

Fall Prevention

Teaching duration: 75 min

Class and groups: 30 min

Learning activities: 30 min

Reflection and introspection: 15 min

- Teaching Goals**
- 1) Educate caregivers the reasons of seniors falling
 - 2) Discuss the possible consequences of falling
 - 3) Introduce the safety of home environment to prevent accidental falling
- Learning Objectives**
- After the completion of the class, learners should be able to:
- 1) Discuss the reasons and consequences of falling
 - 2) Discuss and apply proper intervention of fall prevention in the home environment and outdoors
 - 3) Assess risk in the home environment effectively
 - 4) Apply the appropriate treatment to falls
- Course Content**
- 1) Factors leading to seniors' falling
 - 2) Potential consequences of falls
 - 3) Evaluation of falls
 - 4) Interventions to prevent or decrease falls in seniors.

Suggested Learning Activities

Activities	Objectives
1. Case Study: Ms. Li's falling	To understand how to appropriately treat falls
2. Home Environment Risks: Evaluation Practices	To manage home environment risks

Teaching Materials List

Handouts and Notes

Handouts/Notes	Content	Use	Quantity
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Handouts	Lecture 19	Lecture handouts	1
Learning Activities	Case Study: Ms. Li's falling	Group Activities	1
Evaluation Form	Environmental risk evaluation	Caregiving skill practices	1

Materials for group activities

Auxiliary material	Content	Use	Quantity
Online Videos		Group discussion	1

Class evaluation

1. Immediate feedback on in-class collaborative learning in groups
2. Problems of practices in class, self-evaluations of learners
3. Evaluation of trainers
4. Conclusions from learners' reflection and discussion

Reference

香港大學秀圃老年研究中心. (2001). *護老情真：護老技巧入門手冊*. 香港：香港大學出版社.

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Services. (2007). Voluntary (optional) provider training curriculum. Retrieved from <http://www.cdss.ca.gov/agedblinddisabled/PG3366.htm>

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Content

I. Fall

The Reason of Falls

Falling is one of the most serious and common issues related to aging.

- According to the Center for Disease Control and Prevention (CDC) more than one third of adults over the age of 65 fall each year.
- Among older adults, falls are the leading cause of injuries and deaths and the most common cause for nonfatal injuries and hospital admissions for trauma.

Many older adults or caregivers think that falling is accidental. Falls, however, are also a sign of potential problems. For example: If a senior who could normally use the bathroom and toilet unsupervised is found on the ground unable to call for help, this is probably a sign that he or she is experiencing aging-related problems and needs supervision.

The reasons for this fall can be classified as:

1. Extrinsic factors:

- Accidents caused by unsafe environment, such as slippery floor, uneven ground, insufficient lighting, clutters, etc.
- If the everyday environment has changed, the senior may not have adjusted to or become familiar with the environment. For example: moving into a new house, moving into a new nursing home or hospital, or moving furniture around the senior's home.

2. Intrinsic factors

- Poor balance caused by functional decline related to aging.
- Unidentified diseases, such as Transient Ischemic Attack, often resulting in temporarily passing out and then falling.
- Side effects caused by medications

Risk Factors of Falls

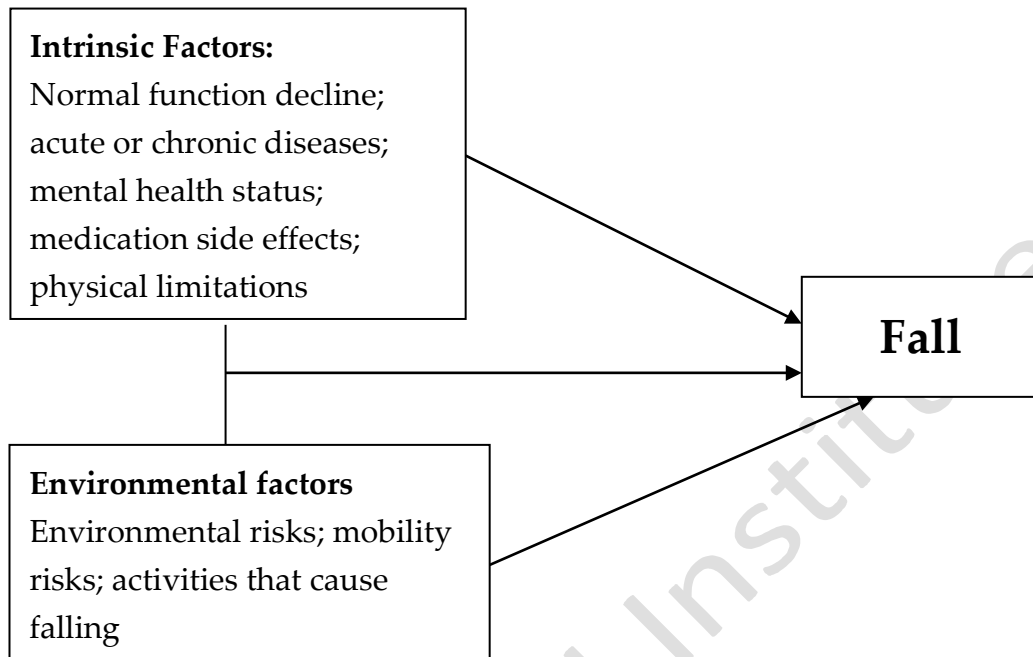
Extrinsic Factors	
1.	Environment <ol style="list-style-type: none"> 1) Insufficient light 2) Lack of handrails in bathroom and stairways 3) Toilet seat too low 4) Carpet with repetitive patterns that hinder sense of orientation to space. 5) Uneven ground 6) Loose carpet 7) Unstable furniture 8) Wet and slippery floor 9) Frequent changes of furniture positions 10) Too many obstacles on the floor 11) Improperly designed handrails 12) Improperly designed stairs and elevators 13) Crowded place
2.	Transition to new environments, such as moving, transferring hospitals, or making room changes.
3.	Inappropriate walking aids, or improper functions of assistive equipment.
4.	Visual impairment from sunlight
5.	Activity types, such as walking, going upstairs, turning over in bed.

Intrinsic Factors	
1.	Aging related <ol style="list-style-type: none"> 1) Vision impairment (cataract, constriction of visual field, poor adjustment) 2) Postural hypotension 3) Sensory perception deficit 4) Hearing loss 5) Loss of balance 6) Increase in muscle tension 7) Decline of autonomic response to stimulus 8) Increase in reaction time
2.	Physical and health related:

	<ol style="list-style-type: none"> 1) Cardio-pulmonary functional impairment (congestive heart failure/ CHF, cardiac arrhythmia, chronic pulmonary obstructive disease/ COPD) 2) Cognitive impairment <ul style="list-style-type: none"> • Confusion • Delirium 3) Lower limb problems (Callus, Talipes Cavus, long toe nails, unfit shoes) 4) Side effects of medications <ul style="list-style-type: none"> • Diuretics • Anti-depressants • Hypnotics • Anti-hypertensive 5) Alcohol and drug abuse 6) Malnutrition 7) Dehydration
3.	Disease and disability related
	<ol style="list-style-type: none"> 1) Disease-related <ul style="list-style-type: none"> • Stroke • Heart diseases • Parkinson's disease 2) Cognitive impairment (lack of alertness) <ul style="list-style-type: none"> • Dementia • Depression • Anxiety and fear 3) Disease related to bones and muscles: <ul style="list-style-type: none"> • Osteoarthritis and joint deformity • Osteoporosis • Myopathy • History of joint replacement 4) Blindness 5) Hearing loss

Risk Factors (Table 1)

Risk factors resulting in falls are compound.



Reasons of Falls (Table 2)

Content

II. Possible Consequences of Falls

Physical

1. Accidental death, injury, or hospitalization
2. Fracture: commonly seen as fracture of cranium, tibia, pelvis, rib, radius¹
3. Though the fracture resulting in the fall can be healed, unsteady gaits and poor balance can result in further difficulty in walking.
4. Disability
5. Use of assistive devices
6. Dizziness and pain caused by cerebral concussion
7. Potential recurrent diseases, such as minor stroke, that may result in
8. Passing out and weakness in lower limbs.
9. Sleep disturbances.
10. Loss of independence.
11. Increasingly limited mobility due to decrease in activities to prevent from falling again.

Psychological

1. Depression in response to the disability
2. Anxiety and fear about falling again, refusal to walk
3. Increasing dependence on others

Social

Social isolation and decreasing social contact

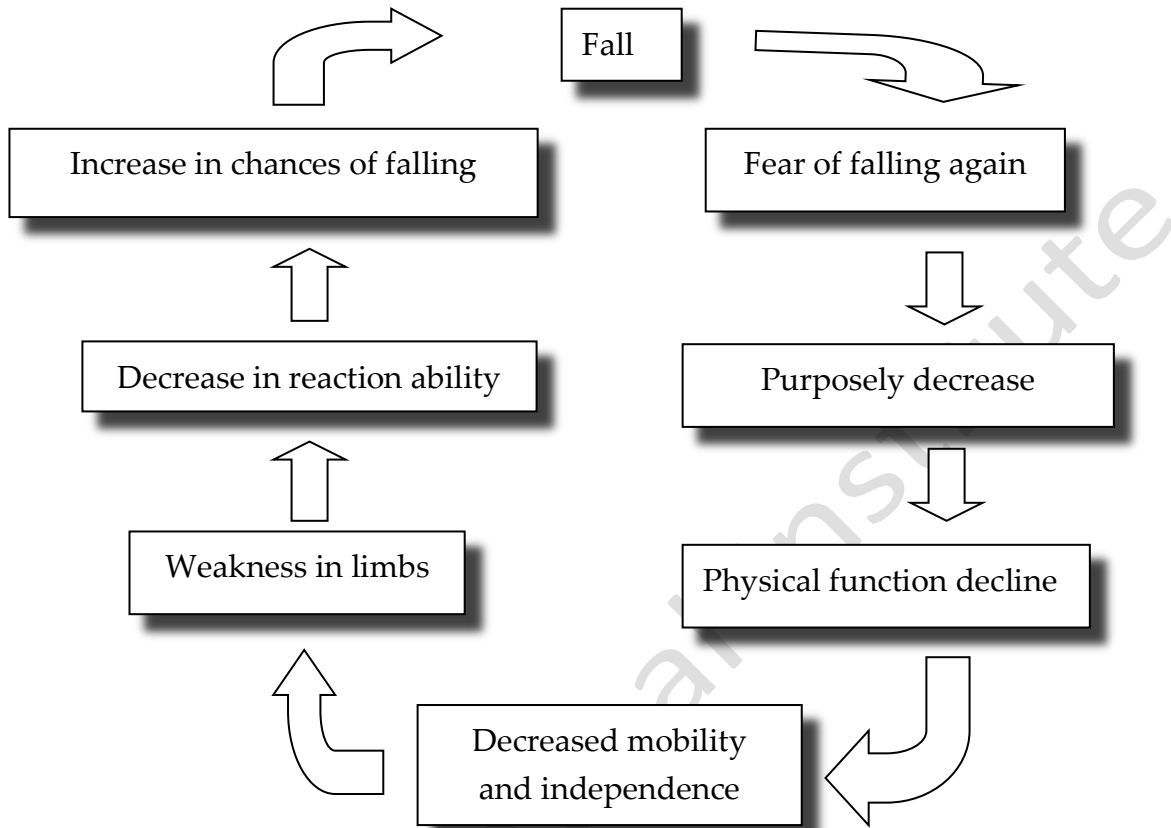
Financial

1. Increase in cost of treatment
2. Moving to nursing homes or long-term care facilities.
3. Necessity to purchase recovery equipment, such as walking aids and wheelchairs

Seniors may have permanent function decline due to one fall, no longer able to take

¹ Seniors that have Osteoporosis do not have to fall on the floor to be fractured. The mere strength of the fall can result in a fracture.

care of themselves. Falls are usually recurrent.



The Vicious Cycle of Falling (Table 3)

Content

III. Fall Evaluation

As discussed above, factors leading to falls are complicated. Therefore, it is important to have a comprehensive evaluation of falls. The purpose of evaluation is to help better identify causes and act on them, in order to prevent falling again.

A comprehensive evaluation of falls includes:

- Medical record
- Physical examinations
- Evaluation of activity capacity
- Evaluation of environmental risks
- Diagnostic examinations

CARE TIPS

1. These evaluations should be done by health professionals.
2. Caregivers can assist to provide information regarding seniors' background and the falling situation, including:
 - The senior's symptoms when falling. For example: dizziness, palpitation, shortness of breath, loss of consciousness, passing out, hyperspasmia, incontinence and vomiting.
 - Any falls in the past year.
 - Location of falls.
 - Activities preceding falls
 - Duration of falls and of staying on the floor
 - Any injuries caused by falls

Content

IV. Prevent or Reduce Falls

Many caregivers are currently using straitjacket to prevent seniors from falling. However, this is not the best method of prevention, and some places in western countries have forbidden using it. Other actions can be taken to prevent or reduce falls. Restraining the recipient's physical activity altogether does not have to be the answer.

The best way to prevent falling is to conduct a *comprehensive evaluation of seniors and the impact their environments have on their daily living*.

CARE TIPS

1. Do not use straitjacket; this may increase seniors' fear and anxiety of falling.
2. The correct way to prevent falls is to manage risks.
 - Identify causes of falling based on evaluations from health professionals, and act on them. For example: manage medications, or start treatment for acute or chronic diseases.
 - Make changes to the senior's living environment based on environmental risk evaluations to create a safer home for him or her.

Purpose of Caring

1. Remove all obstacles in pathways both inside and outside the room.
2. Seniors can use proper assistive devices to move around more easily.

Interventions

1. **Evaluate the senior's walking, his or her ability to balance him or herself, and any potential risk factors for falls. It is necessary to turn to professionals, such as medical doctors, physical therapists, and occupational therapists, and seek for guidance for interventions from them.**

Medical Doctors

- Conduct fall risk assessment for elders by evaluating their health conditions and ability to balance, etc.

- Assess visual acuity and/or follow up with any vision problems.
- Review side effects caused by any currently prescribed medications to determine if any changes in medication usage or the senior's environment need to be made.²
- Assess the senior's mental health status.
- Refer cases to specialists if necessary

Physical Therapists

- Assess the senior's physical activity and muscle strength.
- Prescribe the senior in suitable exercise programs for muscle strengthening, gait training, enhancing joint function, and improving his or her lower limbs' strength and balance.
- Prescribe of appropriate walking devices that could assist the senior.
- Provide guidance on pelvic floor exercises for seniors with urinary incontinence.

Occupational Therapists

- Assess senior's daily functioning, way of living, and habits in order determine areas that need improvement
- Visit the recipient's home to conduct a home assessment and provide advice for environmental modifications, if necessary.
- Provide guidance on the use of assistive devices, e.g. bath panels, long-handles aids, or joint protection pants.
- Advise on lifting and transferring techniques.

Dietitians

- Nutritional assessment and counseling to optimize the senior's nutritional intake and prevent osteoporosis.

2. Educate seniors and caregivers about fall risk factors and prevention.

Self care

• Body Movement

Make sure the senior is slow when changing postures (e.g. get up from bed, stand up). Especially make sure the senior walks slowly up and down the stairs, if he or she is capable of it.

² Especially tranquilizers, sleeping pills, anti-anxiety drugs, and Benadryl

Be cautious of actions that require certain level of balance. For example: the senior should sit while changing trousers.

- **Energy preservation**

Sit down when doing housework, e.g. ironing clothes, preparing foods, etc.

Alternate light and demanding housework.

- **Necessities**

Necessities should be placed within easy reach (e.g. from waist to shoulder's level), especially mobile phones, wallets, keys, clothing, etc.

- **Avoid reaching things too high or squatting.**

- **Avoid risky actions and ask for help if necessary.**

- **Use of assistive devices, if needed.**

(a) Long-handle reaching aids, long-handle shoe horns, socking aids

(b) Walking aids: walkers, canes (one-point and four-point), etc. Keep them by the senior's place of sitting.

(c) Hip protector to protect the senior from injury (e.g. fracture) in the event of a fall

(d) Glasses

- **Limit seniors' alcohol intake.**

- **Check the recipient's blood pressure and pulse** after lying down for at least five minutes and again after getting up.

Be alert when going out

- Keep calm and do not hurry.
- Be especially careful when going up or down the walkway and escalator. Always have a free hand in case of an emergency.
- Have the senior walk on grass when sidewalks are slick.
- If the ground is icy, apply salt to reduce the senior's risk of slipping outside.

3. Dressing

Clothing

- Have the senior wear light and fit clothing of a suitable length and size
- The senior's clothing should be easy to wear and take off (especially trousers for seniors with urinary incontinence)

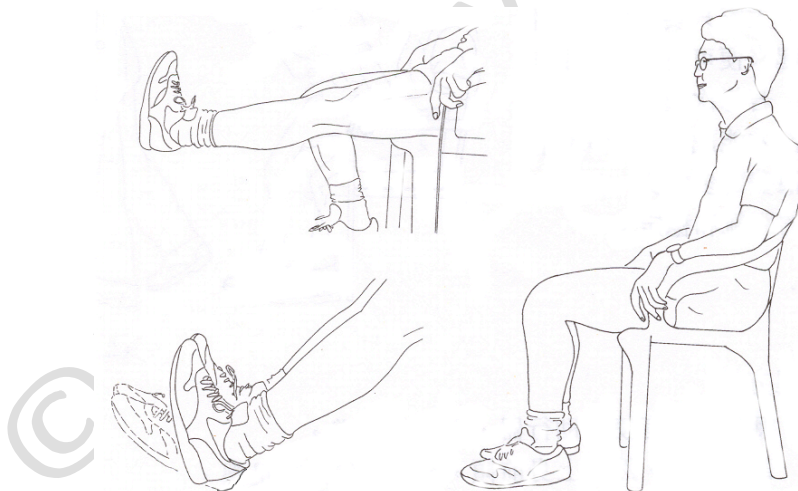
- Do not let the senior wear long pajamas.

Footwear

- Footwear should be comfortable and fitting.
- Footwear should be low-heeled.
- The soles of the shoes should be non-slippery
- Check the soles of the shoes to see if they have worn out or become slippery; change if needed.
- Make sure the senior does not walk only in socks, stockings or slippers.
- Shoelaces should be totally tied. Alternatively, the recipient can wear “convenient shoes” (e.g. Velcro, zippers)

4. Improving seniors' physical activities

- Under physical therapists' guidance, do exercises that help strengthen muscles and joints and can improve balance.
- Caregivers can also encourage seniors to do more exercises suitable for the elderly, like Tai Chi, swimming etc. to improve physical fitness.



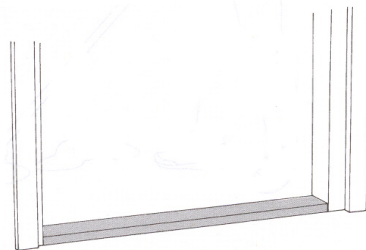
- During long period of sitting, it is common for elders to feel weakness in their limbs if they try to stand up, especially for those experiencing joint degeneration. To prevent this, seniors can perform warm-up exercises, i.e. stretching their knee joints several times and moving around their ankles before standing up.

5. Evaluate and reduce environmental obstacles to the senior's movement and vision. Improve the environment to make sure senior can walk around freely.

(1) Floor

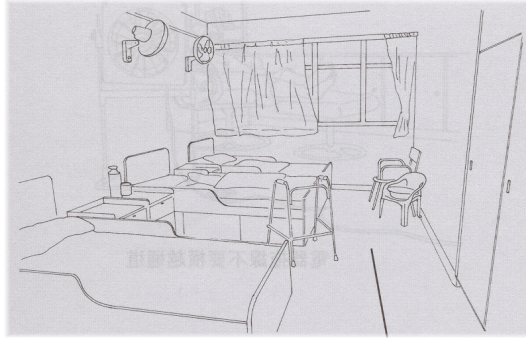


- It is necessary to apply anti-slip materials, or chemicals that increase friction if necessary.
- If the floor needs waxing, use non-skid wax.
- Flat surfaces with no obstacles in the senior's pathways are ideal. If barriers exist, it is important to indicate those obstacles with bright colors, i.e. bright paint or brightly colored stickers.



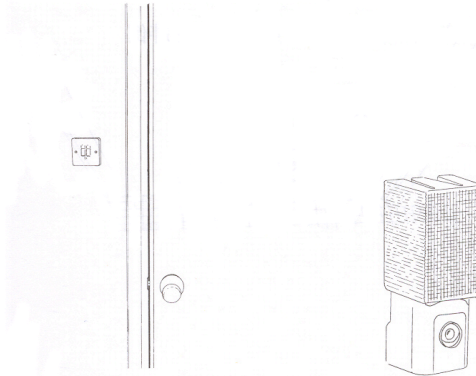
- Thresholds should be removed. If they cannot be removed, make sure they are no taller than one inch and are distinguished from the floor by a different color.
- Dry the floor immediately if it gets wet





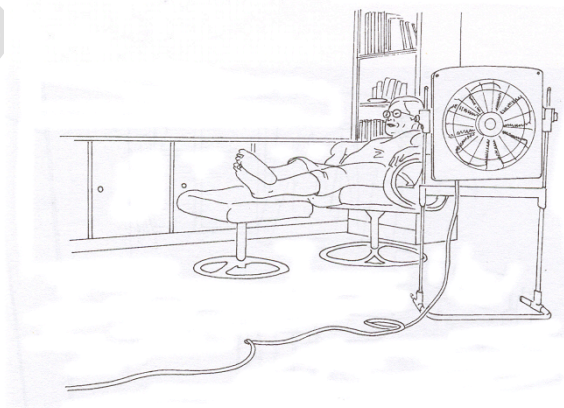
(2) Sufficient lightning

- Seniors need adequate, gentle and not dazzling light. The simplest way to improve the lighting in the senior's home is to change lighter bulbs with lampshade.
- It is easier to be trapped by furniture in darkness.



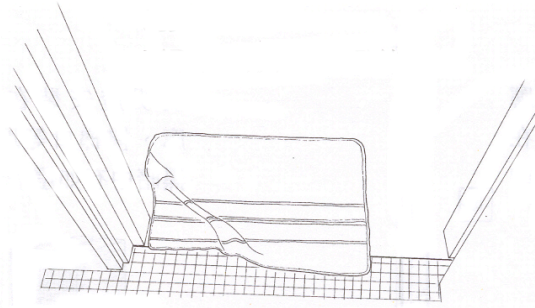
(3) Electronic switches

- Switches should be in proper locations that make them easily accessible.
- Night-lights should be installed in hallways and/or entrances to stairs.



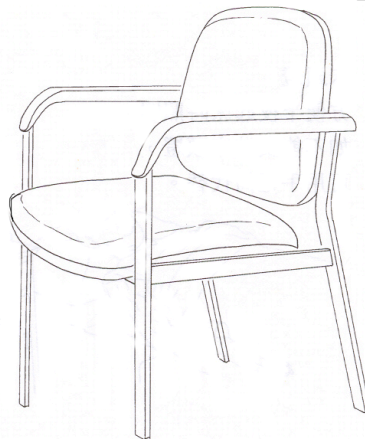
(4) Electronic equipment

- Keep electronic cables out of the recipient's pathways.



(5) Carpet

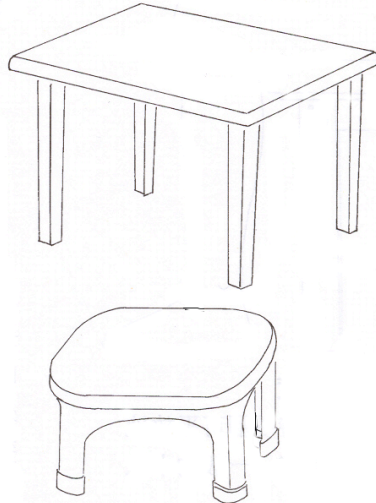
- Make sure carpets are flat on the ground.
- It is better to use plastic and skid-proof carpets instead of cloth or soft carpets.
- Repair worn or ripped carpets; tape or tack down curled carpet corners or edges.
- Place non-skid pads under throw rugs, or remove the throw rugs.



(6) Furniture

(a) Chairs

- Should be stable and hard to turn over
- Should be a suitable height, so that the senior's feet remain on the floor when in use
- Cushion should be able to bear the senior's weight
- Should have strong armrests and high backs that easily support seniors in standing up and sitting down
- *Cushions should not sag easily, as they increase the senior's difficulty in standing up.



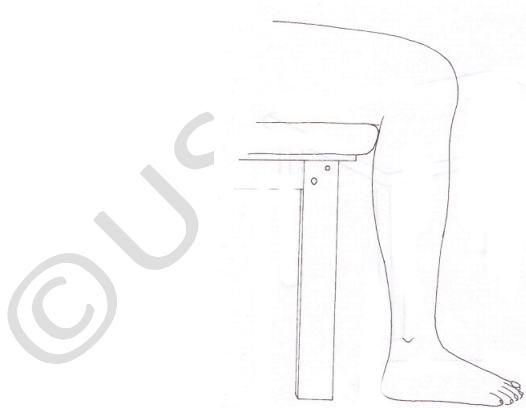
(b) Coffee tables and low stools

- Due to the constriction of the visual field, elders may not recognize the presence of short or small objects. Therefore, coffee tables and low stools should not be placed in any pathways.
- Furniture of lower height should differ in color from the floor.

(7) Bedroom

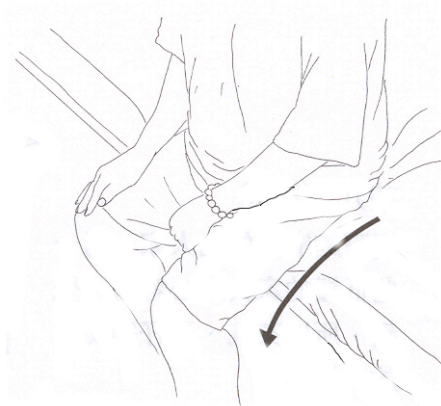
(a) Bed lamps

- It is suggested to keep the senior's bed area illuminated with a night-light. If it is impossible to install bed lamps, flashlights can substitute.



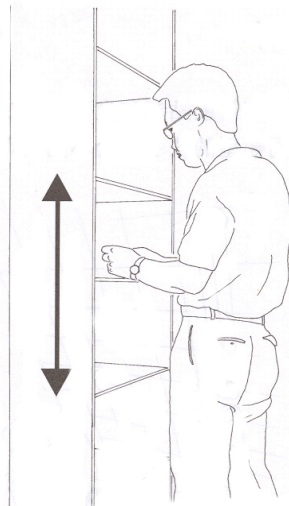
(b) Bed height

- Make sure the senior's bed is at a height that he or she can place his or her feet naturally on the floor and get out of the bed easily. This is usually 18 inches.
- Bedside cushions help reduce the impact of a fall if the senior rolls out of bed.



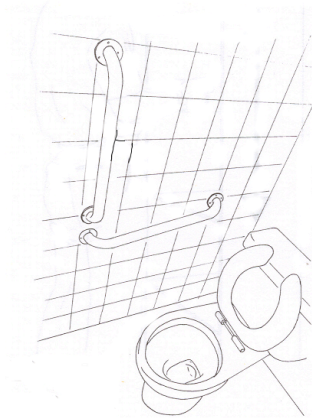
(c) Mattress

- Should have enough strength to support the senior.
- Those too thick or too soft are not only bad for spine, but also make it harder to turn over and get up. If it takes too much strength to get up, it will impact the senior's ability to walk. It is also easier for the senior to slip off of his or her bed and fall when sitting at the edge of it.



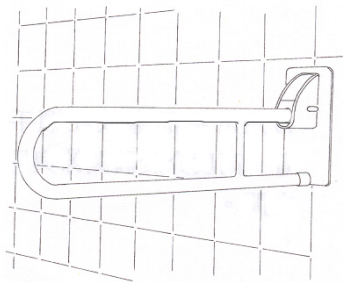
(8) Kitchen

- Place frequently used items at easy-to-reach locations (from the senior's waist to shoulder level).
- Always keep floor dry.
- Use non-slip mats on floors that get wet easily.

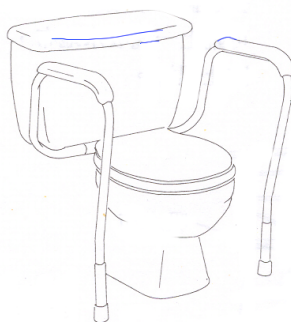


(9) Restroom

- Grabbers assist the senior in standing up and sitting down, reducing risk of falling. Different grabbers work better for various environments, such as:
- Vertical and horizontal fixed grabbers



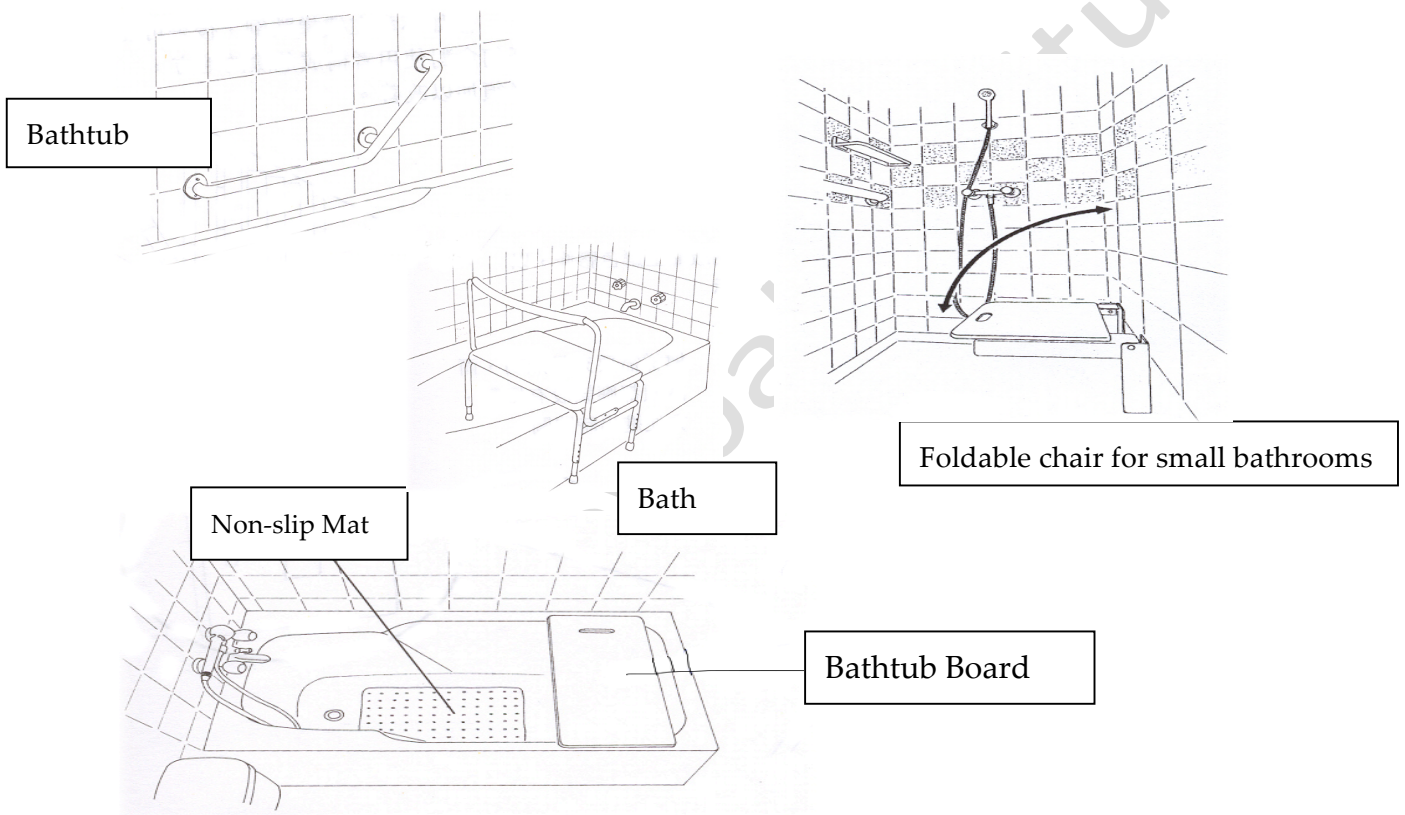
- Foldable grabbers that save space



- Grabbers beside toilet, fixed on the toilet, easy to install



- Specially raised toilet seat, easy for standing up and sitting down.

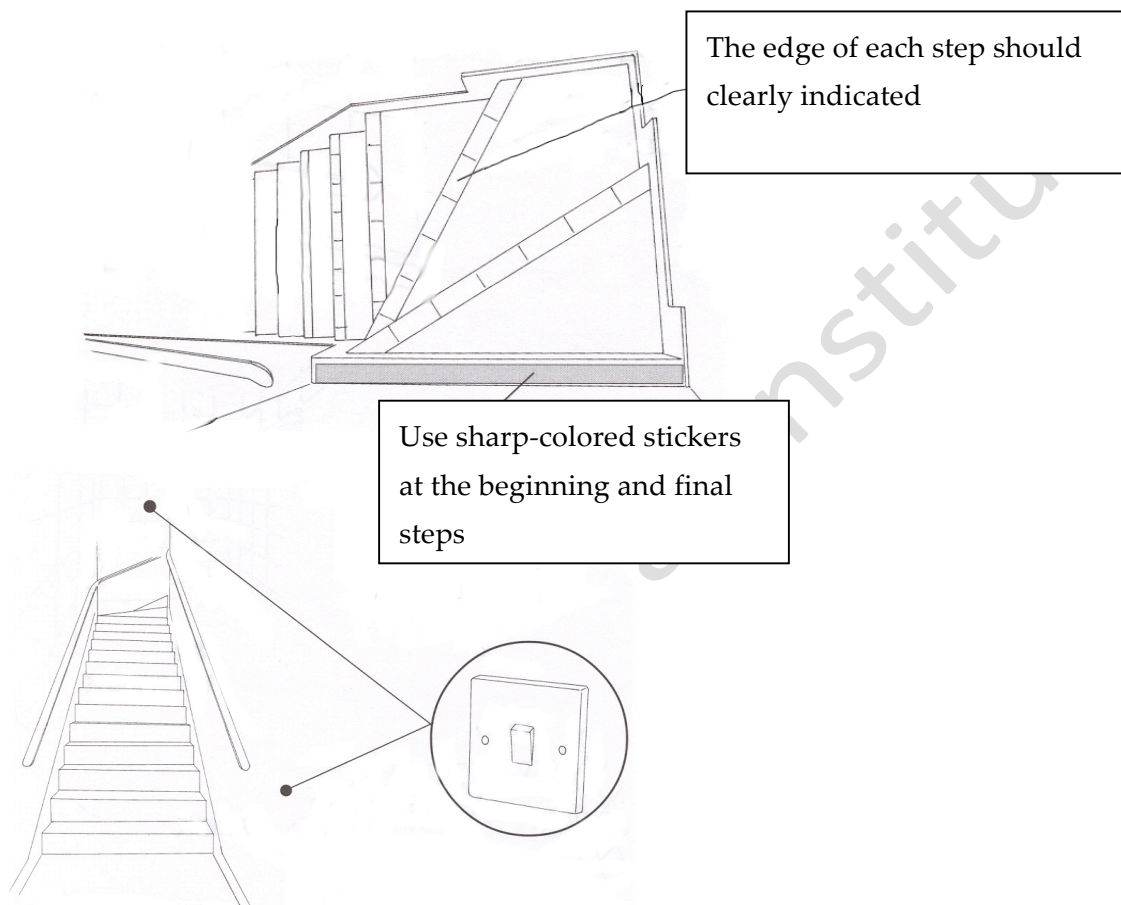


(10) Bathroom

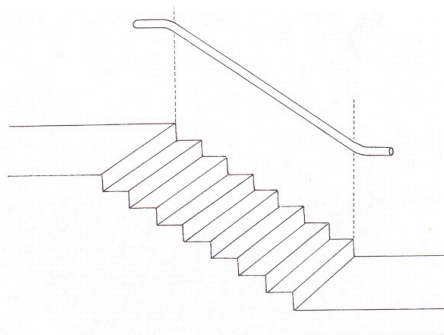
- Make sure the bathroom is free of spills and litter.
- Install non-slip strips or rubber-bottom mats in the tub or shower floor.
- Seniors with limited physical strength should use bathtub boards, foldable chairs, and bathing chairs to make bathing easier and reduce the risks of slipping.
- Avoid using bath oils that can result in slippery conditions. Replace bar soap with wall-mounted soap dispenser, if possible.

(11) Stairs

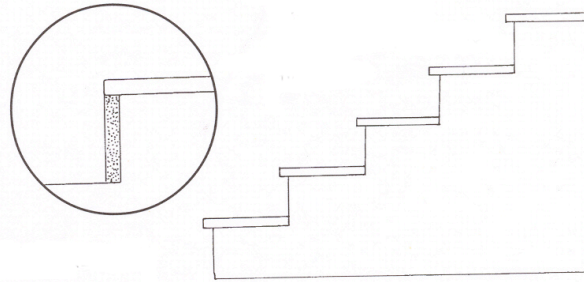
- Serious consequences can result from falling in stairways. Thus, stairways should be completely clear of risks of falling.
- Stairways need adequate lighting, and light switches at both ends of the stairways should be available to the seniors so he or she can use the stairways more frequently and safely.
- Mark step edges with brightly colored adhesive tape.



- There should be sturdy handrails at every stairway



- The handrails should be extended past the beginning and final stairs to increase the senior's safety walking up and down the stairs.



- Stair steps with protruded edges can easily trip seniors, especially those with a history of strokes whose ankles cannot move freely.
- To prevent such risks, the edges can be filled with board.
- Stairs with carpeting must be kept flat.
- Broken stairs need repair as soon as possible

(12) Communication Devices

- Make sure a telephone is in easy reach of the senior's bed and chairs.
- Keep a cordless phone in the senior's home for him or her to use to call for help in case of a fall.
- Chair, bed, and toilet alarms should be installed to signal when the senior leaves a bed, chair, wheelchair, or toilet unattended.

6. Responding to falls immediately

(a) If the recipient starts falling, try to lower him or her gently to the floor without injuring yourself in the process.

(b) Hold the recipient still while you look for any injuries.

(c) If the recipient is able to report pain, help him or her up.

(d) If the recipient has already fallen when you find him or her:

- Ask the recipient if he or she thinks he or she can get up safely.
- If the recipient is unresponsive, call 911 immediately.
- If the recipient is responsive, do not move him or her. Check for bleeding. Make the recipient comfortable without moving any affected body parts to ensure that neither you nor the recipient is injured.
- Call 911. The paramedics will evaluate the recipient when they arrive.
- If the recipient lives in a retirement home, nursing home, or assisted living facility, call a supervisor there for further instructions.

Learning Activity (I)

Case Study : Ms. Li's falling

Ms. Li felt like taking a shower on a warm day. Her daughter was taking a vacation at home watching TV. After informing her daughter, Ms. Li stepped into the bathroom on her own. Her daughter was so entertained by the TV show that she lost track of time. After the TV show, the daughter stretched and realized her mom had not stepped out of the bathroom yet. She knocked on the door, but got no response other than the sound of flowing water. She rushed in to find Ms. Li falling down on the floor, having lost her consciousness. The daughter was so frightened and hopeless and she didn't know how to deal with this situation.

Trainers ask learners to discuss in groups:

Were you Aunt Li's daughter (her caregiver), how would you

- (a) Respond to Aunt Li?
- (b) Seek for help?
- (c) Provide information for medical workers for diagnosis?

Ask each group to report their responses after discussion. Trainers will discuss home treatment to falls and encourage trainees to share information and reference based on personal experiences.

Leaning Activity (II)

Evaluation form of potential risks in the home environment

Below are some basic hints, trainers can refer to “reference II: factors leading to seniors’ falls” to inspire caregivers. Trainers ask learners to form groups. Each group is given a set of pictures (home or outdoor environment). Ask group members to make assessments of the environments according to instructions, and come up with ways to improve the situation.

General Environment

1. Is lighting adequate?
2. Are there enough handrails?
3. Is the carpet easy to move? Can it trip people easily?
4. Do electric wires exist that can trip people easily?
5. Can extra long trousers cause tripping hazards?
6. Are there clutters blocking passageways?
7. Is the furniture arranged in a way that increases tripping hazards?

Kitchen

1. Is there dishwashing liquid or water on the floor?
2. Do electric wires on the floor pose a tripping hazard?
3. Is the carpet easy to move? Does it pose a tripping hazard?
4. Are shoes worn here skidproof?
5. Is food storage at an appropriate height?
6. Steps/doorways

Bathroom

1. Are there enough handrails where appropriate?
2. Is toilet seat cover stable enough?
3. Is there a non-slip mat in the tub or shower?
4. Is lighting adequate?
5. Is the water tap too high?

Bedroom

1. Is the height of bed appropriate?
2. Does the location of the bed pose a tripping hazard?
3. Is the carpet easy to move? Does it pose a tripping hazard?
4. Is lighting adequate?

Falling and Disabilities:

Reflection and Introspection

Objectives: Go over the key points of the lecture 15 min before class ends and summarize the in-class experience.

Process:

1. Form 4-6 caregivers into a group, and choose leaders for each group.
2. Before group discussion, calm the class down and keep quiet to begin the “reflection topics”.
3. Each group discusses “reflection topics” on its own; each group can discuss a different topic.
4. Group leader leads each group and reports the group’s reflection in front of the class. The leader can also respond to other groups.

The following two options can be chosen from:

- i) Groups take turns to report on all the topics, receiving feedback from other groups, or
 - ii) Each group take turns to report and respond to specific topics.
5. Trainers integrate key points reported and summarize them.

Reflection topics:

1. Are the senior’s falls entirely “accidental”, or are there other reasons for them?
2. What side effects do falls have on the recipients – mentally, physically and socially?

Key Points

The reasons of falls in elderly persons are multi-dimensional. Caregivers should conduct thorough evaluations and take the right prevention steps to prevent future falls.