

Slips and trips

Stairs and steps

Introduction

A fall on stairs, particularly in descent, often leads to serious injury or even death.

The person who falls on the stairs is often blamed for their accident, perhaps due to their inattention or rushing. Research tells us that the way the stairs are built can make a big difference to the risk of an accident. There are simple and inexpensive things that can be done to make existing stairs safer. Providing good handrails and visible highlights on the treads are things to prioritize. The size of the steps and the consistency of the stair dimensions are also important.

Handrails

Handrails are a key feature of safe stairs – something to grab if anyone starts to fall! Handrails can reduce the severity of a fall and any injury, even if they are not held all the time. To be effective, handrails need to be well designed so that the person on the stair can easily reach them and secure a good grip.

- > The top of the handrails should be between 900 and 1000 mm above the front edge of each step (the nosing).
- > Circular handrails are best, ideally with a diameter of 32 - 50 mm. It is desirable to get the hand all the way around the rail, giving the best possible grip.
- > There should be 50 - 75 mm clearance from nearby walls and objects to allow the rail to be grasped easily.
- > Handrails should contrast with their surroundings, e.g. a black rail against a white wall.
- > Simply repositioning existing handrails can sometimes be a significant improvement.

Handrails should be continuous and within easy reach of users and on both sides of the stair where possible, allowing people to use either hand for support when going up or down. If there are stairs wider than 2m they should be divided into channels (at least 1m wide) using additional handrails.

Asking staff to hold the handrail is helpful, as it prevents them from carrying objects in both hands, a very risky activity on stairs. A suitable handrail is a reasonable safety measure on any stair, regardless of the other features.

Highlight and Edges

The front edge of the step, known as the nosing, should be clearly highlighted to help people place their feet safely when using the stair. Improved visual contrast on stair nosings can be achieved in several ways, including painting the edges or installing commercially available nosing highlights. The highlight should be a single color, extend to the edge of the tread and should be present on the front face and top of the step, helping to identify the nosing accurately when walking up and down the flight.

A square nosing maximizes the size of each tread but a slight rounding (about 5mm radius) is recommended to lessen potential injuries should a fall occur.

Good color contrast between the nosing, the step it is on, the step below and any landings improves stair safety. Taking a black and white photograph of stairs will give a simple indication of how effective the current color contrast is. Consider different lighting conditions during daylight and night time. Stairs should always be well lit.

If people with visual impairments are using the stairs, they may need more light. Both natural and artificial light should be even and not creating confusing shadows, reflection or glare.

Slips and trips - Stairs and steps

Stair dimensions and consistency

Stair dimensions are often described using the following terms:

- > Rise - the vertical distance between two consecutive treads, or between a tread and a landing.
- > Going - the horizontal distance between two consecutive nosings.

Stair dimensions have a significant impact on the risk of stair falls:

- > The smaller the going, the greater the risk of a fall. Goings smaller than 250 mm pose a significant risk of falls, goings between 300 mm and 400 mm are much safer.
- > Very small, or very large rises can increase the risk of falls. Rises should be at least 150 mm and the risk of falls increases as they get bigger than 170 mm.
- > Where there are differences in rise or going between adjacent treads the risk of falls is increased. Even 5 mm difference in between adjacent treads can significantly increase the risk of people falling.
- > Slips can happen on stairs, so treads need to provide good slip resistance in expected conditions, e.g. a stair near an entrance may need to provide good slip resistance in the wet. This grip is most important at the very edge of the tread, many proprietary nosing products are available that provide both a clear highlight and enhanced slip resistance.

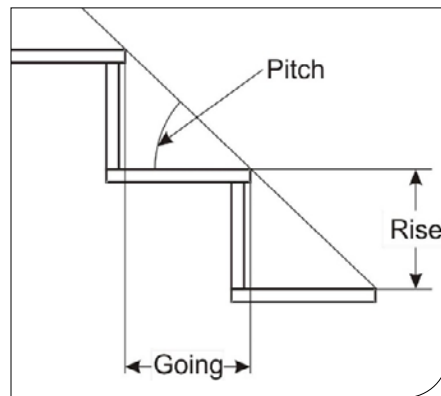


An example of a stair with nosing highlights installed

A common cause of stair falls when walking down is an overstep, where the person places their foot too far forward on the step. This will happen more frequently if the goings are small, because more of the foot is likely to overhang the step, or if the dimensions are inconsistent. Trips can occur when walking upstairs when the rise is large or larger than expected due to inconsistency.

Design problems at the top of a stair are likely to give rise to more severe falls in descent as there is further to fall.

Inconsistencies in stair dimensions can be eliminated by adding material to the treads. Don't assume that a stair with an inconsistent rise or going cannot be improved.



An example of a stair with nosing highlights installed

Assessing the stair

A simple visual assessment of a stair can be informative, so inspect stairs from both the top and bottom of the flight and consider the issues discussed above. Any damage or wear to treads and loose, worn or poorly fitting nosings should all be noted, and repairs completed as quickly as possible. To confirm a stair is uniform you will need to make more detailed measurements.

Observing people use the stairs can also bring issues into focus, so take a little time to do so. If it is suspected that a specific defect causes people difficulties, don't wait for a serious fall to confirm your suspicions!

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