

Developing Fall Prevention Interventions for Older Adults

Problem:

Falls are a matter of concern to many older adults, as it can decrease independence when performing daily activities and increase disability (Pereira et al., 2008).

- Falls in elderly people are a significant cause of injuries, leading to a general fear of falling, reduced quality of life and even death.
- About 30% of people over the age of 65 years living in the community fall at least once a year.
- The rate of falls increases gradually with advancing age.

Fall Risk Factors:

- Weak muscles
 - Lack of physical activity
 - Health conditions-Arthritis, UTIs, Meningitis, Diabetes Mellitus
- Poor balance
 - Weak muscles
 - Health conditions-Stroke and Parkinson's Disease
 - Side effects from medications
- Dizziness or lightheadedness
 - Drop in blood pressure (postural hypotension)
 - Dehydration
 - Malnutrition
- Black outs or loss of consciousness
 - Health conditions-bradycardia, tachycardia, and atrial fibrillation
- Foot problems
 - Health conditions-Diabetes
 - Unproper footwear
 - Cuts, blisters, and sores
- Confusion or memory loss
 - Health conditions-Alzheimer's and Dementia
- Vision and hearing impairments
 - Vision related conditions-Cataracts and Glaucoma
- Medication use
 - Psychotropics tablets
 - Blood pressure medications
 - Sleeping tablets
- Change in behavior
 - Drinking too much alcohol
 - Fear of falling
- Bladder and bowel conditions

Process of maintaining balance requires input from the following sensory systems: (“The Human Balance System”, n.d.)

Vestibular System:
Provides information to the brain about motion, spatial orientation and head position, which allows us to maintain our balance, posture, and stabilize head and body during movements.

Vision System:
Allows coordination relative to positions of objects about the body.

Somatosensory System:
Provides information about perception of touch, pressure, vibration, temperature, and pain, which arise from the skin and joints.

Treatment from an Occupational Therapist:

With the help of an occupational therapist, older adults can take steps to reduce fall risk and safely increase their involvement in activities they value. An occupational therapist can help by recommending: (Barney & Perkinson, 2016)

- Improving behavior to change daily activities.
- Modifying your home environment.
- Improving physical activity to safely perform daily activities.

A goal of an occupational therapist is to enable clients to continue functioning in all meaningful activities.

Treatment from other professionals:

- **Primary Physician:** Discuss previous falls, current health issues as well as medications that you are taking on a regular basis so that your doctor can determine the cause of your fall and suggest a suitable solution.
- **Orthopedic doctors:** Assess the health of your bones and joints, can help diagnose and treat your alignments.
- **Podiatrist:** Can help assess and treat foot pain, identifying and correcting underlying biomechanical and gait abnormalities prescribing exercise programs and issuing foot health and footwear advice.
- **Physical Therapist:** Can help by evaluating and developing individualized treatment plans with exercises to improve mobility, strength and balance.

1. Modifications to Create a Safe Environment:

Your home can put you at a risk for a fall. Up to 75% of falls occur in the home environment, but you can reduce the likelihood of falls with simple home modifications. Many of the falls take place in the bathroom, kitchen, bedrooms, and stairways. Some major problems in the home that can cause falls include: high bed heights, poorly equipped toilets and chairs, lying objects on the floor, slippery floor surfaces, unsecured rugs, and inadequate lighting in the hallways (Trudeau, 2017). When an occupational therapist is evaluating the home environment it is important to determine which areas increase the risk of falls by observing when the client:

- Transfers from the bed, chairs, and toilet and in and out of the shower or bathtub
- Walking on the different floor surfaces (e.g., wooden floors, tiles, and carpet)
- Reaching up and bending down to receive objects in the kitchen
- Going up and down the stairs (Hall, 2018)

What can I do to prevent falls?

- Fix the common hazards:
 - Increase lights inside in every room and hallways
 - Keep floors free of clutter
 - Add grab bars in the bathroom
 - Add sturdy handrails on both sides of stairs
 - Add non-slip mats in the tub or shower
 - Store items within easy reach
 - Add nightlights in every room
 - Immediately clean spilled liquids (Hall, 2018)
- Remove hazards from the floor and stairs:
 - Remove rugs
 - Move electrical cords
 - Move sofas, chairs, and tables to allow enough space for walking
 - Never leave anything on the stairs (Hall, 2018)
- Use adaptive equipment:
 - Reacher
 - Shower chair
 - Stools (Hall, 2018)
- Move and do tasks with care:
 - Hold on to grab bars and handrails
 - Do not use chairs with wheels
 - Do not climb on chairs or wobbly ladders
 - Turn on lights when going into a dark room
 - Do not rush, slow down and pick up your feet
 - Do not walk while using the phone
 - Stay alert and focus when you are in public places (Hall, 2018)

2. Proper Foot Positioning and Footwear:

Feet problems can lead to improper positioning of your feet and affect your walking.

What can I do to prevent falls?

- Pick up your feet when you walk and avoid shuffling
- Exercise your feet
- Inspect your feet every day to check for redness, cuts, sores, blisters, swelling, or loss of sensation
- See the doctor if you notice any changes or have problems with walking (Hall, 2018)
- Proper footwear:
 - Closed toes
 - Light weight
 - Good support
 - Well-fitted
 - Low heel

3. Staying Active:

Moderate physical activity can lower the risk of falls and injuries. While being physically active, it is important to be aware of factors that will cause a fall by taking appropriate precautions:

What can I do to prevent falls?

- Moderate Physical Activity:
 - Try participating in activities that you enjoy, such as walking, dancing, swimming, biking.
 - Workout for at least 30 minutes day.
 - Make sure to stretch each day before and after exercising (Hall, 2018)
- Good programs to consider helping increase strength, balance, flexibility, and gait:
 - Try using light hand weights, resistance bands to work on strength.
 - Practice your balance by standing on one foot throughout the day.
 - Try joining yoga, Tai-chi, dancing programs to help increase balance.
 - ⇒ Tai Chi: <https://www.youtube.com/watch?v=wKblSVIDliw>
 - ⇒ Yoga: <https://www.youtube.com/watch?v=kFhG-ZzLNN4>
 - ⇒ Dancing: <https://www.youtube.com/watch?v=012SAJ9z3Yg>

3. Use of Assistive Devices:

Assistive devices are used to help you keep steady and reduce the likelihood of falls. These include: (Hall, 2018)

- Cane
<https://www.assistivedevicesinc.com/canes-and-crutches/offset-handle-canes/gel-grip-canes/adjustable-height-offset-handle-black-cane-with-gel-hand-grip-rtl10372bk/>
- Walker
<https://www.home-med-equip.com/catalog/lumex-color-select-adult-walker-with-wheels-716270.html>
- Raised toilet seats
<https://www.rehabmart.com/product/premium-seat-rizer-with-removable-arms1-21385.html>
- Grab bars
<https://www.grab-bar.com/collections/grab-bars>
- Shower chairs
<https://www.home-med-equip.com/catalog/deluxe-shower-bath-chair-with-back-12202kdr-by-drive.html>
- Reacher
<https://www.ablemart.com/our-products/shop-by-category/grabbers-reachers-openers/aktiv-reacher-762>



What can I do to prevent falls?

- Follow the guidelines to use the assistive devices appropriately.
- Always keep canes and walkers near you.

How can the interventions improve occupational engagement?

When moving around, one should move the whole body from one place to another by means other than walking, such as skipping and jumping over objects. Therefore, it's important to consider proper foot positioning and footwear during occupational engagement.

Modifying the environment to improve occupational engagement essential when walking and moving around in various places and situations. When walking between rooms in the house, within a building, or down the street always try to be aware of common hazards and use adaptive equipment.

Changing and maintaining body positions, moving along a surface on foot, step by step, so that one foot is always is on the ground is important to consider when staying active to reduce the risk of falls.

Resources:

Barney, K. F., & Perkinson, M. A. (2016). *Occupational therapy with aging adults: Promoting quality of life through collaborative practice* (pp. 140-141). St. Louis, MO: Elsevier.

Hall, C. (2018). *Occupational therapy toolkit: patient handouts and treatment guides for physical disabilities, chronic conditions and geriatrics*. Tomonium, MD: Hallen House Publishing.

Pereira, C.L.N., Vogelaere, P. & Baptista, F. Role of physical activity in the prevention of falls and their consequences in the elderly. *Eur Rev Aging Phys Act* 5, 51–58 (2008). <https://doi.org/10.1007/s11556-008-0031-8>

Trudeau, Scott A. "18 Steps to Fall Proofing Your Home - Healthy Aging Blog." *NCOA*, 27 July 2017, www.ncoa.org/blog/falls-prevention-home-18-step-safety-checklist/.

Watson, M., Black, F., & Crowson, M. "The Human Balance System." *Vestibular Disorders Association*, 28 Sept. 2018, vestibular.org/understanding-vestibular-disorder/human-balance-system.