Home Safety Interventions for Older Adults with Impaired Balance

Learning Objectives

- Understand how daily activities and the home environment may contribute to fall risk.
- Become familiar with common activity and home environment modifications to increase home safety.
- Understand the role of occupational therapy in reducing fall risks within the home.

Occupational Therapists are ultimately concerned with enabling people to participate in all aspects of their daily life despite physical, cognitive or emotional impairments...
What we do is help people to DO those things that make life worth living ! ! !

Assessing Risk Factors for Falling - The Critical First Step

- Intrinsic
- Extrinsic
- Behavioral / Situational

Intrinsic Risk Factors (Risk Increase)

- Lower extremity weakness (x4)
- Balance problems / gait disorders (x3)
- History of fall (x3)
- Visual Impairments (x2.5)
- Depression (x2)
- Cognitive impairment (x2)

Intrinsic Risk Factors (Cont.)

- Sensory changes affecting postural control
  - Vestibular
  - Visual
  - Somatosensory
- Chronic Illness
- Polypharmacy
- Orthostatic hypotension
- Fear of falling

Extrinsic Risk Factors

- 25% to 45% of falls implicate environmental hazards
- Interactions of the individual with the environment must be considered
- Environmental factors cannot be completely separated from intrinsic and behavioral factors
  - Variations from person to person
  - Variations over time within persons


Common Home Hazards

- Absence of grab bars
- Absence of nonskid strips in tub
- Absence of sturdy footstool
- Absence of adequate railing on stairway
- Cluttered stairs / pathways
- Inadequate lighting (e.g., stairs, thresholds)
- Furniture (e.g., too soft, low, unsteady)
- Exposed cords
- Storage space requiring frequent bending
Common Hazards Outside Home

- Absence of railing on both sides of steps
- Inadequate lighting of walkways / steps
- Uneven or disrepair of walkway
- Slippery surfaces
- Steps of varying depth / height

Adaptive Environments Center, 1989

Why Checklists Are Not Enough...

- Randomized controlled trials involving "one-size-fits-all" environmental modifications are equivocal in terms of fall reduction
- Risk factors may interact in a synergistic way, sharply increasing fall risk
- Identification of multiple risk factors increases opportunities for targeted individualized interventions


Environmental Press

- ...the interaction between a person’s competence to perform a given task and the specific demands required by the environment to carry out that task
- The task of the occupational therapist is to recognize when environmental press exceeds competence and must intervene with strategies to reduce excessive environmental demands and increase competence by modifying intrinsic and behavioral risk factors

Occupational Therapy Process

- Review of medical, social, and activity history
- Review of fall history with emphasis on Person - Task - Environment interactions
- Determine daily activities person wants / needs to do
- Evaluate person-environment fit for those tasks
- Implement an individualized multifactorial falls prevention plan to maximize activity / reduce fall risk

Behavioral / Situational Risk Factors

- A dynamic relationship between the environment and behavior such that fall risk is substantially increased.
- Habitual behavior - actions set in motion by a specific set of environmental cues (e.g., ascending the left side of the stairs holding onto the left handrail)
- Intentional behavior - actions requiring purposive reflection, intention and planning (e.g., retrieving the mail on a extremely windy day)


Behavioral / Situational Risk Factors

- Hurrying
- Inattention
- Carelessness
- Decreased visual scanning
- Improper use of mobility device
- Choice of footwear
- Habitual action in familiar environment despite declining physical functioning

An Example of Falls Complexity

“...a fall resulting from a trip over an uneven threshold may actually have been caused by a combination of several intrinsic and extrinsic factors, such as a visual impairment that interfered with seeing the threshold, behavioral issues such as being in a hurry, confusion brought on by a new medication, lower extremity weakness related to a sedentary lifestyle, and poor lighting over the threshold.”

Caldeira, K. M., & Reitz, S. M. (2010), pg. 475

Occupational Therapy Home Evaluation

- Entering the home
- Getting around
- Kitchen
- Bathroom
- Bedroom
- Living / Dining room
- Laundry

Entering the Home

1. Adequate space to enter/exit car?
2. Clear level walkway?
3. Steps well maintained / railings?
4. Doorway with large threshold?
5. Adequate lighting?

Pictures Adapted from Adaptive Environments Center, 1989
Getting Around
1. Hallways free from obstructions?
2. Extended railings?
3. Carpet secure?

Kitchen
1. Appliances easy to access?
2. Counters with open space to work / sit?
3. Room to navigate around table?
4. Storage heights minimize bending?
5. Flooring free of trip hazards?
6. Adequate ambient and task lighting?

Bathroom
1. Ease of access to sink, toilet and tub?
2. Sturdy grab bars?
3. Towel rack as grab bar?
4. Accessible storage?
5. Space to move around?
6. Adequate lighting? (day and night)
Bedroom
1. Ease in entering / exiting bed?
2. Items accessible in closet?
3. Space to get around / access to bathroom?
4. Adequate lighting? (day and night)

Living / Dining Room
1. Controls / outlets within easy reach?
2. Storage within easy reach?
3. How is furniture arranged for use?
4. Adequate task lighting?
5. Room to get around?
6. Floor clear of clutter?
7. Adequate lighting?

Laundry
1. Appliances easy to reach / use?
2. Storage easily accessible?
3. Room to get around free of clutter?
4. Adequate lighting?
The Aging Eye

- Age-related diseases and change inevitably impact visual acuity
- Impaired vision can have substantial adverse effects on:
  - Reading
  - Recreational pastimes
  - Activities of daily living (ADL) / Instrumental ADL
- Impaired vision adversely affects postural stability and increases the risk of falling


Inappropriate Glasses as Risk Factor

- Increase awareness of fall risk due to multi-focal lenses
- Bifocal / trifocal / progressive lens wearers have a x2.5 increased risk for falls
- Viewing the environment through lower lenses impairs visual fields, visual acuity, contrast sensitivity and depth perception
- Greater difficulty in discriminating obstacles in path
- Get annual check ups


Contrast Sensitivity

Critical aspect of visual acuity for safe performance of daily activities

IESNA. (1998)
Glare

Increased sensitivity to glare and increased time needed to accommodate the pupils to light.

IESNA (1998)

Lighting Considerations for the Aging Eye

- Higher levels of luminance (300 - 500 Lux)
- Task lighting for productivity and leisure needs (500 - 1000 Lux)
- Increased time for adaptation to change in light
- Limit drastic transitions in luminance
- Freedom from glare
- Enhanced chromatic contrasts


Personal, Environmental, and Behavioral Interactions - Multifactorial Considerations

- Intrinsic Risk Factors:
  - Urinary urgency
  - Orthostatic hypotension (polypharmacy ?)

- Extrinsic Risk Factors:
  - Poor lighting
  - Loose floor mat in bathroom

- Behavioral Risk Factor:
  - Rushing to get to bathroom
  - Inattention
Evidence-Based Approach for Addressing Multifactorial Interacting Risk Factors

- **Urinary urgency - Referral to physician**

- **Orthostatic hypotension (Polypharmacy)** - Medication review by physician / pharmacist

Evidence-Based Approach for Addressing Multifactorial Interacting Risk Factors

- **Poor lighting - Provision of night light and remote light switch**

- **Loose floor mat in bathroom - Use of no-slip backing on floor mat**

Evidence-Based Approach for Addressing Multifactorial Interacting Risk Factors

- **Rushing to get to bathroom - Education and training regarding behavior risk and alternative behaviors**

- **Inattention - Implementation and review of a diary of falls**
Evidence-Based Approach for Addressing Multifactorial Interacting Risk Factors


Why Don’t They Do What I Tell Them to Do?

- The need to exert control...integral to risk management and motivation to reduce risk

- Strike a balance between the risks perceived by the therapist and the client

- Interdependence between family members may effect the decision to reduce risk


Why Don’t They Do What I Tell Them to Do - Take 2

- Consult with clients to determine what changes they are prepared to make to reduce their risk of falling

- Falls prevention advice may be regarded as useful in principle but not personally relevant or appropriate

Why Don’t They Do What I Tell Them to Do - Take 3

- Implementing modifications may be higher for those who:
  - have higher levels of belief that home modifications are beneficial
  - believe that environmental adaptation can help prevent future falls
  - have taken past action concerning changes in home environment


REFERENCES


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