

Falls in the Amputee Population: a literature review

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Prevalence of falls

- 32% of inpatients (Goody & Hunter 2004)
- 58% of rehabilitation inpatients (Kulkarni et al 1996)
- 52% of outpatients (Miller et al 2001)
- ie significant numbers!

Risk factors

An amputee is more likely to fall:

- if they have an AKA, back or joint pain, multiple problems with prosthesis or stump (Miller et al 2001)
- if they have a cognitive impairment, are older than 70, were deaf (Gooday and Hunter 2004)

Risk factors

- while leaning or reaching out of the wheelchair or transferring from/to wheelchair (Gooday and Hunter 2004, Vlahov et al 1990)
- in their room or the bathroom (Gooday and Hunter 2004, Vlahov et al 1990)

Risk factors

An amputee is less likely to fall:

- If they have had the amputation for more than 4 years (Miller et al 2001)

Risk factors

- Amputees have increased postural sway cf non-amputee subjects (Isakov et al 1992) esp. vascular amputees (Hermodsson et al 2003)
- This reduces during rehabilitation (Isakov et al 1992)

Risk factors

- Balance confidence positively effects mobility performance and social activity (Miller et al 2001)
- All amputees score low on the balance confidence scale (ABC) (Miller et al 2002)

Causes of falls

- Patient-related **
- Prosthesis-related
- Environment-related
- Combination of above 3

Consequences of falls

- Femoral fractures (Gonzalez and Mathews 1980)
- Stump trauma (Behar et al 1991)
- Increased fear of falling (Miller et al 2001)
- Prolonged hospital stay and discharge to long-term care (Bates et al 1995)
- Restriction of mobility and social activity (Miller et al 2001a)

Intervention

- Devise a risk assessment sheet (Gooday and Hunter 2004)
- Notices around ward to remind patients to transfer safely (Gooday and Hunter 2004)
- Teach patients to transfer safely (Gooday and Hunter 2004)

Intervention

- Provision of WC if MMSE less than 24
(Gooday and Hunter 2004)
- Designation of 'safe rooms' on a ward
(Gooday and Hunter 2004)
- POP stump protection for at-risk patients
(Gooday and Hunter 2004)

Intervention

- Advice on environmental hazards (Kulkarni et al 1996)
- Education about prosthesis eg knee locking mechanism, don/doff procedure (Kulkarni et al 1996)

Intervention

- Gait training to include high risk areas such as kerbs and obstacles (Kulkarni et al 1996)
- Balance training (Kulkarni et al 1996) specifically
 - *Use of limb load monitor or mirror/verbal instruction to enhance feedback (Gauthier-Gagnon et al 1986)
 - *Use of task-orientated balance training (Matjacic and Burger 2003)

Intervention

- Good training in fitting of socket to enhance sensory feedback from the stump (Kulkarni et al 1996)
- On/off floor instruction (Kulkarni et al 1996)

Intervention

- Use of walker inlet-closure strap to limit patients advancing too far into their PUF (Kirby et al 1999)
- Strengthening of hip abductor muscles (Nadollek et al 2002)

A risk assessment tool

- MMSE < 24
- a cognitive impairment
- back or joint pain
- multiple problems with prosthesis
- multiple problems with stump
- are older than 70
- deaf
- increased postural sway with eyes open and closed
- weak hip abductors