



GREKOV'S/SHUTTERSTOCK

Injury Insight

Injuries from Falls on Stairs

Falls are the second leading cause of unintentional injuries worldwide after road traffic crashes.¹ While stairs are in our homes, workplaces, and public and outdoor spaces, they can be dangerous and are a common place for injury to happen. In BC, stairs were involved in approximately 8.2% of all hospitalizations for fall-related injuries, with 68% of these falls on stairs happening in the home.² Hospitalizations resulting from falls on stairs cost BC over \$17 million during the 2013/2014 fiscal year.² On average, 38 people are killed every year in BC by falling on stairs.³

Risk Factors

AGE AND SEX

As people age they experience bodily changes, including decreased in muscle mass and strength and deteriorating vision.^{1,4} Women can experience decreases in bone strength as well. Studies have shown that older adults, especially older women, can have difficulties climbing stairs due to these physical changes.^{4,7} In BC, women experience a higher rate of hospitalization for injury sustained when falling on stairs than men, at 43.9 compared to 27.6 per 100,000 people.²

VISION AND ILLNESS

Impaired vision and not wearing corrective lenses can contribute to trips and falls on stairs.⁸ Acute and chronic illnesses can impair a person's mobility, either temporarily or permanently, causing changes in coordination, mental processes, sensation, and perception.⁵

MEDICATION

People taking different medications to manage their health issues are at risk for polypharmacy: concurrently taking four or more medications for one or more conditions. The effects of the medications, as well as the unexpected side effects of



In BC in 2013/2014, the total hospitalization cost for falls on stairs was over **\$17 MILLION**

taking multiple medications throughout the day, can result in a higher risk of falling.

BEHAVIOUR

Running, rushing, carrying objects, and being distracted all increase the risk of falling while on stairs. Leaving objects on stairs can be a tripping hazard. Not paying attention can cause a fall when individuals think they have already reached the bottom of the stairs when they are actually on the second-last step.⁸

ENVIRONMENT

Poor design, faulty construction, and inadequate maintenance are all environmental risk factors for falling on stairs. Insufficient lighting and slippery surfaces also increase the risk of falling.^{8,9}

In BC, women experience a higher rate of hospitalization for injury sustained when falling on stairs than men.

Special Populations

While everyone may be at risk for falling on stairs, two age groups are at a higher risk when it comes to falls: young children and older adults.

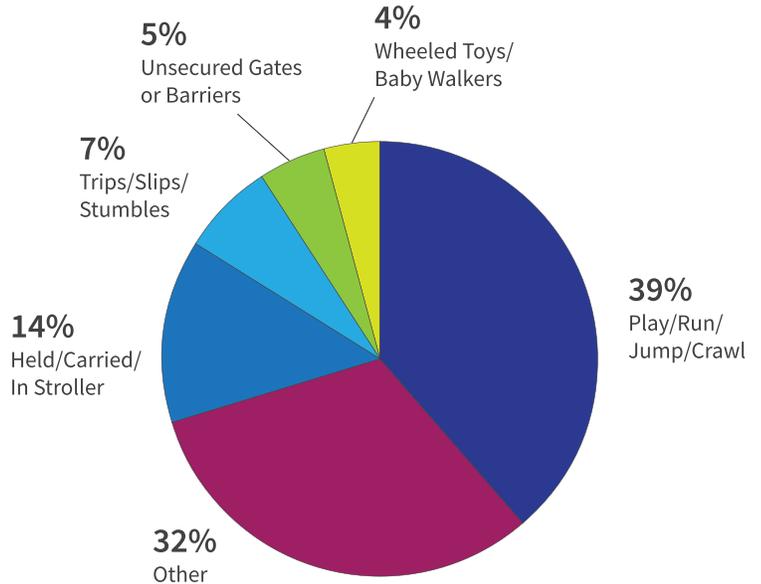
YOUNG CHILDREN

Falls are the leading cause of injury requiring medical attention among children less than 5 years of age.¹⁰ Young children lack coordination and are at a high risk of head injury from a fall, as their heads are disproportionately larger than their body and their neck muscles are underdeveloped.¹¹ As children age, injuries to the limbs become more common, such as a broken arm. Young children tend to fall more often in the home as this is where they spend a large portion of their time.²

Circumstances of falls on stairs among young children:

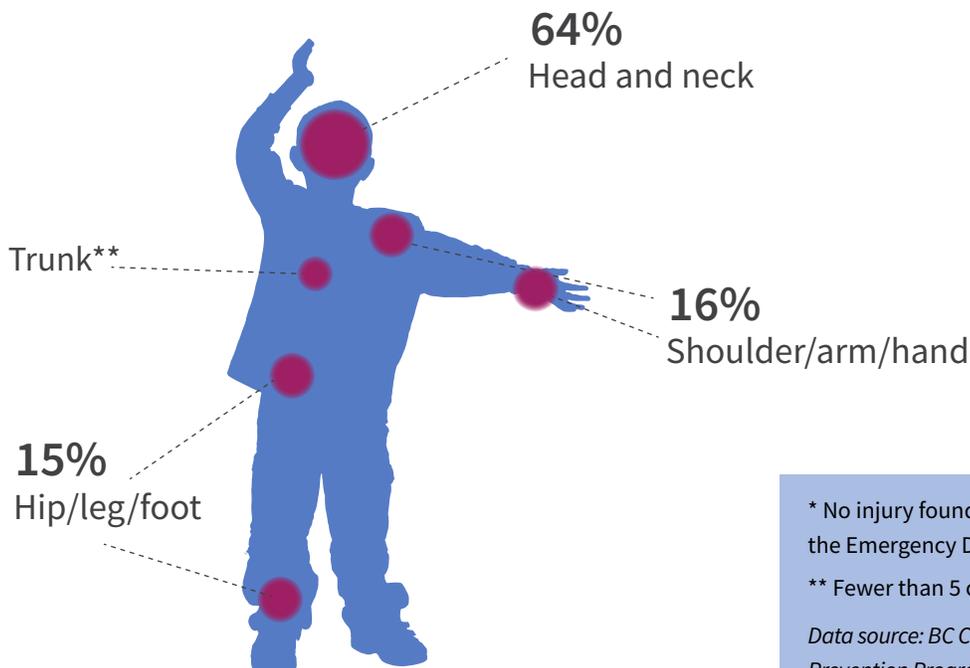
- Improper use of baby gates such as using pressurized gates instead of wall mounted gates at the top of stairs, or not closing the gate.^{10,12}
- Baby walkers or toys with wheels that enhance a child's ability to walk.^{10,12}
- Being carried on stairs.^{10,12,13}
- Playing on stairs.¹⁴

Activity at Time of Fall for Young Children, 0-4 Years of Age



Data source: BC Canadian Hospital Injury Reporting and Prevention Program (BC CHIRPP) 2012-2014, n=311

Body Parts Injured: Young Children 0-4 Years of Age*



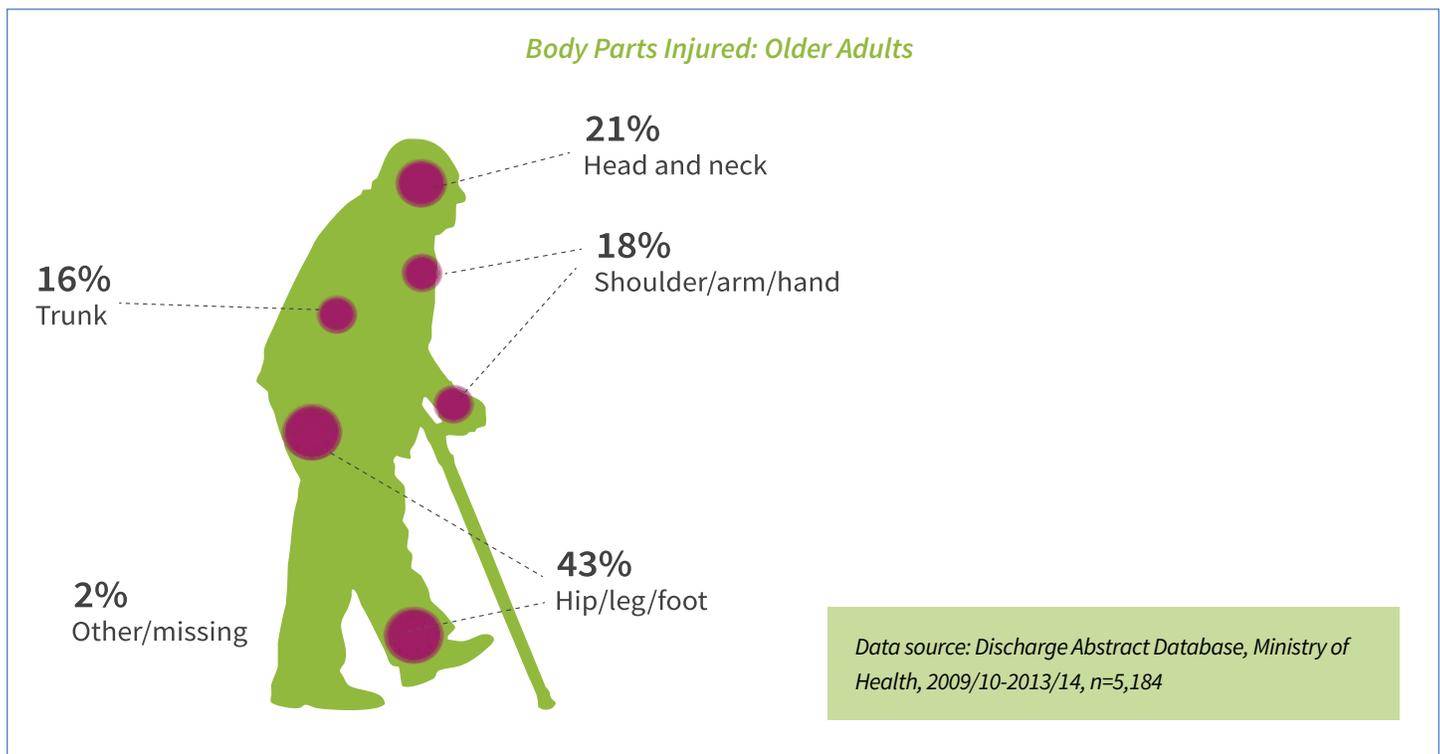
* No injury found in 4% of children presenting to the Emergency Department

** Fewer than 5 cases of "trunk" injury

Data source: BC Canadian Hospital Injury Reporting and Prevention Program (BC CHIRPP) 2012-2014, n=311

OLDER ADULTS

Older adults experiencing a fall on stairs are at risk of sustaining injuries to the hip, lower legs, and head.^{2,8} In addition, falls on stairs can result in psychological effects in older adults, such as developing a fear of using stairs, which may affect mobility, activity, and health.^{8,16}



Prevention Strategies

Decrease the risk for falling on stairs:

- Limit clutter on stairs.
- Use handrails at all times.
- Avoid loose carpets at the top or bottom of stairs.
- Avoid loose slippers or shoes; wear shoes or slippers that cup your heel and have a non-slip sole.⁸
- Take your time—do not rush up or down the stairs.
- Have your vision checked by an optometrist every two years; every year for older adults.
- Wear corrective lenses if needed for seeing distance.
- Have your pharmacist or family doctor review your medications.
- Turn on the lights to ensure that stairs are well lit.
- Do exercises that increase strength and balance. Tai Chi has been shown to be effective in reducing the risk of falling on stairs, especially for older adults.^{5,9}

Caring for Children?

Keep young children safe around stairs:¹²

- Do not carry other items when carrying a young child on the stairs.
- Do not carry a young child in a stroller on the stairs.
- Use baby gates according to their instructions.
- Discourage play on or by stairs.
- Do not use baby walkers.
- Supervise young children with wheeled toys.

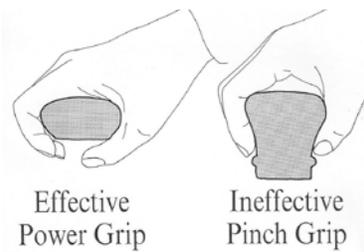


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How Safe Are Your Stairs?

Some environmental recommendations to improve stair structure and environment:^{17,18}

- A landing between floors reduces the distance of a potential fall.
- Hand rails on both sides.
 - Handrail height should be 91 cm–97 cm from the steps.
 - Handrail shape should be circular or oval to promote a power grip and not a pinch grip.
 - Handrail extension from the first and last steps should be between 32 cm–48 cm.
- Step dimensions: a longer run and shorter rise makes it easier to go up and down stairs.
- Consistent steps construction: same shape, material, and dimensions.
- Good lighting and contrasting colour on the edge of all steps to promote visibility.
- For more information, read the Canada Mortgage and Housing Corporation's [Preventing Falls on Stairs](#).



A power grip (left) promotes a stronger hold than a pinch grip.¹⁹



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Baby Walkers

All sales of baby walkers in Canada have been banned since April 2004. According to Health Canada's Canadian Hospital Injury Reporting and Prevention Program (CHIRPP), between April 1990 and April 2002, there were 1,935 baby walker injuries reported among children aged 5 to 14 months.¹⁵ Despite being banned, people are still using baby walkers which may have been passed down from previous generations or brought in from other countries. Although not banned, ride-on wheeled toys also contribute to falls on stairs.

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