

Falls in polio survivors

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Programme



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- 1 **General overview** – *Falls research*
 - 2 **AMC study falls** – *Methods, Results, Conclusions*
 - 3 **Discussion** – *Key Points*
 - 4 **Questions**
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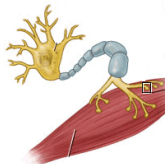


1. General Overview



- Leading cause of - Morbidity
- Mortality
- High health care costs

- >55 years \Rightarrow ~20% \geq 1 fall per year
- >75 years \Rightarrow ~37% \geq 1 fall per year



NMD

- 70% \geq 1 fall per year (n=66, mean age 49*)

*Pieterse et al, 2006**



1. General Overview

- Muscle weakness is risk factor for falls
- Polio survivors have muscle weakness
- Muscle & joint pain, fatigue



Polio survivors fall frequently?





1. General Overview


Falls in polio survivors, 5 studies*

- Frequency:

50-84% ≥ 1 fall per year

25-68% ≥ 2 falls per year

- Consequences:

-  38% in 5 years
35% at some point

-  61%-95%
18-82% changing activities

* Lord 2002, Silver 2002, Hill 2004, Legters 2006, Mohammad 2009

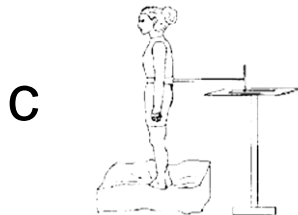
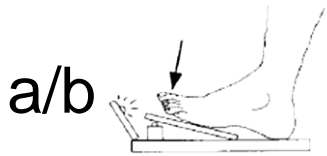


1. General Overview

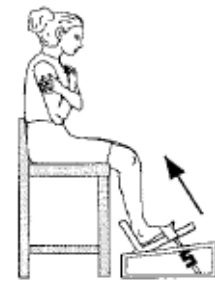
- Circumstances: Hill 2004
 - $\frac{2}{3}$ walking
 - $\frac{1}{2}$ outdoors
 - $\frac{1}{2}$ extrinsic hazard
- } Very small sample size

Associated factors: Lord 2002

- Frequent fallers had:



- a. Reduced foot tapping speed
- b. Slow reaction times
- c. Increased body sway
- d. Reduced lower limb strength



d



1. General Overview

- Other possible underlying mechanisms:
 - Fear of falling
 - Joint & muscle pain
 - Fatigue
 - Relative loss of proprioception*
 - Joint position sense
 - Motion sense
- reduced in (contracting) weak muscles

* *Butler et al, 2008*



1. General Overview

- Conclusion previous research:
 - Falls are a problem
 - There are no comprehensive fall intervention strategies
 - Some fall mechanisms are clear, but many aren't
- Circumstances of falls and associated factors

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2. Research Questions

- Is falling a problem for polio survivors?
- Frequency
 - Consequences

- If so, what are the ... ?
- Circumstances of falls
 - Factors associated with falls



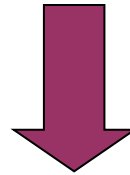
Intervention programmes

2. Methods



376 polio survivors approached

305 participated (81%)



- Questionnaire
- Medical files



2. Methods: Outcome Measures

Frequency:

- Fallers: ≥ 1 fall last year
- Recurrent fallers: ≥ 2 falls last year

Consequences:

- Fear of falling:



Yes/No

10 item FES-scale

- Injuries:



minor

major: fractures separate

2. Methods: Outcome Measures



Circumstances:

- Time



- Shoes

- Activity



- Location



- Floor



2. Methods: Outcome Measures

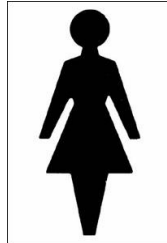
Basic demographics

Increased age

Female

Immigrant

Living alone



Other

Physical complaints

Medication

Type

≥ 4

Fear of falling



Disease characteristics

PPS

Muscle weakness lower limb

Walking ability

Walking aid

Orthopaedic shoes

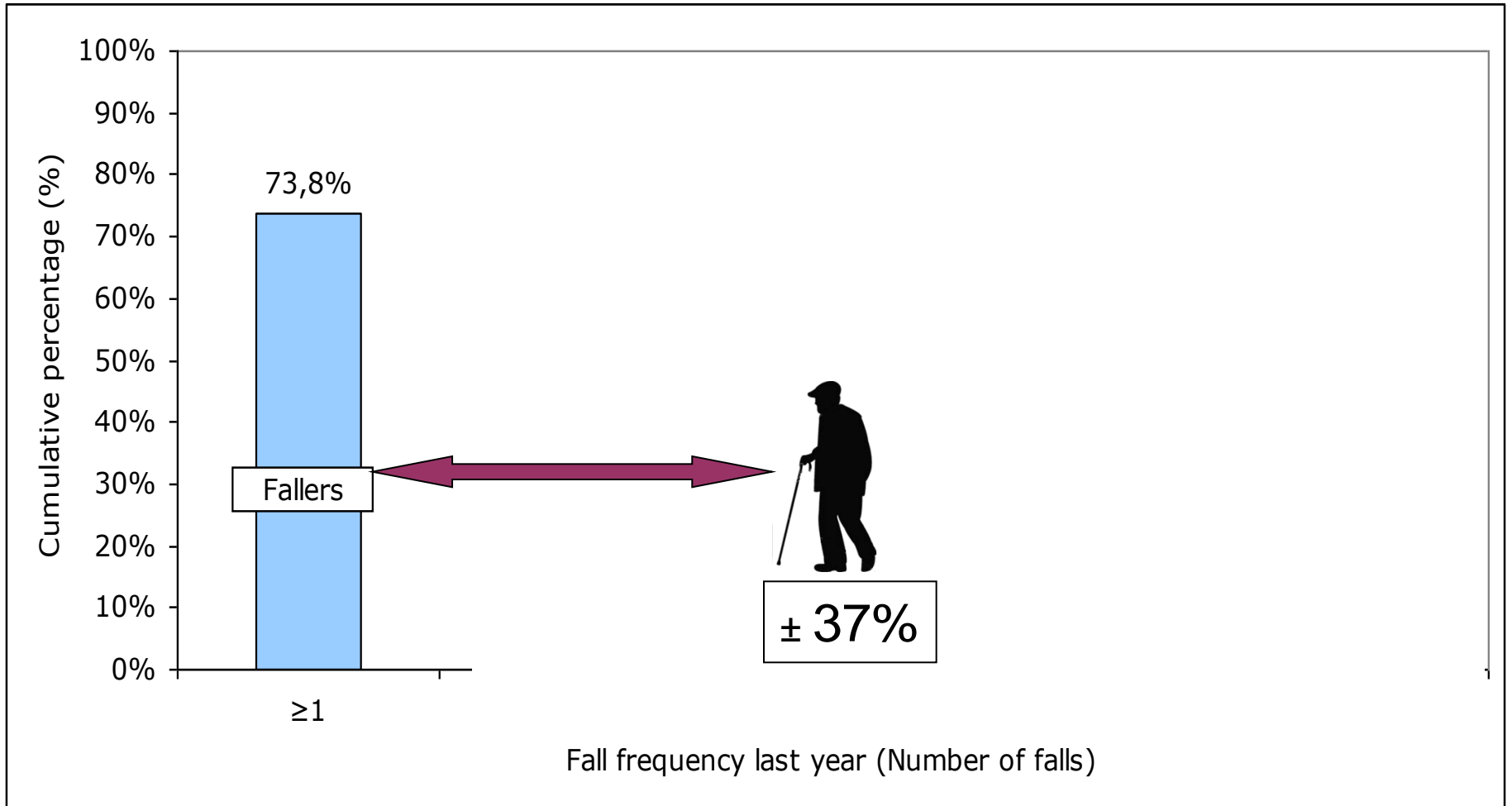
Orthosis



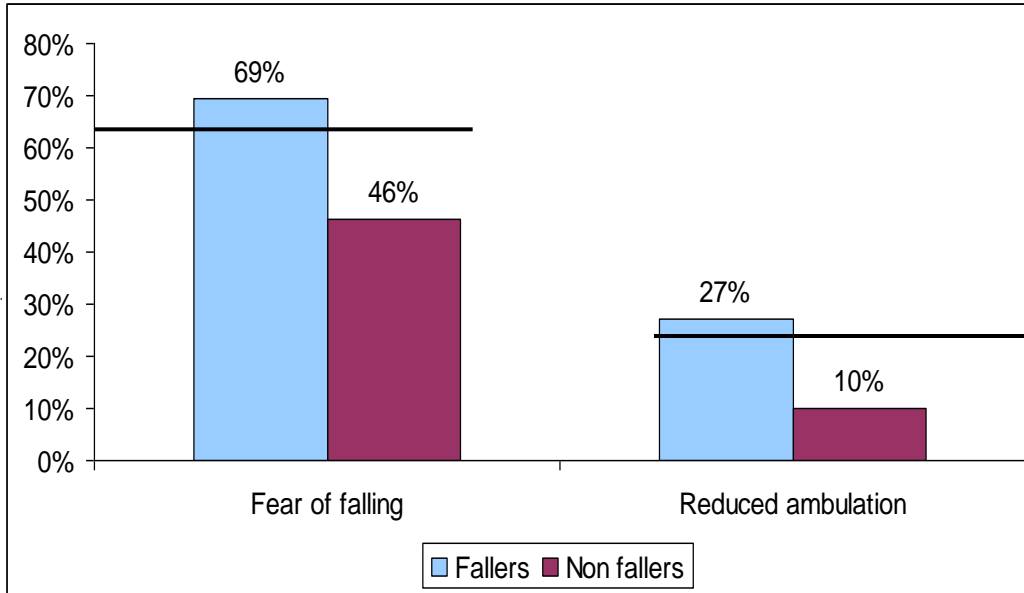
Logistic regression



2. Results: Frequency



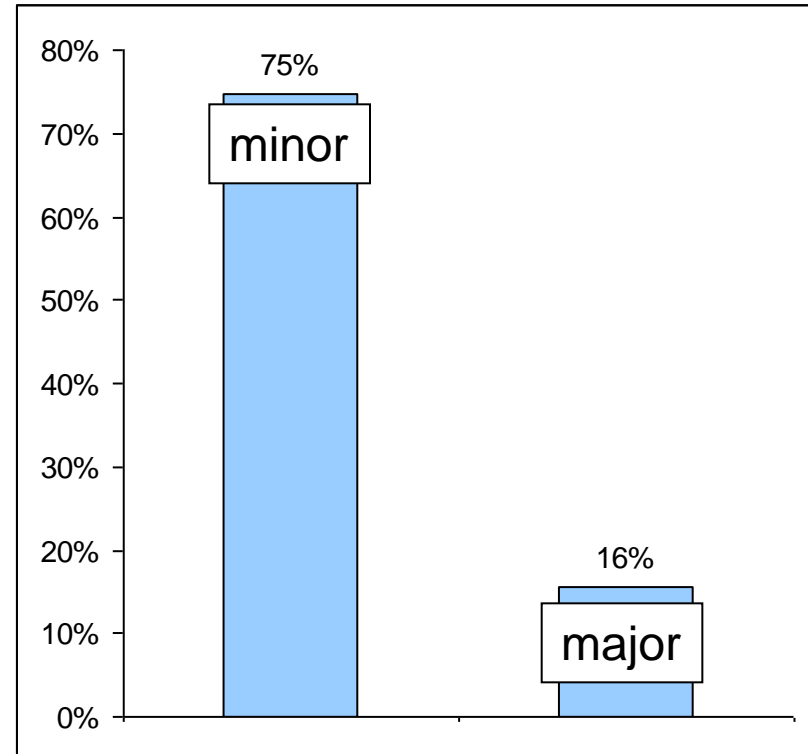
2. Results: Consequences



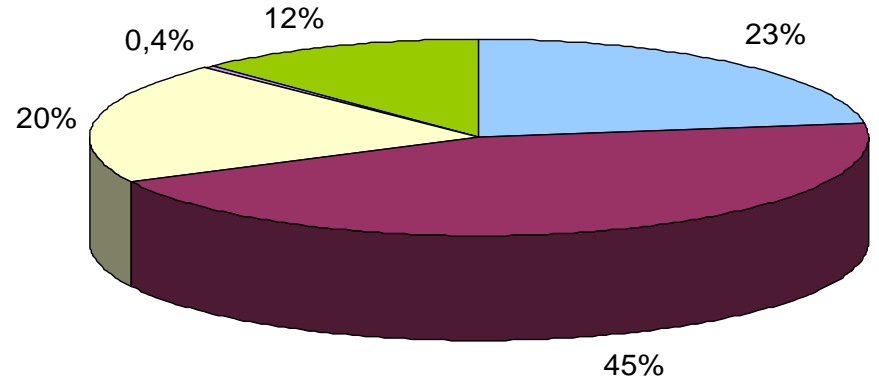
Fear of falling



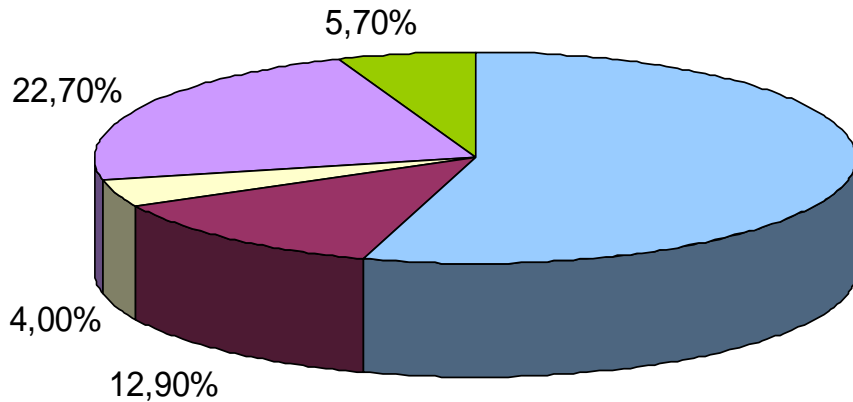
Injuries



2. Results: Circumstances



■ Morning
 ■ Afternoon
 ■ Evening
 ■ Night
 ■ Missing



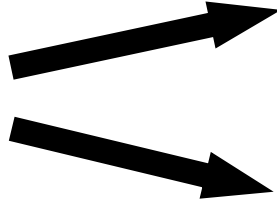
Activity



■ Walking
 ■ Transfer/posture change
■ De- / ascending stairs
 ■ Various tasks in & around the house
■ Missing



2. Results: Circumstances



86% in a familiar location

50% in and around the home



53.4% has orthopaedic shoes

23.5% were wearing them!



11% Slips

21% Trips



Results: Associated factors

Risk factor	Falls (≥ 1)		Recurrent falls (≥ 2)	
	Exp B	95%CI	Exp B	95%CI
Balance problems	3.42	1.87 - 6.25	3.01	1.78-5.08
Quadriceps weakness	2.66	1.42 – 4.89	1.88	1.11-3.18
Fear of falling	1.98	1.08 – 3.61	1.72	1.01-2.94



4. Conclusion

- Fall frequency is **high** and there is a high proportion of **fear**, **injuries** and **activity avoidance**
- Falls mainly occur:
 - **Ambulation**
 - **Afternoon**
 - **Inside the home**
- Factors associated with falls:
 - **Self-reported balance problems**
 - **Quadriceps weakness**
 - **Fear of falling**



Proprioceptive loss
Increased sway
Slow reaction times

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4. Key Points



- Falls are a clinically important problem for polio survivors



- No known effective intervention



- An intervention study should target polio-specific fall mechanisms for maximum effect.

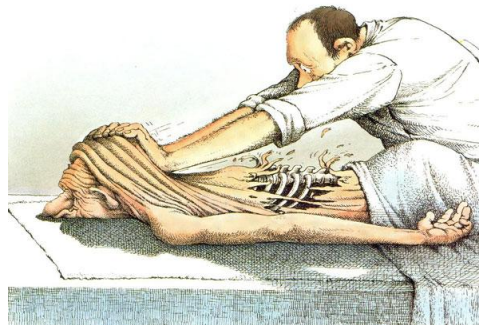
- Lower limb muscle weakness
- Fear of falling
- Complaints of problems maintaining balance
- Loss of proprioception (Butler, et al)
- Reaction time (Lord, et al)



4. Key Points



- In the meantime, clinical recommendations are possible:
 - Tell your doctor about your falls!!
 - How often?
 - Where?
 - When?
 - Why?
 - Consequences?
 - Discuss available treatment options



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