



WEBINAR SERIES

Home Safe Home: Adapting the Home for Those with Neurological Diagnoses

How to improve safety and decrease risk for falls in the home

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NeuroRehab

Rebound. Recover. Reconnect.

Objectives



- Achieve insight on the importance of fall prevention and home safety.
- Identify hazards in the home which increase the risk for falls.
- Identify essential components of a comprehensive home assessment.
- Examine unique and “smart” products for accessible home modifications and safety.



Aging Demographic

- By 2030, the population aged 50 or over will increase to 132 million.
- Most of this growth will be concentrated among those aged 65 and over.
- Retirement of the baby boomer is projected to nearly double the number of adults aged 65-74 from 21.7 million in 2010 to 38.6 million in 2030.
- The population aged 75-84 will also continue to grow. After increasing from 10.1 million in 1990 to 13.1 million in 2010, the number of people aged 75-84 is projected to reach 30.1 million in 2040.
- With growth more concentrated among older age groups, the overall population distribution is set to shift, as one in five people in the US are projected to be 65 or over by 2030 (compared to one in seven today). One in eight will be 75 or over by 2040 (up from one in sixteen today).

http://www.jchs.harvard.edu/sites/default/files/jchs_housing_americas_older_adults_2014_k

Aging Demographic



*“Population ageing is a triumph of humanity
but also a challenge to society”*

- Worldwide, the number of persons over 60 years is growing faster than any other age group.
- Falls prevention is a challenge to population ageing.

http://www.who.int/ageing/publications/Falls_prevention7March.pdf

Why Fall prevention?



- Every second of every day in the United States an older adult falls, making falls the number one cause of injuries and deaths from injury among older Americans;
- Each year, millions of adults aged 65 and older fall. Falls can cause moderate to severe injuries, such as hip fractures and head traumas, and can increase the risk of early death;
- 2.8 million non-fatal falls were reported in 2014. and 800.000 people were subsequently hospitalized

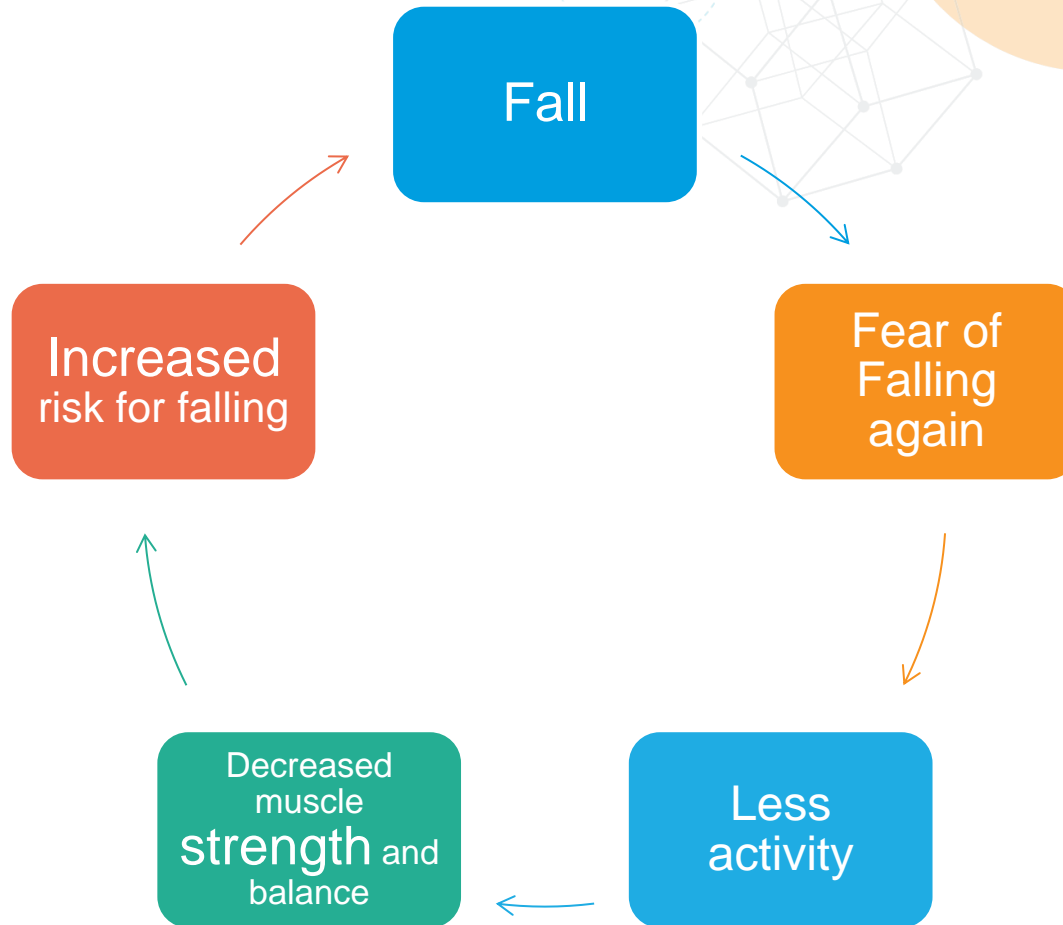
<http://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html>

Fall Statistics

- 1/3 of people 65 year old and older fall each year.
- Every 29 minutes an elderly person dies from a fall injury.
- In 2014 approximately 27,000 older adults died because of falls;
- Annual cost of fall injuries was estimated at 31 billion dollars. This amount is estimated to double by 2030.
- 28.7% of older adults reported a fall in the preceding 12 months.
- Many people who fall, even if they are not injured, develop a fear of falling. This fear may cause them to limit their activities, which leads to reduced mobility and loss of physical fitness, and in turn increases their actual risk of falling.

<http://www.cdc.gov/homeandrecreationalafety/falls/adultfalls.html>

Fall Statistics



Basic Fall Prevention Recommendations

- Exercise regularly: it is important that the exercises focus on increasing leg strength and improving balance.
- Ask the doctor or pharmacist to review your medications—both prescription and over-the counter—to identify medications that may cause side effects or interactions such as dizziness or drowsiness.
- Have your vision checked by an eye doctor at least once a year and update eyeglasses to maximize vision.
- Ensure proper hydration and nutrition.
- **Make the home safer by reducing tripping hazards.**

falls. <http://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html>

Fall Risks

- Factors that increase risk of falling that **cannot** be changed:
 - Age;
 - Previous falls.
- Factors that increase risk for falling that possibly **can** be changed:
 - problems walking or moving around;
 - taking 4 or more medications;
 - foot problems or unsafe footwear,
 - blood pressure dropping too much on getting up (orthostatic hypotension);
 - problems with vision;
 - **tripping hazards at home.**

Who is Involved in a Home Assessment?

- Patient;
- Family members;
- Care givers;
- Occupational therapist – Physical Therapist;
- Nurse or home health aide.

Assessment



- Rebuilding Together. Together we Transform. Home Safety Checklist
http://togetherwetransform.org/sites/default/files/PDF/Safe&Healthy_Housing_tri_fold_brochure.pdf
- Home Safety Self Assessment Tool (HSSAT)
agingresearch.buffalo.edu/hssat;
 - A therapist can ask patients to take pictures or videos with their phones; take measurements;
 - The therapist can ask family members to fill out check list when taking patient home for visit.

Outdoor (Exterior / Entrance)

- Repair uneven or broken up sidewalks
- Keep bushes and foliage pruned
- Keep sidewalks clear of clutter, ice, or snow
- Identify the most accessible home entrance and exit
- Be aware of ditches between sidewalk and grass.
(Install a “mini” fence or border).



Outdoor (continued)

- Good lighting and / or light sensors
- If there is a step to enter: railing on 1 or both sides, or a ramp with railing
- Color contrast railing if impaired vision
- Consider removing the screen door
- Have a small bench or table by entry to home to place items on while unlocking and opening door
- Install a grab bar to step through doorway



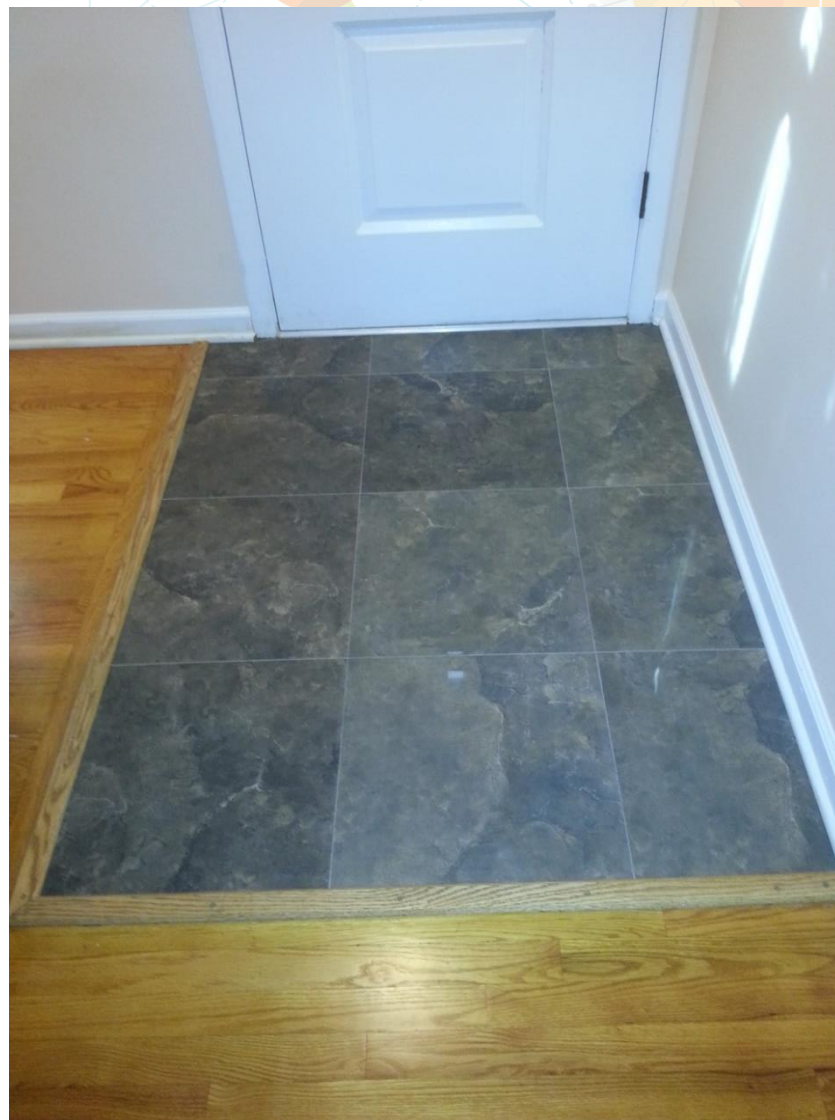




Hallway



- Mat with level edges and rubber backing
- Level threshold (threshold ramp)
- Proper lighting
- A chair or bench to sit on when managing shoes or coat



Living Room

- Proper seating: consider height of chairs and couches, does it have arm rests, firmness of cushions
- If furniture is too low: install furniture risers
- Place pillow or ply wood under seat cushion if it is too soft
- Place non slip rubber pads on legs of furniture if furniture is sliding on wood floor
- Install a “swivel stopper base” on swivel chairs or rocking chairs to block the motion





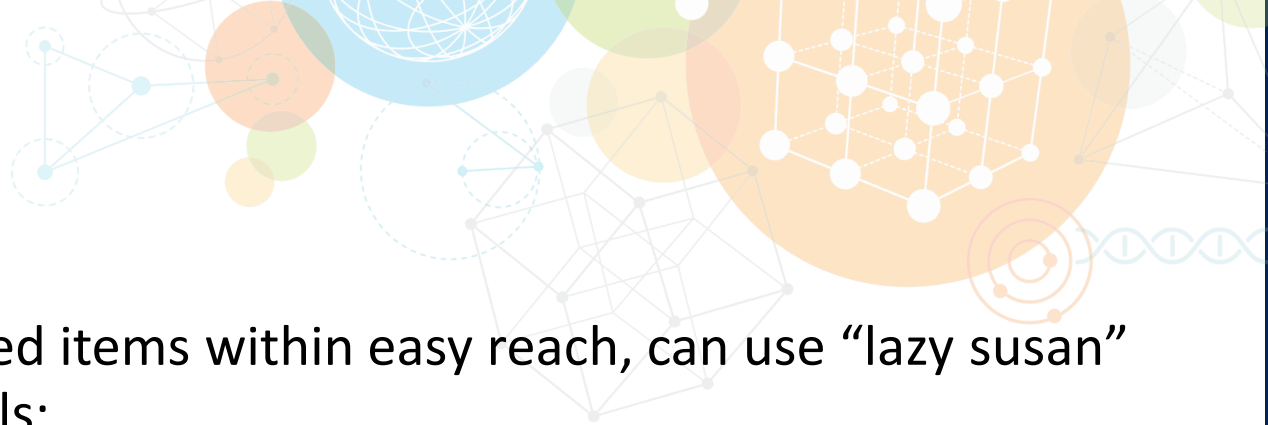
Living Room (continued)

- Avoid furniture that is bulky, has sharp edges, and with glass
- Remove the coffee table to accommodate an assistive device and make it easier to navigate around
- Extension cords should be anchored to a base board or behind furniture
- Light switch access: a cordless switch, touch sensitive, remote control, motion sensor lights
- Electric sit to stand chair
- Don't clean floors with wax and keep wood floors swept to decrease slipping on dust

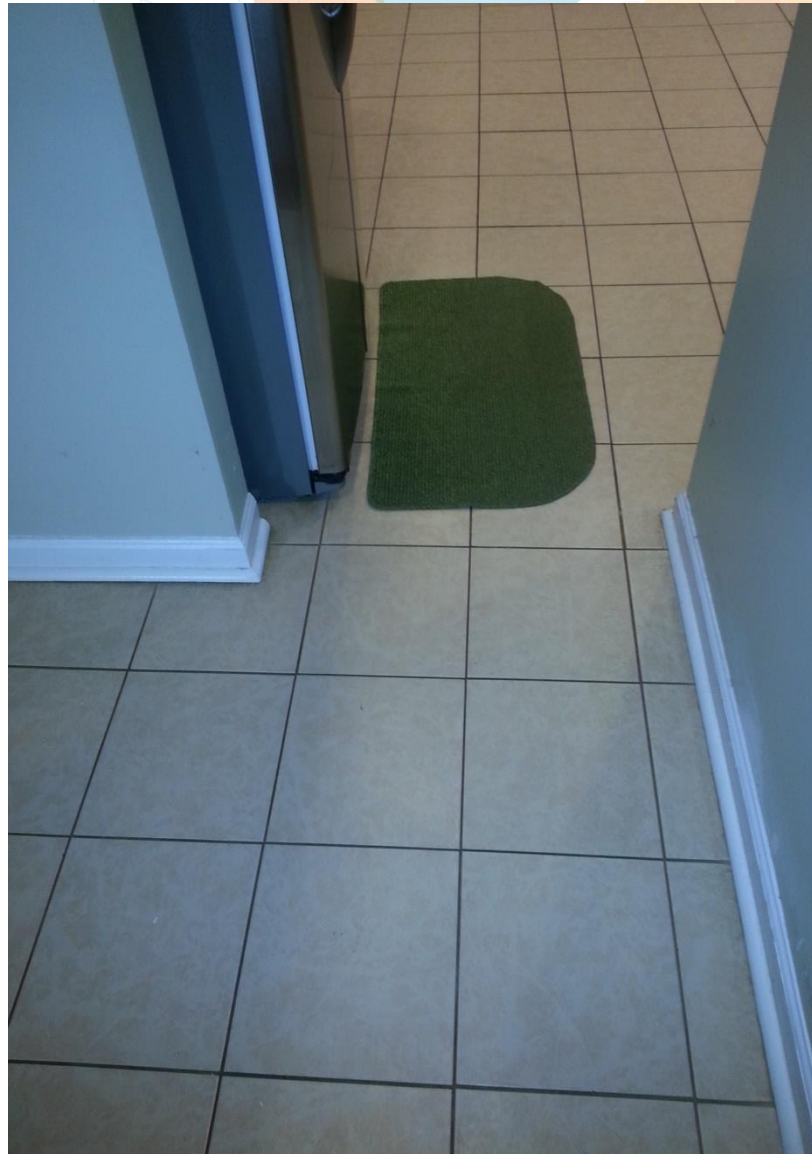
Living Room



Kitchen

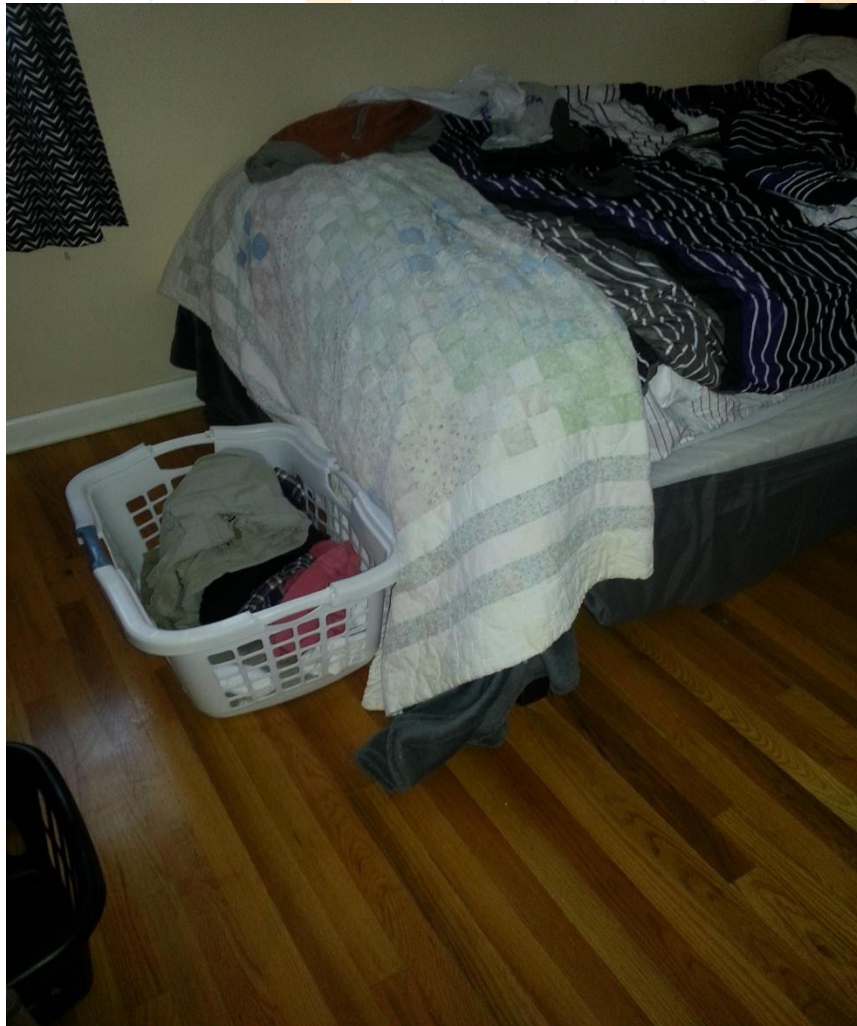


- Have commonly used items within easy reach, can use “lazy susan” and avoid step stools;
- Avoid carrying items; instead, slide items across counter tops, use push cart, a walker basket or tray;
- Keep counter tops clear to assist with mobility and standing;
- Proper lighting and switch access;
- Front controls on stove to avoid reaching too far (if no children around).



Bedroom

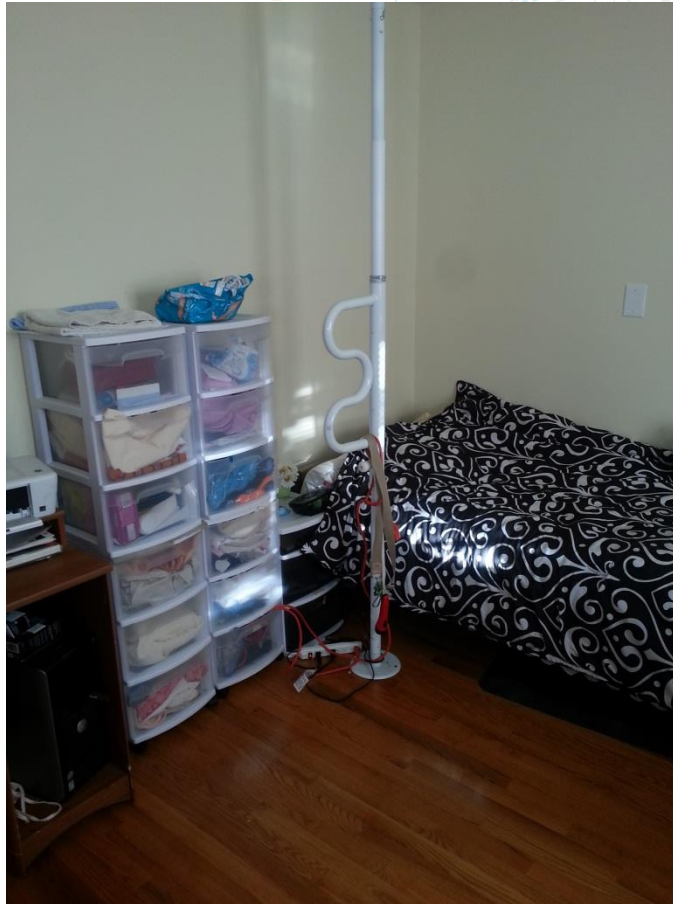
- Look at style of furniture and mattress; height of mattress
- Remove wheels of the bed frame; use non slip pads on bed legs if the bed moves on wood or tile floors
- Arrange the furniture so it is easy to walk around and functional
- Accessible lighting to the entrance of bedroom and within reach from the bed (touch lamp, wireless light switch, remote control, motion sensor night lights)



Bedroom (continued)

- Keep supportive, rubber sole shoes, or non slip socks bedside
- Avoid silk sheets to prevent sliding out of bed
- Remove clutter from floor, especially around bed and path way to the bathroom
- Use a bedside commode or urinal for middle of the night toileting needs
- Use a sturdy chair with armrests or a bench for getting dressed
- Consider a transfer bar or a pole attached to the floor or bed frame

Bedroom



Bathroom

- Grab bars around the toilet and tub or shower
- Grab bars in place of towel rods and toilet paper holder
- Consider a raised toilet seat, shower chair, transfer tub seat, or Versa Frame
- Keep a long handled reacher hooked on the wall in the bathroom to pick up items that have fallen, or to assist with dressing



Bathroom (continued)

- Ensure proper lighting
- Consider a toilet mat with non-slip bottom to prevent slipping from urine
- Place non slip treads in front of the commode for safe transfers
- Place textured strips or rubber mat in shower or tub



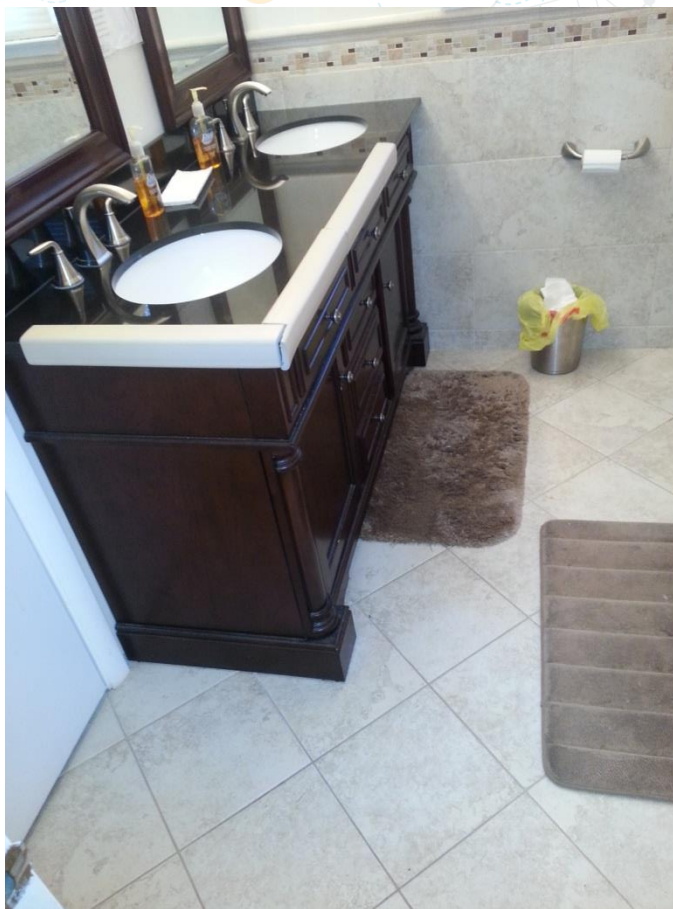




Bathroom (continued)

- Wear open toe rubber tread sandals in shower to prevent slipping
- Shower curtain instead of glass door preferred (or non shatter sliding door)
- Cut shower curtain around transfer tub seat to decrease water getting on the floor
- Keep counters and all grab bars free of clutter
- Remove area rugs. If must, use a good rubber back mat with double sided carpet tape
- Clear plastic shower curtain to allow more light in the space
- Ensure enough space to move around in the bathroom with assistive device







Stairs

- Make sure the railing is sturdy and at least on one side, (prefer 2 railings)
- Length of the railing should match the length of stairs
- Light switch at top and bottom of stairs
- Consider a “Stair Glide”
- Arrange for main floor living (avoid stairs)
- Avoid carrying items up and down stairs
- For visual deficits, put a bright color on the edge of each step
- Improve traction: use textured paint or abrasive strips





Things To Consider (Visual Deficits)

- Yellow, orange, and red colors are more alerting for safety awareness; use duct tape for contrast
- Frosted bulbs to decrease glare, use shades or blinds to adjust amount of natural light, and use lamp shades to decrease direct light

Things to Consider (Mobility and Balance Deficits)

- Wear shoes or non slip socks all the time in the home
- Wear pants that fit properly (not too long and stay on hips)
- Place “safe” chairs around the home to sit as needed
- Install grab bars throughout the home (hallways, closet)
- Bedside commode or urinal positioned next to the bed

Things to Consider (General Safety)

- Telephone with answering machine (avoid rushing to the phone)
- Carry cell phone at all times in a pocket, fanny bag, clip on pants, or a bag that crosses the chest
- Consider an emergency alert pendant (Life Alert, or smart watch).

General Safety (continued)

- Have a fall plan (can practice what to do in therapy)
- Move slowly from lying down to sitting, and sitting to standing (due to changes in blood pressure)
- Have a 4 foot path without obstacles





Things To Consider (Pets)

- A study, published in the *Journal of Safety Research (2010)*, shows that dogs and cats contribute to injuries that send an estimated 87,000 people to emergency rooms every year
- Have a pet that is well trained to sit and not jump or pull
- Bell on collar of cat / dog to alert where animal is and decrease tripping
- Have one room or space for pet toys
- Absorbent mat for water and food dish



Miscellaneous Hazards



- Children (toys)
- Oxygen (different color tubing)
- Basement
- Office - Desk chairs
- Step stools
- Foot wear (not too much traction, not too little traction); “YakTrax” for ice and snow
- Deck or porch access with sliding glass door



Wearables & Smart Home Technology Helps Seniors Age in Place

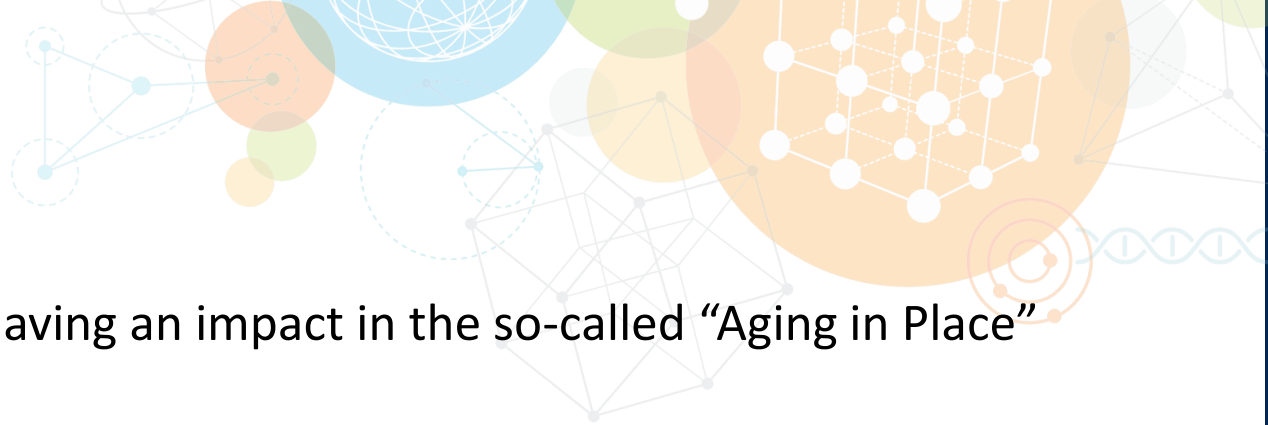


SMART TECHNOLOGY



- Smart technology is fast becoming an essential Aging-in-Place tool
- This is according to Home Advisor's 2017 Aging in Place report, based on surveys of more than 800 homeowners in the 55-to-75 and 75-and-up age groups

Aging in Place



- Smart technology is having an impact in the so-called “Aging in Place” movement
- Aging in Place is the concept of aging homeowners choosing to live in their homes for as long as possible, rather than move in with family or to an assisted living facility

<https://www.homeadvisor.com/r/smart-technology-aging-in-place>

Technology and Fall Prevention

- Educational interventions deployed on mobile platforms such as smart-phones and tablet-based applications may also be an area of potential opportunity for such applications, particularly given the popularity and ever increasing ubiquity of such devices.

<https://www.sciencedirect.com/science/article/pii/S1532046415002932>. Journal of Biomedical Informatics Volume 59 February 2016, Pages 319-345

Suggestions for General Safety and Fall Prevention:

- Smart smoke detector: the devices can be programmed to send alerts to friends and family, so if there's an emergency at your house, family members or others can be notified by phone.
- Automate lighting: motion sensor lights in high-risk areas, such as stairways, hallways, and bathrooms. The light will automatically turn on to the desired brightness when you enter the space, then off again after you've left, preventing energy loss in addition to dangerous falls.



Smart Watches for Health Monitoring



- Garmin Vivoactive
- Microsoft Band
- Apple watch
- Pebble watch
- Samsung Gear Fit
- Misfit Shine
- Fitbit



Voice Controlled Smart Devices:



- Amazon Alexa
- Google Home
- Apple HomeKit

Barriers to Implementation of Home Modifications

- Decreased cognition;
- Decreased insight in to limitations;
- Denial of safety risks;
- Not accepting change or advise;
- Appearance;
- Dignity.

Performance Outcome Measures

- Utilize fall assessments to determine fall risk:
 - Tinetti balance and gait assessment;
 - Berg Balance Test;
 - Functional Reach Test;
 - Dynamic Gait Index.

Performance Outcome Measures

- Home Safety Assessment:
 - The Canadian Occupational Performance Measure (COPM) is an individualized measure designed for use to detect self-perceived change in functional performance problems over time;
 - Housing Enabler screening tool (Sweden).

Education Resources



- [CDC.gov](https://www.cdc.gov)
- [NCOA.gov](https://www.ncoa.gov)
- [Fallprevention.org](https://www.fallprevention.org)
- [NAHB.org](https://www.nahb.org)
- [Homemods.org](https://www.homemods.org)
- [Asaging.org](https://www.asaging.org)
- [AOTA.org](https://www.aota.org)
- [Nia.nih.org](https://nia.nih.org)
- [AARP.org](https://www.aarp.org)
- [Togetherwetransform.org](https://www.togetherwetransform.org)
- www.homeadvisor.com/r/smart-technology-aging-in-place/

A CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults, 2010.

http://www.cdc.gov/homeandrecreationalafety/pdf/cdc_falls_compendium_lowres.pdf

Certifications

- CAPS: Certified Aging in Place Specialist;
- ECHM: Executive Certificate in Home Modification;
- SCEM: Specialty Certification in Environmental Modifications.

Research

- Research indicates that treating and correcting specific health problems reduces the rate of falling by more than 30%. (Tinetti, et al);
- Multi factorial interventions have best result. (Tinetti, et al);
- After one fall: increased benefit of education and home modifications. (Lord, et al);
<http://www.fallprevention.org/pages/clinicians.htm>
- AOTA Evidence based research (see reference list)
aota.org

Research continued

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Research continued

- Mary E. Tinetti; Dorothy I. Baker, Ph.D., R.N., C.S.; Gail McAvay, M.S.; Elizabeth B. Claus, Ph.D.; Patricia Garrett, M.H.S., Margaret Gottschalk, P.T.; Marie L. Koch, M.S., P.T., Kathryn Trainor, M.S.; Ralph I. Horwitz, M.D.(1994). A Multifactorial Intervention to Reduce the Risk of Falling Among Elderly People Living in the Community. New England Journal of Medicine. 331(13):821-7.
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Questions?

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