## Environment-Person Fit

We make adaptations as we age to the way we negotiate the environment. Impaired sensory, vestibular, or musculo-skeletal changes can influence balance during movement, the major risk of falls.

**Walking**

Slower, shorter step, more time with both feet on the ground. Observe for someone ‘shuffling’ An opportunity to talk about risk of falls, then possible reasons- ill fitting slippers, weak ankles, poor balance.

**Trip hazards- approaching obstacles**

More conservative strategy stepping over obstacles . There is minimum toe clearance between the shoe and the ground as swing your foot,1 Lag foot has a lower obstacle clearance than the lead foot,2 heel strike is closer to the obstacle and increased chance of making contact with the obstacle 3 particularly when less time to make an adaption.4 Reduced ambient lighting can be a factor in foot clearance.5

Anticipating obstacles enhances the likelihood likely of making adaptations; consider opportunities and prompts for raising awareness.

**Stairs**

About ten percent of fatal falls in older people happen on stairs.6 Having difficulty climbing down stairs has been associated with increased falls. The way we approach stairs is that we automatically start to adjust our step to prepare for descent so if a change in level is not highlighted or contrasted in some way we do not have time to adjust our step.

Slipping down stairs, not placing foot properly on the edge of the step, and descent is more dangerous. A misstep at the bottom step is common. Compensatory strategies that you may observe people using tend to be increasing use of handrail, moving closer to the rail7 and pulling oneself up. Lighting and vision are often an issue- Low ambient lighting (e.g. LED strips) will be sufficient to provide visibility at night or on dark stairwells.

Footwear soles need to allow for proprioceptive feedback on step edges and change of levels- thinness of shoe is preferable, not thick soles (e.g. thick soled gym shoes are actually designed for shock attenuation so a good pair of softer walking shoe may be a better option.)

So taking time and being cautious on stairs, using handrails down stairs, not cluttering stairs, lighting, avoid distraction on the stairs. Take off reading glasses or watch head position or position of glasses so can see. Clean your glasses regularly. (see strategies list below)

**Slip hazards**

Usually occur just after heel strike. The environment, footwear and a quicker pace can contribute. Also depends on awareness of a slippery surface so that they can make adaptions to foot placement and pace and be more cautious. Footwear that is slippery- people often don’t notice soles are worn and slippery or that new shoes may have a slippery sole.

**Reaching, turning and climbing.**

Observe for lack of confidence or instability in the following situations: in turning or extending neck (e.g. when standing or reaching), reaching for an object from a shelf, or stepping over an obstacle or steps: observing steadiness, pace and step placement and toe clearance. Think about mats, lighting, footwear, balance and strength training.

Ladder safety or alterrnatives to climbing may be an appropriate focus for an active person whereas tripping hazards and safe reaching may be more important for a frailer or more sedentary lifestyle.

**Dual tasking while mobilizing or climbing**.

If a person ‘stops walking when talking,8 this has been demonstrated to be a predictor of falls in older adults. What is dual tasking for people can differ. Someone with Parkinson’s Disease may find concentrating on walking through the doorway, then standing at the bench before begin what the task is. Break the manouvre down into ‘stages’.

**Vison**

Multifocals and bifocals, more chance of falls associated with steps and change of level. Be aware of head position and particularly when lenses have been updated.

**Risky behaviours and mild cognitive loss**

Having a mild cognitive impairment and risky mobility behaviours performing ADLs and IADLs was linked to a higher risk of falls.9 These people also lacked confidence in doing these activities. In one study living with someone increased your chance of doing more risky behaviours. Ask what activities/situations they lack confidence in.

**Side effects of medication or alcohol**

Make sure you know the effects of medicines. If a medicine can cause dizziness, be extra careful using the stairs and when changing medications.

Ask your doctor and pharmacist to review all your medications on a regular basis.

Write down in a chart what you need to take when and where so you get the timing and dosage right. Show the chart to your Dr and Pharmacist so they can see everything you are taking.

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| **What causes people to fall on steps or stairs?** | **Strategies to prevent falls** |
| Overstepping stair treads (the most common misstep on home stairs) or twisting your feet or body on relatively short treads or windings stairways | Be cautious, deliberate and not rushed.  Hold on to the handrails. |
| Rushing, especially on steep, curved or cramped stairs | Take time and be extra cautious, especially where there is a transition between angled, shorter treads on winding stairways and rectangular treads. |
| Wearing loose slippers or other footwear | Always wear shoes or slippers that fit properly and that have a non-slip sole. |
| Unintended use of stairs in your home, for example, by vulnerable users, such as small children or older persons with dementia | Secure gates, at top and bottom of stair flights, to prevent unintended use of the stairs. |
| Unfamiliarity with the environment. For example, visiting a relative or friend’s home where there is one or more steps between floors that are at slightly different levels | Take extra time when using an unfamiliar stairway and be especially wary of all places where changes of floor level are possible — especially with only one or two steps in settings that are visually distracting. |
| Lack of attention, for example, when going down stairs; some people fall at the second last step because they think they have already reached the bottom of the stairs | Avoid being distracted when using a stairway.  Make sure that your perception of the stairway is accurate, especially in beginning or ending your use of a stairway. |
| Poor or impaired vision | Remove your reading glasses when you climb up or down stairs.  If you have prescription eyeglasses for distance vision, always wear them when using the stairs.  Take extra care when wearing bifocal or progressive eyeglasses. Adjust the position of your glasses or your head so you can see the stairs clearly. |
| Unnecessary use of stairs, especially under difficult circumstances (for example, rushing up or down stairs to answer the telephone, use the washroom or answer the doorbell) | Take your time when using the stairs, particularly when going down the stairs.  Install a telephone on each floor or carry a portable telephone.  Install a bathroom on each floor.  Install an intercommunication system which you can use from anywhere in your home. |
| Stairs have poor lighting or shadows | If stairs are darker than surrounding areas, consider a way of getting contrast. LED lighting strips can distinguish top of steps at night, have a light on top and bottom of steps. Rail to extend right to bottom step. Light coloured step strips on edge. |
| Not holding the handrails | When walking up or down stairs, always hold the handrails, or have at least one hand within easy reach of a handrail. |
| Carrying objects on the stairs | Avoid carrying objects, such as large laundry baskets, on stairs, especially if they require use of both hands or block your view of the steps. Instead, consider using a laundry bag, for example, that can be carried in one hand, dragged or thrown down the stairs.  Leave one had free t to hold on to a handrail — and for some more vulnerable stair users, both hands should always be available for handrail use, especially when going down stairs. |
| Cleaning the stairs without taking proper precautions | Use small, lightweight tools or equipment such as a hand-held, cordless vacuum cleaner and always keep one hand on, or available for, the handrail.  If you polish uncarpeted stairs, a use non-glare, non-skid wax.  If necessary, have someone else clean the stairs. |
| Leaving, or storing, objects on steps or landings (an important problem that is easily avoided) | Do not place any objects on steps, and make sure that any objects on landings do not distract or obstruct. |

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