

Gait and falls in Elderly population

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- Prof K Pearlson

Today around 125 million people come under the age group of 80 years and older who are at risk of falls. While some elderly enjoy good health and functioning others are frail and require significant attention.

According to recent Study around third of elderly people fall each year. Ageing is associated with a reduction of the functional and physiological capacity of the musculoskeletal and nervous system which significantly affect the daily lifestyle.

CAUSES and EFFECTS of Falls:

Causes	Effect of falls
1 Mental health : -Alzheimer's disease -confusion -paranoia -psychosis -medication side effects	Physical: -Bruising -fracture (especially femur) -brain hemorrhage -Burns (fall against radiator) -Dehydration -pneumonia -Death
Weakness and fragility	Immobility: -reduced activity -loss of muscle and tone 5 stiffer joints
1 Vision defects: -cataract and reduced visual field	Mental: -depression -loss of confidence -fear 4 restriction of lifestyle
4 Musculoskeletal: -arthritis -stiffness of joints -weak muscles -giving way of knee -deconditioning due to immobility.	3 Social: -inability to leave home (real or imagined) -long 6 term care -lack of financial aid -inability to travel -inability to follow hobbies
1 Neurological Epilepsy, stroke, Parkinson's disease: -reduced position sense -reduced vibration sense -reduced balance	

-slow reactions. -medication side effects.	
2 Heart problems: -drop attacks -arrhythmia -blood pressure drop on changing posture -medication side effects -syncope (faint)	
Environment and personal factors: -poor lightening -rugs -stairs -floors -steps -walking frames -improper foot wear -improper clothing -fear of Fall due to past memory of Fall	
Lack of education on care of elderly	

Strategies for fall prevention:

*Attention to physical health by focusing on performing regular exercises to increase strength of muscles and bone thereby improving balance which boosts confidence in elderly people.

*Regular follow up with the doctor regarding the dosage and side effects of medication to overcome dizziness.

*Eye care by timely visits to eye doctor for updating their eyeglasses to maximize their vision.

*Making the home and environment safer for elderly by reducing tripping hazards which can be achieved by installing railings and grab bars for support, making the *anti-slippery flooring, adequate lighting near the staircase, clearing the cords and other obstacles lying in the house, signages with bold and dark letters (contrast) to be used, installing elevated toilet seat, keeping the frequently used household items at reach level, timely checking of the walking aids like cane, walker etc, wearing appropriate footwear with firm non-slippery soles with flat heel.*

- *Taking care of the diet which includes calcium and vitamins.
- *Adequate exposure to sunlight for good bone health.
- *Choosing healthy and active lifestyle over sedentary, can increase the life expectancy.

Role of Physiotherapist:

Physiotherapy plays a vital role in enhancing the integrity of the musculoskeletal, cardiovascular, Neurological systems in elderly population by educating them to improve their strength and balance which boosts their confidence so that they can experience active lifestyle.

Physiotherapy Assessment for geriatric:

It is a multidimensional assessment designed to evaluate an older person's functional ability, physical health, cognition, mental health, and socioenvironmental circumstances.

Screening of older adults is done by taking detailed fall history, risk factor assessment including osteoporosis, cognition, mental health by using the scales such as:

- MMSE - Mini Mental State Examination (or other similar test)
- Berg Balance Scale
- Equilibrium and Non - Equilibrium tests
- Timed Up and Go (TUG) Test
- Tinetti balance assessment and many more evaluation test.

Physiotherapy Management:

Goals

- *Boosting confidence and removing fear of fall
- *Improving the overall strength
- *improving the endurance
- *Educating regarding the strategies against the prevention of falls

Rehabilitation

A Physiotherapist conducts a brief screening of fall risks, if the screening shows that the individual is at risk, then the physiotherapist will do a thorough evaluation and design a protocol or the same.

Intervention

- Otago Exercise Program for reduce falls in Elderly
- Balance training: It is an effective part of falls prevention.

When the older people meet Physiotherapists, they will design exercises that challenge your ability to keep balance as well as recover from a loss of balance.

Example:

- Single leg standing
- Tandem walking/standing
- Standing/walking on different surfaces
- Wobble board balancing
- Walking over obstacles
- Side walking
- Backward walking

And many more exercises that challenges their balance.

Strength training:

Individualized strengthening protocol to focused group of muscles with help of manual resistance, theraband, weights with 10 repetitions of 3 sets, thrice a day and then slowly progress to 20 repetitions and so on.

Endurance training:

It is done by aerobic exercises, treadmill training, jogging, swimming, cycling etc endurance training with recreation gives good outcomes.

Fear management:

Its important for you to talk to your physiotherapist regarding fear of fall as the physiotherapist helps to boost confidence. Also education regarding falls prevention strategies.

Co-ordination exercises:

Finger to nose exercises
Finger to finger test

Frenkel exercises:

This is done by keeping markers on floor and asking them to touch with feet on command.

A Physiotherapist can do home visit and help you to make your home as safe as possible, also design an individualized plan for your fall - prevention needs.

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