Keeping an eye on falls

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Questions

• why do we need to see well to stay upright?
• why does our ability to see get worse as we get older?
• is there anything we can do about it?
Why do we need vision to stay upright?

• Balance
  – Close your eyes
  – “Vertigo” at top of tall buildings
  – “moving room” experiments
Why do we need vision to stay upright?

• Route planning during walking
  – obstacles
  – slippery surfaces
  – safe places to step
  – slopes
Why do we need vision to stay upright?

putting your feet in the right places at the right times
Why do we need vision to stay upright?

- Putting your foot in the right place at the right time – eye-foot coordination (stair example)
Why do we need vision to stay upright?

- Turning around and changing walking direction
  - eyes and head lead the way
  - optic flow (virtual corridors)
Why do we need vision to stay upright?

• Responding to unexpected events
  – Grasping hand rail when slip or trip
  – Responding to unstable floor e.g. on bus
Why can we not see as well as we get older?

Eye diseases

– Cataracts
– Maculopathy
– Glaucoma
– Diabetic retinopathy
Why can we not see as well as we get older?

Healthy Ageing

- Less light enters the eye
- Slower adjustment to changes in light level
- Increased glare
- Reduced visual field
- Reduced sensitivity to contrast
- Medical conditions e.g. changes to blood pressure and glucose levels
Is our brain telling us to look in the right places at the right times as we walk?

- attention and cognition
- anxiety/fear of falling
- visuomotor control (how brain uses vision to make an appropriate movement)
Is there anything we can do about it?

Look after eyesight

- get regular check ups
- keep glasses clean and wear them when you are supposed to
- consider alternatives to bi and varifocals
Is there anything we can do about it?

Visually optimize your environment

- Lighting
- Décor
Is there anything we can do about it?

Change behaviour!

- scan ahead
- try to ignore distractions
- keep glasses close by
  - turn on lights
- be careful at dusk
- wear a hat on bright days