

Vision helps us keep our balance

Vision helps us keep our balance. This is easy to demonstrate:

- Stand up and gently hold onto the back of a chair with one hand. Stand on one leg and then close your eyes. Did you have trouble staying upright?
- Now try standing on one leg but this time keep your eyes open. It's much easier, isn't it?

It is easier to stay upright with our eyes open because we can see where we are in our environment. But vision is only one of three sources of information conveyed to our brain to help us keep upright. The vestibular system in our inner ear tells us our orientation in space e.g. are we upright or laying down? Information about our body location is also provided by the somatosensory system (which includes our muscles, bones, skin and internal organs) e.g. are we standing on a flat surface or a slope? Therefore, if you practice being aware of where your body location is in space, then you may be able to stand comfortably on one leg with your eyes closed without falling over.

Are people with poor vision more likely to have trouble with balance?

Yes, there is evidence that people with vision impairment are more likely to report trouble with balance¹. Wearing spectacles which blurs your vision (e.g. wearing your reading glasses instead of your distance glasses when walking around) can also affect the balance of some people.

Why do some people lose their balance on escalators?



Some researchers think that people lose their balance on escalators because the gratings on escalator stairs create a visual illusion which leads to a misjudgment of depth².

More recently the ABC reported an investigation into why people were falling on the escalators at Parliament Station in Melbourne³. The escalators at this train station are very long: it takes 1 minute 25 seconds to travel on the first section of the escalators, with additional escalators travelling to lower platforms. Investigators suspect that people were falling because they were disoriented within the escalator environment. This was due to a lack of visual cues (e.g. a lack of

vertical lines in the vicinity of the escalators) and conflicting visual cues (e.g. reflections of overhead light sources on shiny surfaces which made it difficult for people to determine which way was “up”).

Some of the proposed solutions to help people travelling on the Parliament Station escalators were to display visual imagery so people have something to look at, reduce the number and intensity of reflections on shiny surfaces, as well as installing signs to make people aware of the risks.

References:

1. Zetterlund et al (2019) Clinical and Experimental Optometry 102: 63-69
2. Cohn et al (1990) Perception 19: 573–580
3. <https://www.abc.net.au/news/2018-12-10/melbourne-parliament-station-escalator-falls/10599282>

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