Post-hospital exercise

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Outline

• The problem of falls and disability after hospital stays
• Exercise interventions
  • to prevent falls
  • to lessen disability
• Current RCT
  • overview of intervention
  • adherence
Falls after hospital stays

- 14% fell in the month after a hospital stay for a medical illness (n=214)\(^1\)
- 34% fell in the 3 months after aged care inpatient rehabilitation in Sydney (n=442)\(^2\)
- 73% of stroke survivors fell within 6 months of discharge from hospital (n=108)\(^3\)
- 46% of stroke survivors fell within 6 months of discharge from rehabilitation in Adelaide, most falls within 2 months (n=56)\(^4\)
- 49% of 255 people so far in our current Sydney trial\(^5\) fell in 12 months after hospital stay in aged care or rehab: rate 0.9 falls/person

\(^2\)Sherrington C, J Clin Epi 2011; Epub 18 Jan.
\(^3\)Forster A, BMJ 1995; 311:83-86
\(^5\)Sherrington C, BMC Geriatrics 2009;9:8
Disability after hospital stays

- Community-dwellers 70+ who did not need any assistance with personal tasks followed for 5 years (n=754)$^1$
  - 55% developed disability (need for help with daily tasks)
  - 49% were hospitalised
  - very high risk of developing disability within a month of hospitalisation: hazard ratio 61.8 (95% CI, 49.0-78.0)

- People after discharge from aged care inpatient rehabilitation followed for 3 months (n=442)$^2$
  - 59% were unable to climb a flight of stairs or walk 800m
  - 36% had been unable to do this prior to hospital stay

$^1$Gill, JAMA, 2004;292:2115-2124
$^2$Sherrington C, J Physio 2010;56:121–127
The context of falls and disability

Medical/surgical event → Bed rest/↓ activity

ageing → chronic disease

→ inactivity

↓ muscle strength

↓ balance & co-ordination

falls

↓ mobility
Reserve capacity

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Functional decline during hospitalization.
Intervention questions

• Can exercise prevent falls and improve mobility (decrease disability) among older people who have been in hospital?

• What is the effectiveness and cost-effectiveness of different intervention approaches?
Evidence about exercise:
Physiotherapy Evidence Database

- [www.pedro.org.au](http://www.pedro.org.au)
- Freely available since 1999
- 18,000 records
  - clinical practice guidelines
  - systematic reviews
  - RCTs
Latest Cochrane review

- Exercise interventions reduce risk and rate of falls
- One trial of exercise after hospital discharge
  - Latham (n=243)
  - seated leg strengthening exercise 3x weekly for 10 weeks
  - no effect on falls
  - RR 0.95, 95% CI 0.77 to 1.18

Comparison of 7 days of
• extended physiotherapy: supervised 60 min/d during acute care
  plus an unsupervised home program) versus
• standard physiotherapy supervised 30 min/d during acute care
  plus no home program
• All patients also received Vitamin D
• Extended physiotherapy reduced the rate of falls by 25%
  (95% CI -44% to -1%)

Bischoff-Ferrari Arch Intern Med. 2010;170(9):813-820
“Task-specificity”

- Everyday tasks are motor skills
- Practice is a key aspect of motor skill improvement: “practice makes perfect”
- Task-specificity: greater improvements in tasks which have been practised
- Rehabilitation in older people
  - exercises that are similar to daily activities eg standing up, walking, climbing stairs
  - exercises to improve components of these activities (eg the ability to straighten the leg against gravity)
  - balance is the ability to safely carry out tasks in standing
  - strength can also be trained in a way that is relevant to daily tasks
A Randomized Controlled Trial of Weight-Bearing Versus Non-Weight-Bearing Exercise for Improving Physical Ability After Usual Care for Hip Fracture

Catherine Sherrington, PhD, Stephen R. Lord, PhD, Robert D. Herbert, PhD

- RCT among 120 people after hip fracture
- Weight-bearing exercise led to greater improvements in balance and mobility in 4-month home program than non-weight-bearing exercise
- eg 7cm further on functional reach (95% CI 3-11)

Sherrington C, Arch Phys Med Rehabil, 2004;85:710-6
A novel weight-bearing strengthening program during rehabilitation of older people is feasible and improves standing up more than a non-weight-bearing strengthening program: a randomised trial

- RCT inpatient rehabilitation, n = 88
- Better sit to stand ability from 2-weeks of weight-bearing strength training than traditional seated exercise
- diff in min chair height 5.3 cm (95% CI 0.7 to 9.8)

RCT 180 people recently hospitalised

12 weeks of home-based weight-bearing exercises led to greater improvements in standing balance than non-weight-bearing exercises

eg 2 cm more functional reach test, 95% CI 3 to 29)

no difference in muscle strength

Vogler C, Arch Phys Med Rehabil, 2009;90-1317-24
Group exercise can improve participants’ mobility in an outpatient rehabilitation setting: a randomized controlled trial

- RCT 173 people
- 5-week twice weekly circuit class incorporated into usual care lead to better stepping, sit-to-stand and gait speed
- exercise vs control diff. incl. 31m further in 6 min walk (95% CI 9 to 52)