

# Frailty and Falls

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**NSW FALLS PREVENTION NETWORK FORUM PROGRAM**

Friday 11<sup>th</sup> May 2018

Wesley Conference Centre, Sydney NSW

# Pam Albany Guest Lecture



- 1951- 2011
- Injury and falls prevention advocate
- Established falls prevention as a priority in NSW

# In summary

- Frailty is a syndrome in which multiple physiological processes decline
- It is an independent risk factor for falls, fall-related fracture and reduced mobility
- This presentation discusses the frailty syndrome and the results of a randomised trial of treatment of frailty (the Frailty Intervention Trial (FIT))
  - successful in reducing frailty and some falls related risk factors
  - not the rate of falls

# Acknowledgements

## **Effect of a multifactorial, interdisciplinary intervention on risk factors for falls and fall rate in frail older people: a randomised controlled trial**

NICOLA FAIRHALL<sup>1</sup>, CATHERINE SHERRINGTON<sup>2</sup>, STEPHEN R. LORD<sup>3</sup>, SUSAN E. KURRLE<sup>4</sup>, COLLEEN LANGRON<sup>4</sup>, KERI LOCKWOOD<sup>1,4</sup>, NOELINE MONAGHAN<sup>1</sup>, CHRISTINA AGGAR<sup>5</sup>, IAN D. CAMERON<sup>1</sup>

- Colleagues, and the older people and their families participating in the study
- NHMRC as funder

Fairhall et al. *Age and Ageing* 2014; 43: 616–622 doi: 10.1093/ageing/aft204

Is this man frail?



# Rupert Murdoch still bedridden after New Year's fall on Lachlan's yacht

By Colin Kruger

Updated 23 February 2018 — 6:04am, first published at 12:15am



For those who came in late, **Rupert Murdoch** had a slip up on **Lachlan Murdoch's** yacht early in the New Year and had to be helicoptered out and spent some time in hospital with a back injury.

It took two weeks for the news to surface, in a *Vanity Fair* report saying he was out of hospital. It included an excerpt from an email he had apparently sent to senior managers: "While I am well on the road to recovery, I have to work from home for some weeks. In the meantime, you'll be hearing from me by email, phone and text!"



Jerry Hall and Rupert Murdoch.

Company insiders point out that a bad back saw Rupert laid up in bed for a month last year.

Is this lady frail?





Is this lady  
frail?

# Definition of Frailty – Cardiovascular Health Study (Fried)

“A Phenotype”

Operationally defined as:

“A clinical syndrome in which **three or more** of the following are present:

- unintentional weight loss (10lbs/4.5kgs in last year)
- self-reported exhaustion
- weakness (grip strength)
- slow walking speed
- low physical activity”

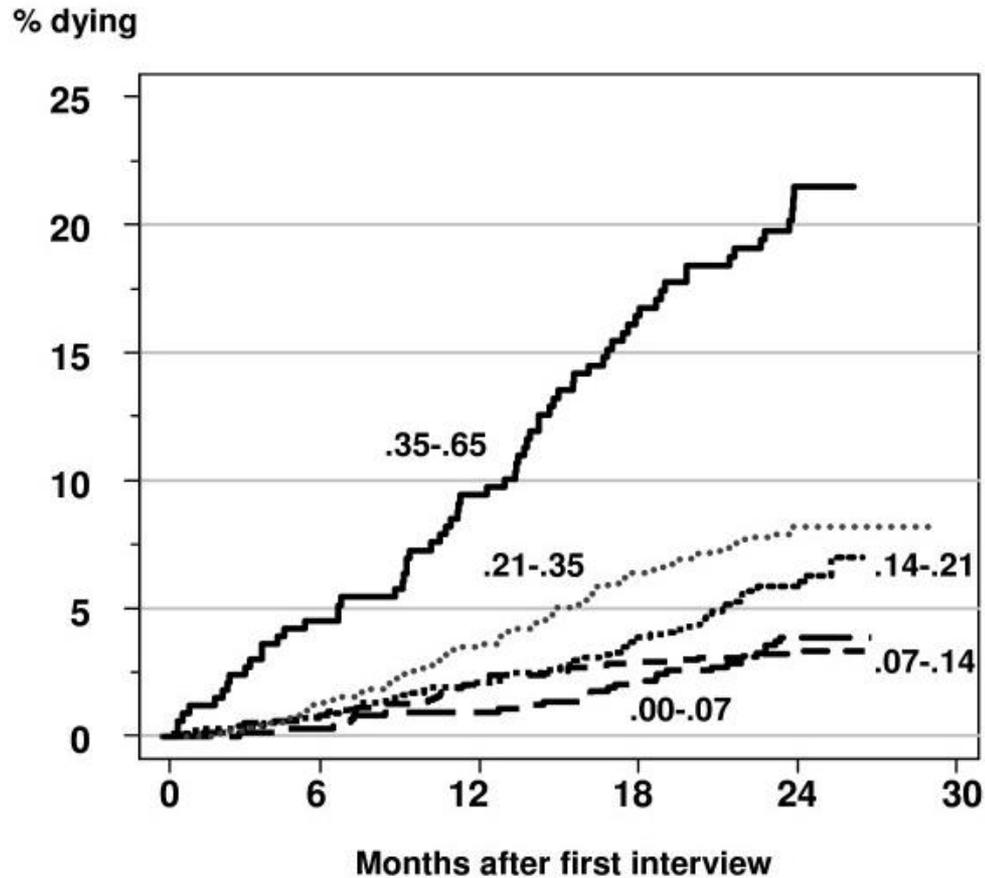
# Definition of Frailty – Accumulated Deficit Model (Rockwood)

## Appendix 1: List of variables used by the Canadian Study of Health and Aging to construct the 70-item CSHA Frailty Index

- Changes in everyday activities
- Head and neck problems
- Poor muscle tone in neck
- Bradykinesia, facial
- Problems getting dressed
- Problems with bathing
- Problems carrying out personal grooming
- Urinary incontinence
- Toileting problems
- Bulk difficulties
- Rectal problems
- Gastrointestinal problems
- Problems cooking
- Sucking problems
- Problems going out alone
- Impaired mobility
- Musculoskeletal problems
- Bradykinesia of the limbs
- Poor muscle tone in limbs
- Poor limb coordination
- Poor coordination, trunk
- Poor standing posture
- Irregular gait pattern
- Falls
- Mood problems
- Feeling sad, blue, depressed
- History of depressed mood
- Tiredness all the time
- Depression (clinical impression)
- Sleep changes
- Restlessness
- Memory changes
- Short-term memory impairment
- Long-term memory impairment
- Changes in general mental functioning
- Onset of cognitive symptoms
- Clouding or delirium
- Paranoid features
- History relevant to cognitive impairment or loss
- Family history relevant to cognitive impairment or loss
- Impaired vibration
- Tremor at rest
- Postural tremor
- Intention tremor
- History of Parkinson's disease
- Family history of degenerative disease
- Seizures, partial complex
- Seizures, generalized
- Syncope or blackouts
- Headache
- Cerebrovascular problems
- History of stroke
- History of diabetes mellitus
- Arterial hypertension
- Peripheral pulses
- Cardiac problems
- Myocardial infarction
- Arrhythmia
- Congestive heart failure
- Lung problems
- Respiratory problems
- History of thyroid disease
- Thyroid problems
- Skin problems
- Malignant disease
- Breast problems
- Abdominal problems
- Presence of snout reflex
- Presence of the palmomental reflex
- Other medical history

**Frailty Index = number of deficits / total possible number of deficits**

# Accumulated Deficit Model (Rockwood) – Predictive Value



Frailty Index and death

# Assessment of Frailty –

## Short validated assessments

- **FRAIL** scale (Fatigue, Resistance, Ambulation, Illness, Loss of weight) – Morley et al. J Nutr Health Aging. 2012 July ; 16(7): 601–608
- **Clinical Frailty Scale** (Pictograms –need some familiarity with older person - [camapcanada.ca/Frailtyscale.pdf](http://camapcanada.ca/Frailtyscale.pdf))
- **Other** – eg Edmonton Frail Scale ([www.nscphealth.co.uk/edmontonscale-pdf](http://www.nscphealth.co.uk/edmontonscale-pdf)), Groningen Frailty Index (<http://www.bgs.org.uk/pdfs/assessment/gfi.pdf> )

# Assessment of Frailty – Short validated assessments

## Clinical Frailty Scale\*



**1 Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



**2 Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



**3 Managing Well** – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



**4 Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being “slowed up”, and/or being tired during the day.



**5 Mildly Frail** – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



**6 Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



**7 Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



**8 Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



**9. Terminally Ill** - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

### Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

\* 1. Canadian Study on Health & Aging, Revised 2008.

2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

# Frailty – “simple” clinical phenotypes



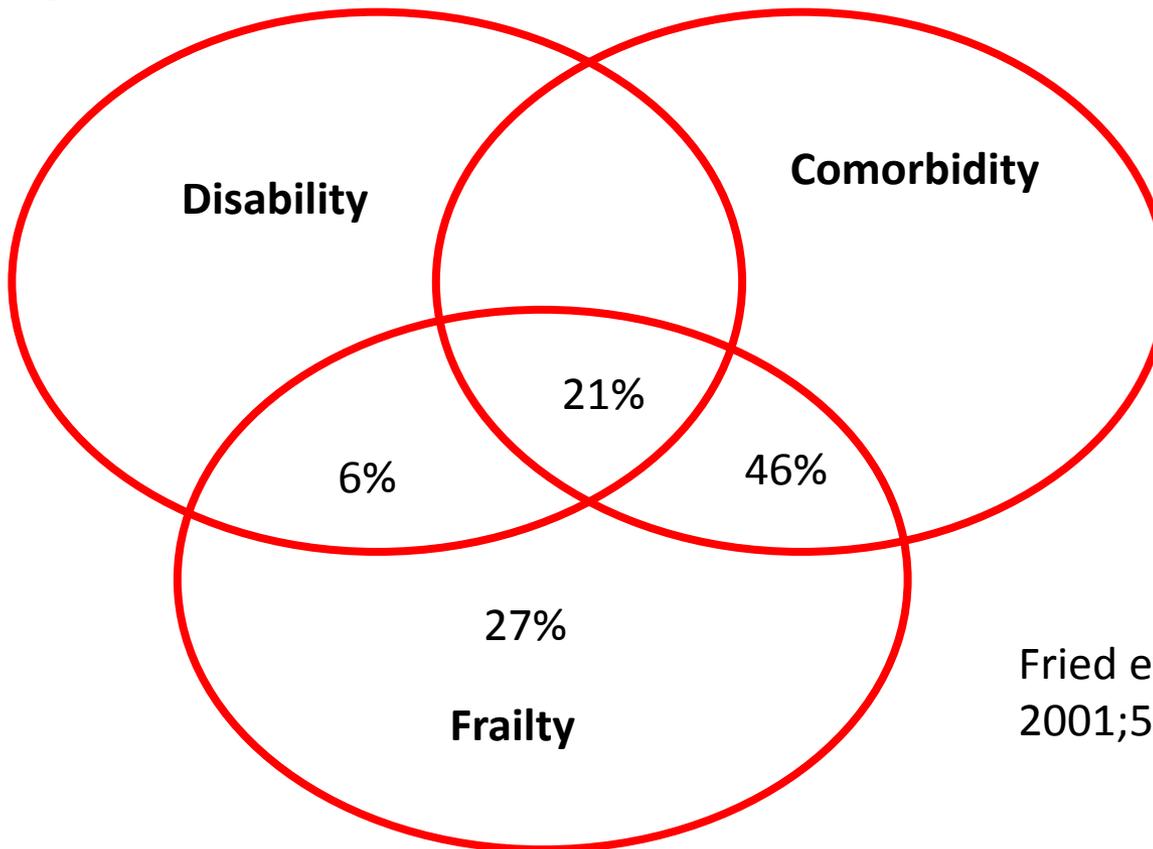
A : 90 – 95% - ‘obviously’ frail

B : 5 – 10% - sarcopaenic obesity



# Frailty is not disability, but most people with disabilities, whom health professionals see are frail

Percentages are for frail people



NB: This is the  
Cardiovascular Health  
Study – an  
epidemiological study

Fried et al. J Geront  
2001;56:M146-M156

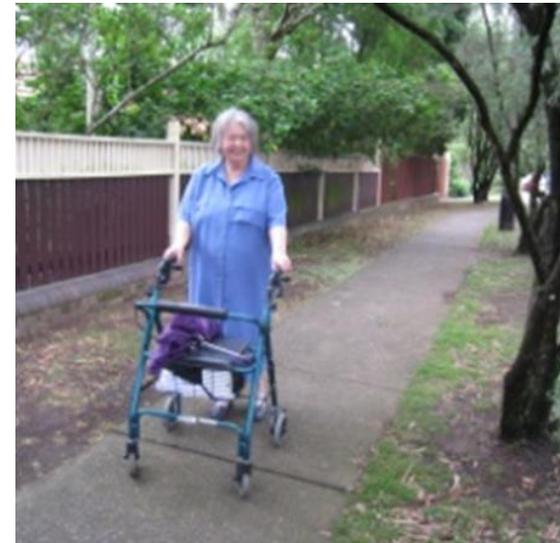
# Frailty and falls - epidemiology

- 30% of community dwelling older people fall each year
- Frail older people are between 1.2 and 3.6 more likely to fall, than non frail people
- Frailty is associated with bad outcomes - injury, reduced functioning, admission to residential aged care facilities

Lord et al 1993; Fried et al 2001; Nelson et al 2007; Tinetti & Williams 1997

# Frailty: is it treatable?

- If frailty is pre-disability, and loss of reserve
  - Improve reserve (physical & ? psychological)
- If 'treatment' is defined broadly
  - Exercise (strength, balance, endurance)
  - Nutrition (mainly under-, but over- sometimes)
  - Psychological / social factors
  - Chronic disease management



**OPINION**

**Open Access**

# Treating frailty-a practical guide

Nicola Fairhall<sup>1,2</sup>, Colleen Langron<sup>3</sup>, Catherine Sherrington<sup>2</sup>, Stephen R Lord<sup>4</sup>, Susan E Kurrle<sup>3</sup>, Keri Lockwood<sup>3</sup>, Noeline Monaghan<sup>1</sup>, Christina Aggar<sup>5</sup>, Liz Gill<sup>1</sup> and Ian D Cameron<sup>1\*</sup>

## **Abstract**

Frailty is a common syndrome that is associated with vulnerability to poor health outcomes. Frail older people have increased risk of morbidity, institutionalization and death, resulting in burden to individuals, their families, health care services and society. Assessment and treatment of the frail individual provide many challenges to clinicians working with older people. Despite frailty being increasingly recognized in the literature, there is a paucity of direct evidence to guide interventions to reduce frailty. In this paper we review methods for identification of frailty in the clinical setting, propose a model for assessment of the frail older person and summarize the current best evidence for treating the frail older person. We provide an evidence-based framework that can be used to guide the diagnosis, assessment and treatment of frail older people.

# Frailty and Falls : treatment

- Frailty is a risk factor for falls
- Falls risk factors can be assessed, eg via the Physiological Profile Assessment (PPA)
- Exercise with emphasis on strength and balance is a component of the FIT study intervention
- The FIT intervention should alter falls risk factors and may alter rate and risk of falls

# Frailty Intervention Trial (FIT)

- Frailty can be viewed as a transition phase in older people between good health and ill health
- Frailty can be treated
- Aim of study was to identify frail older people and address their frailty symptoms and signs

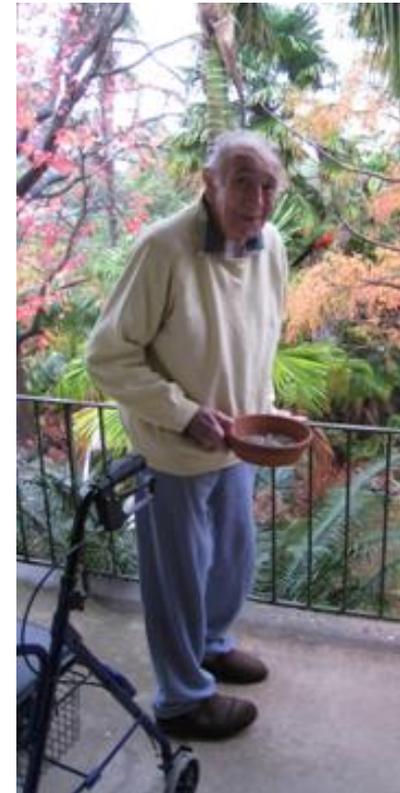
# FIT Program: Interventions



Exercise program – Weight bearing for better balance (WEBB)  
[http://www.webb.org.au/attachments/File/WEBB\\_draft\\_19.pdf](http://www.webb.org.au/attachments/File/WEBB_draft_19.pdf)

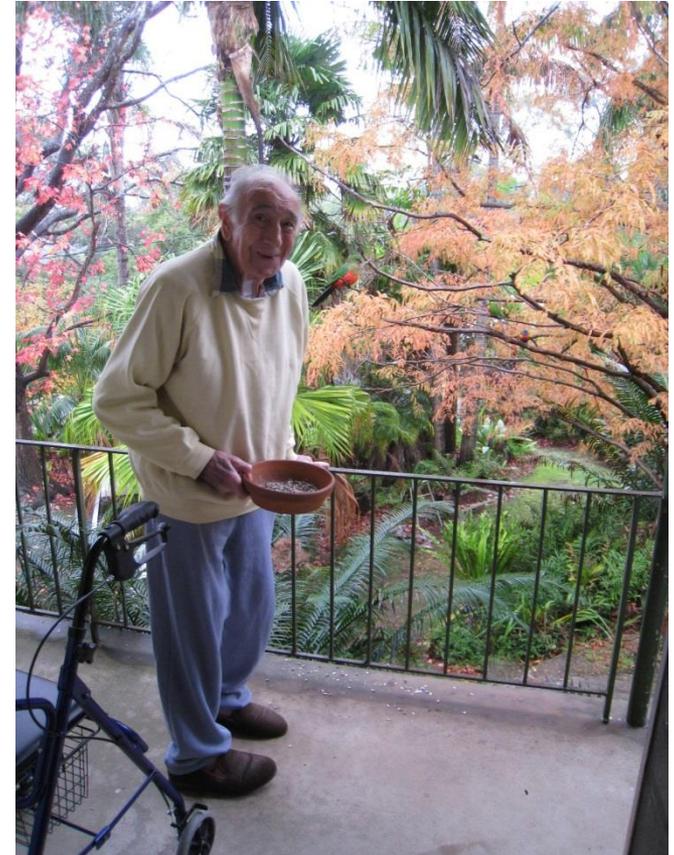
# The FIT Program: Participants

- Frail older people – mean age 83 years
- Women 68%
- Live alone 46%
- MMSE, mean 26, so generally cognitively intact
- Health conditions, mean 6
- 73% hospitalised in the months prior to the study



# Frailty Intervention Trial – headline results

- Reduced frailty (Cardiovascular Health Study criteria) - **NNT 7**
- Improved mobility (Short Physical Performance Battery) – **effect size ~ 0.4**
- Was cost effective, particularly for more frail participants
- Had benefits for carers
- Significant positive effects were seen at 12 months (not 4 months)
- Higher adherence was associated with greater improvement



# Mrs A

- 82 year old lady, lives on her own in an apartment up 1 flight of stairs
- Rarely goes out as very slow on stairs, and has help for shopping and cleaning, 2 falls in previous 6 months
- Frail:
  - Weight loss of approx 5 kg in previous 12 months
  - Low grip strength
  - Slow walking speed
  - Low physical activity
- Goals:
  - Improve nutritional status and gain weight
  - Be able to manage stairs confidently
  - Go shopping with daughter
  - Go to church and to church social group again

# Mrs A

- **Interventions:**

- WEBB exercises introduced gradually with involvement of daughter
- Progression to stairs with assistance
- Provision of a walking aid for walking outside
- Review by dietitian with suggestions for adequate breakfast, addition of nutritional supplements mid morning, meals on wheels
- Appropriate footwear purchased

- **Results:**

- Progressed through exercises slowly with regular encouragement from daughter and granddaughter
- Managed stairs with 2 standby assistants initially, then 1
- Able to go to church once weekly with pick up by friends
- Weight gain of 2 kgs and eating adequate meals

# Mrs T



# Mrs T



# Frailty and falls – the FIT intervention

- Median level of adherence in the 25% to 49% range
- WEBB program by the physiotherapist for 93% of participants , median 8 sessions, 51% had mobility goals, 40% equipment advice or provision
- Assessment and interventions – dietician 50%, geriatrician 25%, of participants
- Referred to specialist aged care services 41%
- Vitamin D recommended 21% and medication advice 30%

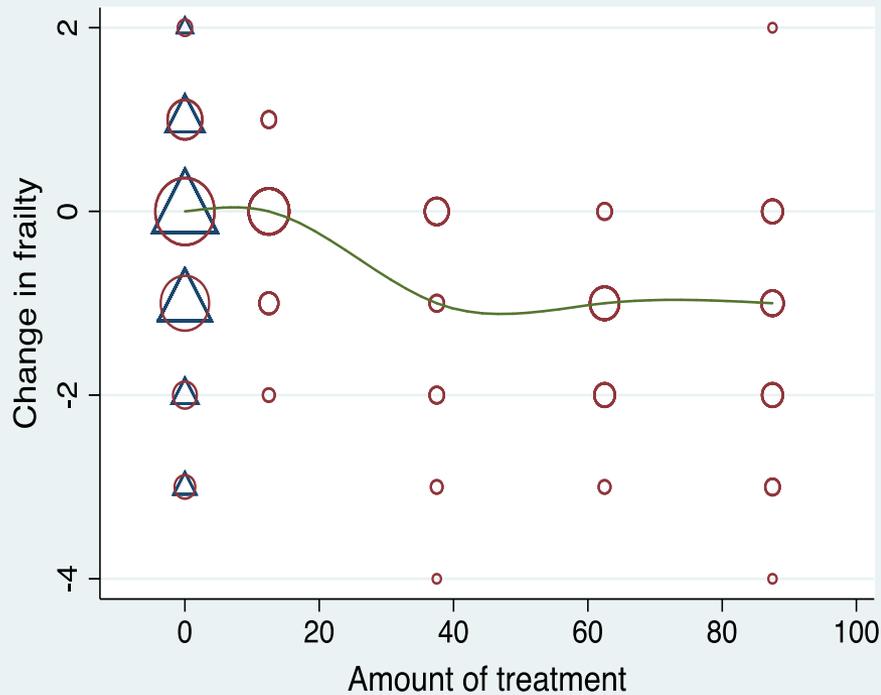
# Frailty and falls – the outcomes

- In intervention group, falls risk decreased in first 3 months and then returned to baseline
- In control group, progressive increase in falls risk
- Trend to better performance in PPA for intervention group at 12 months ( $p=0.07$ )
- At 12 months, intervention group better quadriceps strength and better sway (with no effect on reaction time, contrast sensitivity or proprioception)
- At 12 months, intervention group faster gait speed (0.06m/sec) and better SPPB

# Frailty and falls – the outcomes

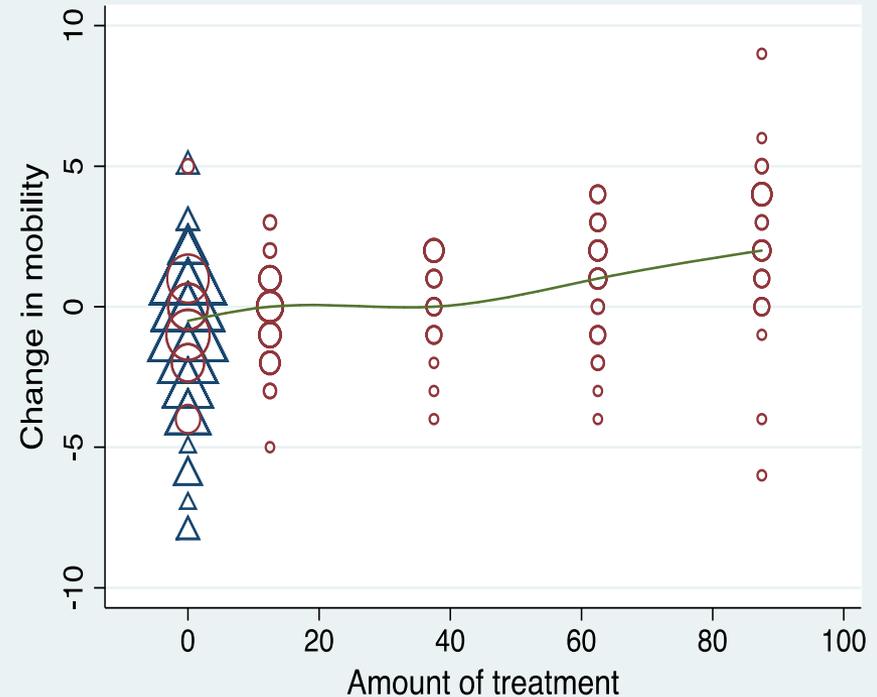
- 58% of participants fell during 12 month follow-up
- No difference between groups – incidence rate ratio 1.12 (CI 0.78 to 1.63)
- Not powered for falls (would need n=520 to detect 30% reduction in falls)

# Adherence : effect on frailty and mobility



△ Control    ○ Intervention

Fairhall et al. A multifactorial intervention for frail older people is more than twice as effective among those who are compliant: complier average causal effect analysis of a randomised trial. *J Physiotherapy* 2017;63(1):40-44



# Frailty and falls - conclusions

- Treating frailty is worthwhile and can be effective
- It is not yet known whether treating frailty reduces falls – it should!
- Frailty interventions have similarities to falls prevention interventions
- Frailty interventions are usually multicomponent



JAMDA

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Special Article

## The Asia-Pacific Clinical Practice Guidelines for the Management of Frailty



### Recommendations

- Use a validated measurement tool to identify frailty
- Prescribe physical activity with a resistance training component
- Reduce or deprescribe inappropriate medications

### Conditional recommendations

- Screen for, and address modifiable causes of, fatigue
- If unintentional weight loss, screen for causes and consider additional protein / calorie intake
- Prescribe vitamin D for people with deficiency