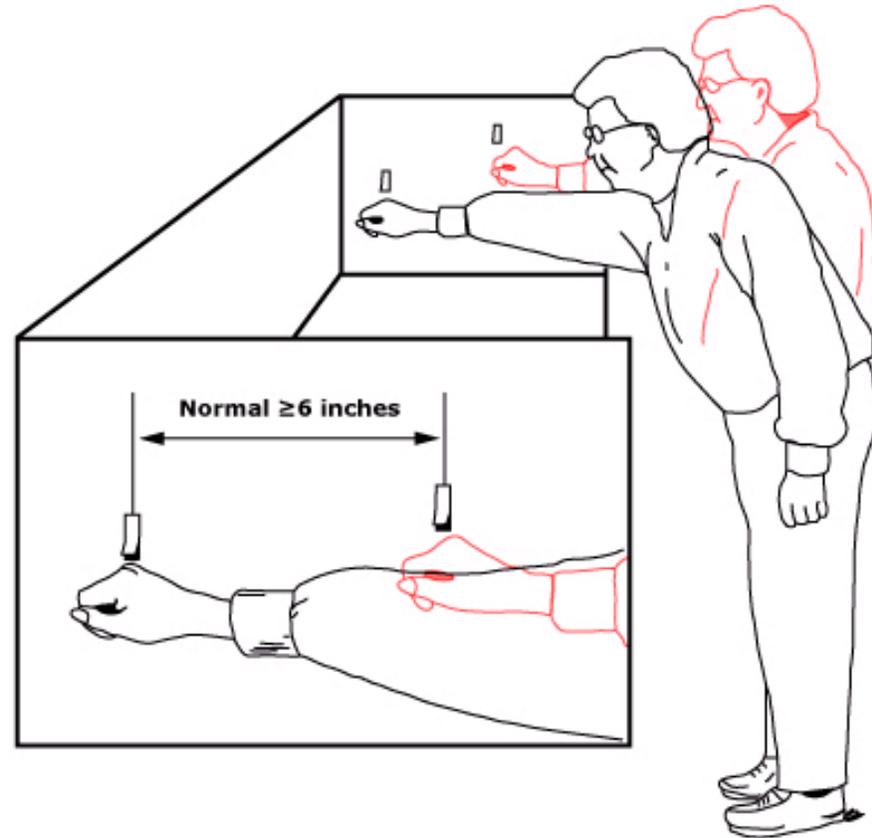
HOW TO ASSESS THE RISKS



HOW TO ASSESS THE RISKS

- Other tools
 - Functional muscle strength – 5x sit to stand
 - Romberg test
 - Tandem walking
 - One legged stance
 - Dual tasking (walking and talking)
 - Functional reach
 - Tinetti balance assessment tool

Diagram of functional reach test to assess balance in elderly persons



Subject stands with fist extended alongside a wall. Subject leans forward as far as possible, moving fist along wall without taking a step or losing stability. Length of fist movement is measured. Distances of less than 6 in (15 cm) indicate an increased risk of falling.

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CONSEQUENCES OF FALLS

Fractures/lacerations/head injuries

Decline in functional status

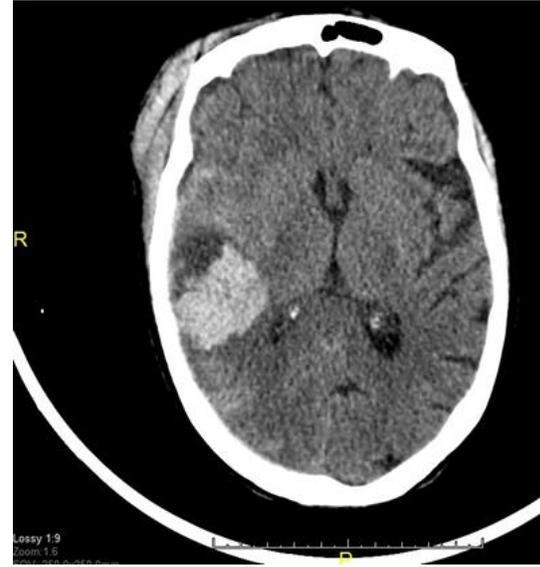
Hospitalisation

Institutionalisation

Increased medical costs

Fear of falling

Death



PREVENTION

Strategies to reduce injuries and develop confidence in elders (STRIDE)

Risk Factor	Why Does It Matter?	Is this a risk for me?	Is this a priority for me?	Comments
Changes in leg strength, balance and/or walking 	People with decreased leg strength and changes in balance and/or gait are more likely to trip, slip and fall.			
Medications 	Medications that cause lightheadedness or tiredness (e.g., sleeping pills) can increase the likelihood of falling.			
Postural Hypotension 	Postural hypotension, or a drop in blood pressure when a person changes positions, increases the chances of falling.			
Feet Footwear 	Problems with feet, footwear can make it more difficult to walk.			
Home Environmental hazards 	Objects on the floor, loose throw rugs, low lighting, and not having handrails can increase the likelihood of tripping, slipping, and falling.			
Risk of Osteoporosis 	Osteoporosis, or fragile bones, increases the chances of injury during or after a fall.			
Vitamin D supplements	People who do not take Vitamin D supplements are more likely to fall and have an injury.			
Vision problems 	Problems with vision can lead to missteps.			

PREVENTION what works...

- Exercise
 - Strength and balance training (not walking)
 - Cognitive and dual task training
 - Tai Chi and yoga
- Medication review and withdrawal of dangerous medication
- Manage postural hypotension
- Cataract surgery
- Proper footwear
- Environmental adaptation
- Screening for osteoporosis

Exercise for falls prevention

PROGRAM	High Balance Challenge	Lower Balance Challenge
High dose and walking	0.76 (0.66-0.88)*	0.96 (0.80-1.16)
High dose, no walking	0.58 (0.48-0.69)*	0.73 (0.60-0.88)*
Low dose and walking	0.95 (0.78-1.16)	1.20 (1.00-1.44)
Low dose, no walking	0.72 (0.60-0.87)*	0.91 (0.79-1.05)

PREVENTION what doesn't work...

- Routine vitamin D supplementation
- Hip protectors (low adherence)
- Education alone

PREVENTION

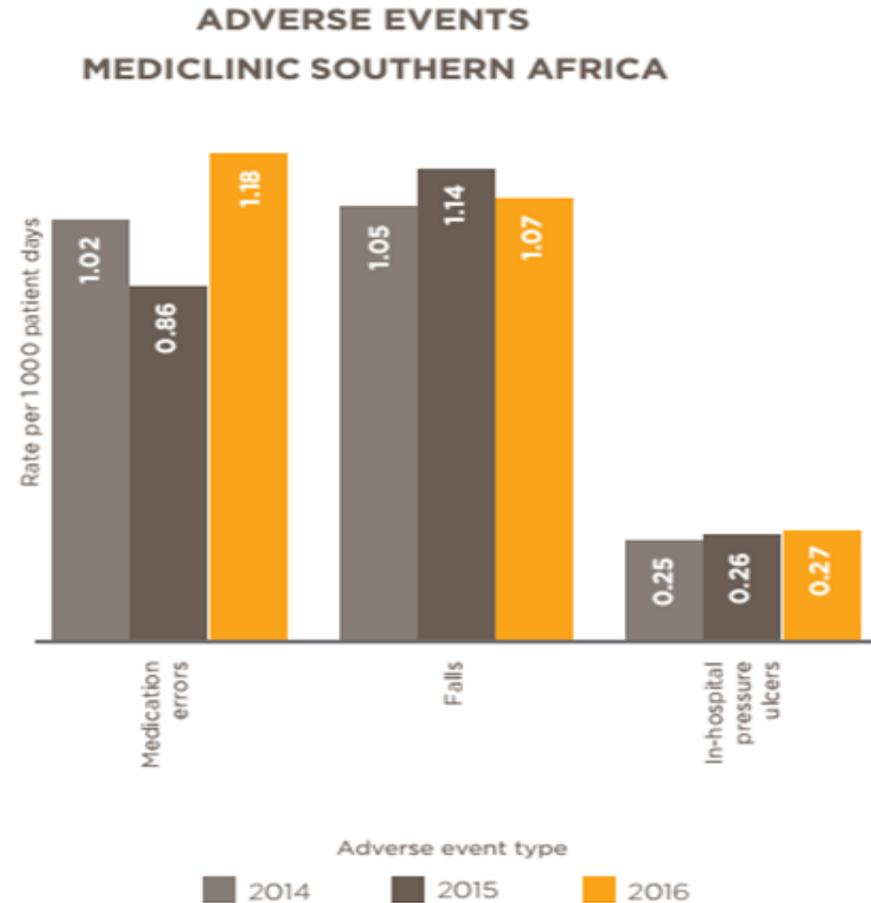
what may work...

- Exergaming and perturbation training
- Myostatin inhibitors



HOSPITAL RELATED FALLS

- 10% of falls occur during acute illness
- 1/200 hospitalised patients fall and injury rate increases by 30%
- NHS UK – inpatient fall rate ranges between 2.9 to 13 falls per 1000 patient-bed-days



HOSPITAL RELATED FALLS

- Possible interventions:
 - “falls alert” sign
 - supervision of patients in the bathroom
 - ensuring patients’ walking aids are within reach
 - a toileting regimen
 - use of a low-low bed
 - use of a bed/chair alarm
- No change in falls or fall related injuries

CONCLUSION

- Many falls are preventable
 - it is possible to reduce risk of falling among people living in the community by at least 30%
- Effective interventions:
 - multi-factorial assessment and individualised intervention
 - (some) exercise programs
 - home modifications (by OTs) in high risk situations
 - vitamin D supplements (if low vitamin D)
 - medication rationalisation
 - cataract surgery

THANK YOU

