

Fighting frailty to stay on your feet

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**New England
Dementia Forum
9/08/2023**



Health
Northern Sydney
Local Health District

Frailty

Frailty and falls

Frailty and dementia

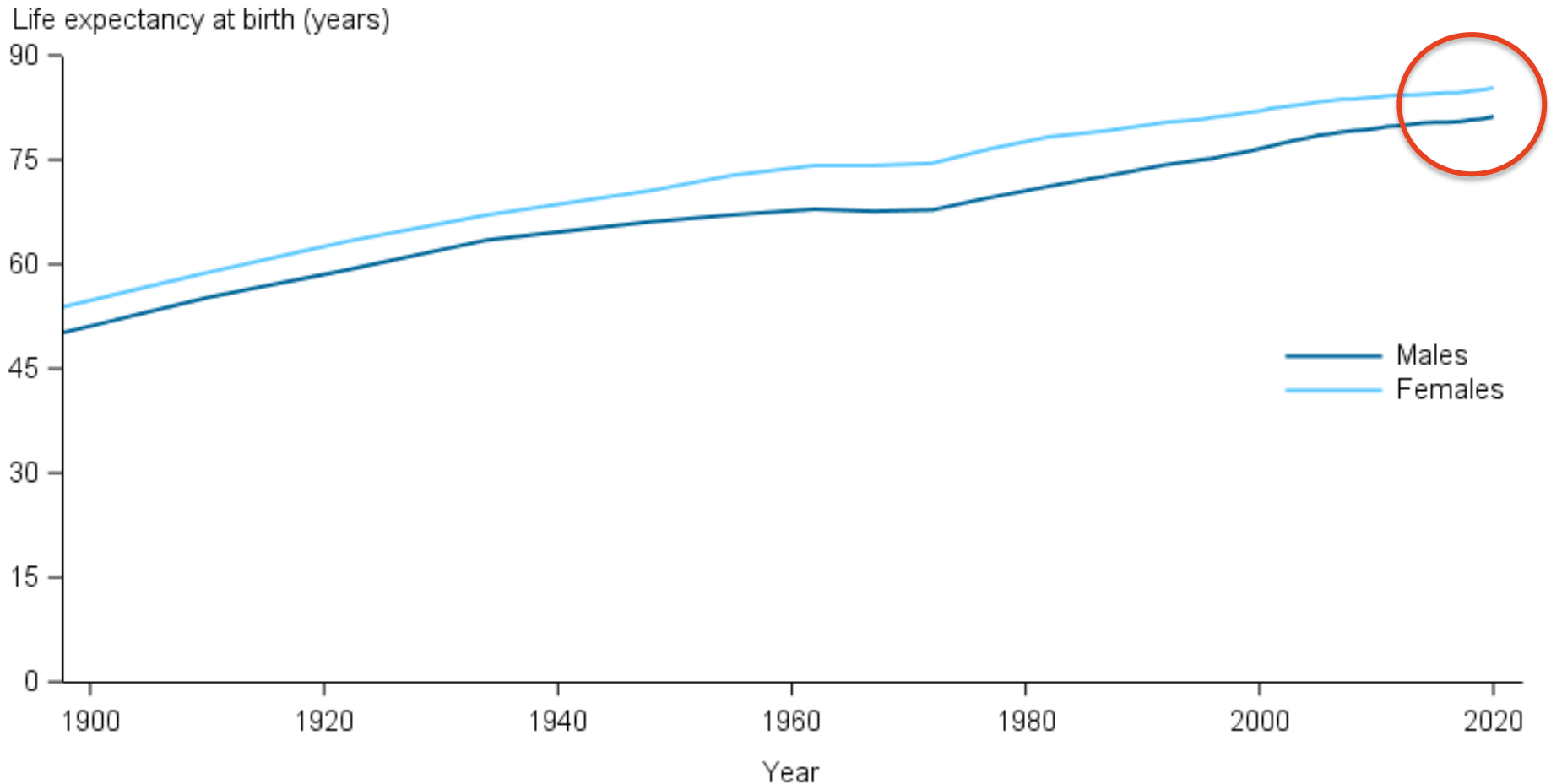
Dementia update



Life expectancy in Australia

Men: 81.2 years

Women: 85.2 years



What is frailty?



Frailty

- Frailty is an age associated decline in functioning across multiple physiological systems resulting in an increased vulnerability to stressors, and an increased chance of poor health outcomes

- **But what actually is frailty?**













How do we recognise frailty?



Definition of Frailty 1:

Physical phenotype: 'physical frailty'

Operationally defined as:

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

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

FRAIL Scale

	Question	Scoring	Result
F	Fatigue How much of the time during the past 4 weeks did you feel tired? A = All or most of the time B = Some, a little or none of the time	A = 1 B = 0	
R	Resistance In the last 4 weeks by yourself and not using aids, do you have any difficulty walking up 10 steps without resting?	Yes = 1 No = 0	
A	Ambulation In the last 4 weeks by yourself and not using aids, do you have any difficulty walking 300 meters?	Yes = 1 No = 0	
I	Illness Did your Doctor ever tell you that you have? <input type="checkbox"/> Hypertension <input type="checkbox"/> Diabetes <input type="checkbox"/> Cancer (not a minor skin cancer) <input type="checkbox"/> Chronic lung disease <input type="checkbox"/> Heart Attack <input type="checkbox"/> Congestive heart failure <input type="checkbox"/> Angina <input type="checkbox"/> Asthma <input type="checkbox"/> Arthritis <input type="checkbox"/> Stroke <input type="checkbox"/> Kidney disease	0 – 4 answers ✓ = 0 5 – 11 answers ✓ = 1	
L	Loss of weight Have you lost more than 5kg or 5% of your body weight in the past year?	Yes = 1 No = 0	
Total Score			
Scoring: Robust = 0, Pre-frail = 1-2, Frail = >3			

Definition of Frailty 2:

Accumulated deficits model: ‘deficit accumulation frailty’

- Biological process
- “Accumulated deficits”
- Gender specific
- Clearly related to mortality
- Expressed as an “index” (> 0.2 likely to be pre-frail, > 0.25 likely to be frail) or as a rating on the Clinical Frailty Scale

Frailty Index

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

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.

Definition of frailty 3:

Multidimensional model of frailty

- Frailty is a dynamic state affecting an individual who experiences losses in one or more domains of human functioning (physical, psychological, social), which is caused by the influence of a range of variables and which increases the risk of adverse outcomes

Tilburg Frailty Indicator Questionnaire



Part A Determinants of frailty

1. Which sex are you?
2. What is your age?
3. What is your marital status?
4. In which country were you born?
5. What is the highest level of education you have completed?
6. Which category indicates your net monthly household income?
7. Overall, how healthy would you say your lifestyle is?
8. Do you have two or more diseases and/or chronic disorders?
9. Have you experienced one or more of the following events during the past year?
 - the death of a loved one
 - a serious illness yourself
 - a serious illness in a loved one
 - a divorce or ending of an important intimate relationship
 - a traffic accident
 - a crime
10. Are you satisfied with your home living environment?

Tilburg Frailty Indicator (TFI)*
Gobbens RJJ, van Assen MALM, Luijckx KG, Wijnen-Sponselee MTH, Schols JMGA. The Tilburg Frailty Indicator: psychometric properties. J Am Med Dir Assoc 2010; 11(5):344-355.

Part B Components of frailty

B1: Physical components

11. Do you feel physically healthy?
12. Have you lost a lot of weight recently without wishing to do so?
Do you experience problems in your daily life due to:
13. difficulty in walking?
14. difficulty maintaining your balance?
15. poor hearing?
16. poor vision?
17. lack of strength in your hands?
18. physical tiredness?

B2 Psychological components

19. Do you have problems with your memory?
20. Have you felt down during the last month?
21. Have you felt nervous or anxious during the last month?
22. Are you able to cope with problems well?

B3 Social components

23. Do you live alone?
24. Do you sometimes miss having people around you?
25. Do you receive enough support from other people?

The Edmonton Frail Scale

NAME :

d.o.b. : _____

DATE : _____

Frailty domain	Item	0 point	1 point	2 points
Cognition	Please imagine that this pre-drawn circle is a clock. I would like you to place the numbers in the correct positions then place the hands to indicate a time of 'ten after eleven'	No errors	Minor spacing errors	Other errors
General health status	In the past year, how many times have you been admitted to a hospital?	0	1-2	≥2
	In general, how would you describe your health?	'Excellent', 'Very good', 'Good'	'Fair'	'Poor'
Functional Independence	With how many of the following activities do you require help? (meal preparation, shopping, transportation, telephone, housekeeping, laundry, managing money, taking medications)	0-1	2-4	5-8
Social support	When you need help, can you count on someone who is willing and able to meet your needs?	Always	Sometimes	Never
Medication use	Do you use five or more different prescription medications on a regular basis?	No	Yes	
	At times, do you forget to take your prescription medications?	No	Yes	
Nutrition	Have you recently lost weight such that your clothing has become looser?	No	Yes	
Mood	Do you often feel sad or depressed?	No	Yes	
Continence	Do you have a problem with losing control of urine when you don't want to?	No	Yes	
Functional performance	I would like you to sit in this chair with your back and arms resting. Then, when I say 'GO', please stand up and walk at a safe and comfortable pace to the mark on the floor (approximately 3 m away), return to the chair and sit down'	0-10 s	11-20 s	One of : >20 s , or patient unwilling , or requires assistance
Totals	Final score is the sum of column totals			

Scoring :

0 - 5 = Not Frail

6 - 7 = Vulnerable

8 - 9 = Mild Frailty

10-11 = Moderate Frailty

12-17 = Severe Frailty

TOTAL

/17

Administered by : _____

Is this person frail?



Edmonton Frail Scale:

10/17 Mod frail

FRAIL Scale: 4/5 Frail

Clin Frailty Scale: 6/9 Mod frail

Is this person frail?



Edmonton Frail Scale:
10/17 Moderately frail

FRAIL Scale: 0/5 Robust

Clin Frailty Scale: 6/9
Moderately frail

Prevalence of frailty

- Australian community over 65 yo: **21%** frail, 48% pre-frail
- Australian acute hospital medical inpatients over 75 yo: **55%**
- European community over 65 yo: **17%**
- International systematic review and meta-analysis over 50 yo: **12%** physical frailty model, **24%** accumulated deficits model
- **Despite being a concept for more than 20 years, frailty is only just entering clinical practice with screening and intervention occurring in both primary care and hospital based care**

Lancet Series on Frailty Oct 2019

Frailty 1



Frailty: implications for clinical practice and public health

Emiel O Hoogendijk, Jonathan Afilalo, Kristine E Ensrud, Paul Kowal, Graziano Onder, Linda P Fried

Frailty is an emerging global health burden, with major implications for clinical practice and public health. The *Lancet* 2019; 394: 1365-75



Frailty 2

Management of frailty: opportunities, challenges, and future directions

Elsa Dent, Finbarr C Martin, Howard Bergman, Jean Woo, Roman Romero-Ortuno, Jeremy D Walston

Lancet 2019; 394: 1376-86 Frailty is a complex age-related clinical condition characterised by a decline in physiological capacity across several

<https://www.thelancet.com/series/frailty>

Consequences of frailty

- Frailty is associated with:
 - increased likelihood of hospitalisation and longer LOS
 - Increased risk of post op complications after general surgery, vascular surgery, neurosurgery, trauma surgery
 - Increased risk of urinary tract infection, pneumonia, DVT
 - increased risk of institutionalisation and death
 - **increased risk of falls and fractures**
 - **increased likelihood of developing dementia**
- **Frailty is a more accurate predictor of poor outcomes after trauma, surgery, cancer, hip fracture than age**

So what can we do about frailty?



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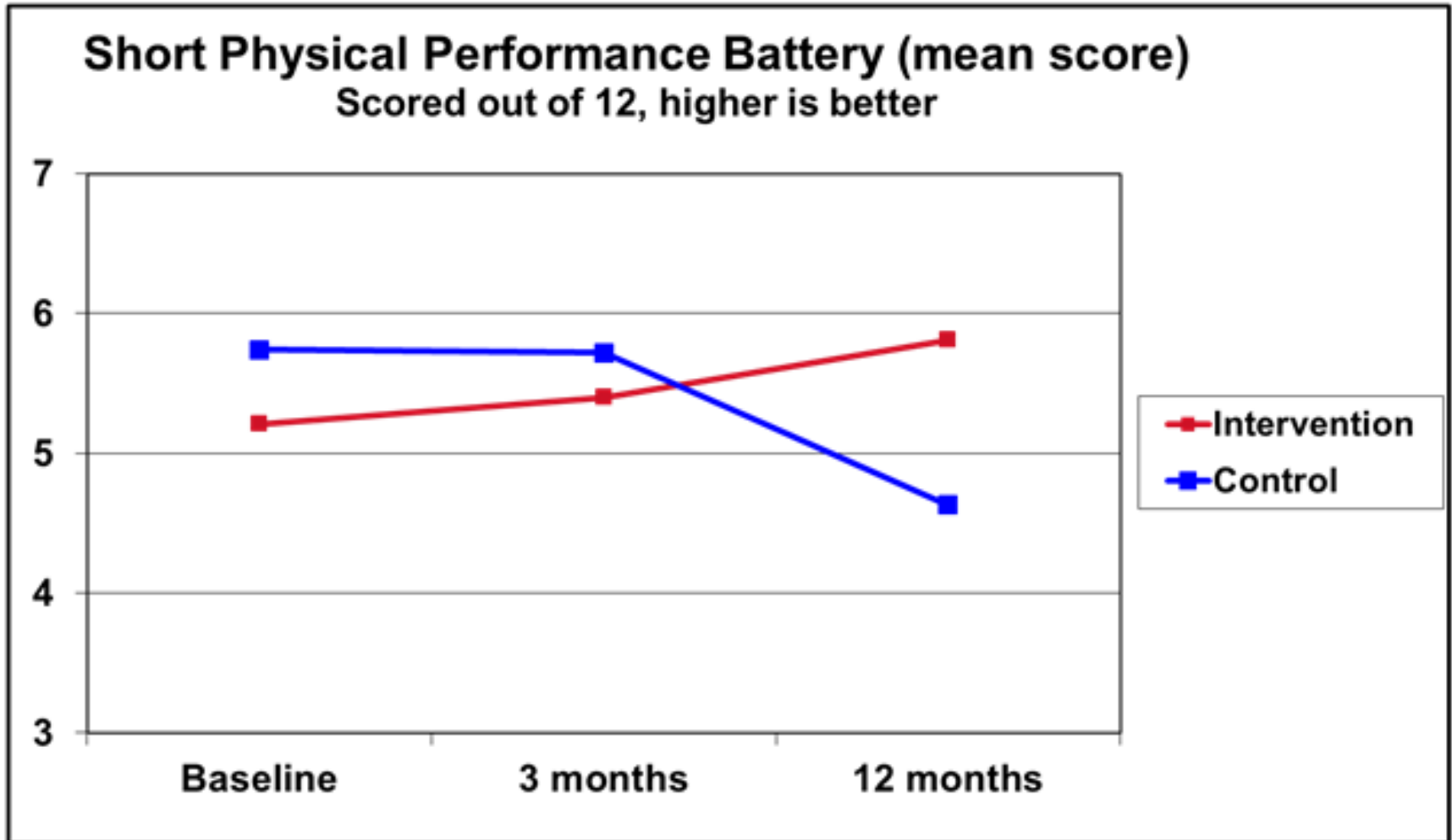
Frailty Intervention Trial (FIT): Sydney 2011

- RCT of 241 community dwelling people aged 70yrs and over, assessed as physically frail using Fried Frailty criteria (3 or more criteria)
- Randomised to intervention (mainly exercise and nutritional advice) or control (normal care)
- Blinded follow-up at 3 and 12 months looking at physical frailty and physical performance (SPPB)





FIT Program Results



Case Mrs T: start of intervention



Fried criteria - “frail” – Walking speed, Exhaustion, Grip, Energy expenditure

Case Mrs T: end of intervention



No longer “frail” – only grip strength

Frailty Clinical Practice Guidelines

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

Recommendations:

– Strong:

- Use a validated measurement tool to **identify frailty**
- Prescribe **physical activity** with a resistance training component
- Address **polypharmacy**

– Conditional

- Screen for, and address, **fatigue**
- Address **weight loss** with **protein/calorie** supplementation if appropriate
- Prescribe **Vit D** if Vit D deficient

Current frailty study: FORTRESS (Frailty in Older people: Treatment Research Examining Separate Settings)

- 3 year stepped wedge trial identifying frailty using FRAIL Scale in patients 75 years and over in acute hospital wards, developing an intervention using the Clinical Practice Guidelines, and following up the patient in the community post discharge with GP input
- 12 month outcomes are hospital readmissions, frailty status, and quality of life
- Occurring in South Australia (Flinders) and in NSW (Hornsby)
- Previous study data indicate about 55% of admitted medical inpatients are frail
- Delay due to COVID, but recruitment finished and followup continues

Frailty information for primary care

www.sydneynorthhealthnetwork.org.au/programs/frailty/



The screenshot shows the top navigation bar of the Sydney North Health Network website. It includes a hamburger menu icon, the PHN Northern Sydney logo (An Australian Government Initiative), the Sydney North Health Network logo, a phone icon, and an email icon. Below the navigation bar is a banner image of five diverse elderly people smiling. The breadcrumb trail reads: Home > Programs > Healthy Ageing & Frailty. The main heading is 'Healthy Ageing & Frailty'. Below the heading are three buttons: 'Clinical Resources' (blue), 'Referrals' (orange), and 'Patient Information' (green).



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Increased risk of falls with frailty



Increased risk of falls with frailty

- Multiple studies have shown that physical frailty predicts falls in older people
- 10 year study of 6000 community living people aged >65 years:
 - Physical frailty was associated with increased rate of falls (1.3 times increase)
- Study of 4125 community living people aged >60 years:
 - Short Physical Performance Battery scores <8 for men and <7 for women (meaning they are frail) predicted increased risk of falls
- Study of 367 community living people aged > 60 years:
 - Frailty measured by physical frailty phenotype, falls risk measured by Fallscreen (quads strength, proprioception, body sway, reaction time, visual contrast sensitivity) showed **increased falls risk with increasing frailty**

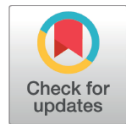
So how does that help us in preventing falls?

- Treatment for frailty is **exercise** (resistance, aerobic, balance) improving nutrition, and addressing polypharmacy. It also includes Vit D if deficient
- Intervention to prevent falls (or further falls) is **exercise** (resistance, balance), addressing polypharmacy, and Vit D if deficient, also addressing vision, footwear, home hazards, low BP etc
- Encouraging older people to be more active is important for their future health, and prescribing resistance training is an essential part of this
- And **exercise** (aerobic and resistance) is important in the **prevention of dementia**

It is never too late to start

BMJ 2020;368:m402 doi: 10.1136/bmj.m402 (Published 5 February 2020)

Page 1 of 2



EDITORIALS

Exercise in people over 85

Advanced age is no barrier to the benefits of tailored exercise

Mikel Izquierdo *professor*^{1,2}, John E Morley *professor*³, Alejandro Lucia *professor*^{2,4}

to benefit from it. Generalists should advise all patients, regardless of age, to be as active as possible. Medical schools should teach students that skeletal muscle remains a plastic, adaptable tissue throughout the human lifespan. It is never too late—and you are never too old—to contract muscles.

Another way to manage frailty



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ABC Old People's Home for 4 Year Olds

Series 1

- A pre-post intervention study of frail and pre-frail older people living in a retirement village in independent or supported accommodation in late 2018
- Intervention over 7 weeks: interaction with ten 4 year-olds
- N = 11, mean age 87.3 years (range 78-95)
- Primary outcomes: walking speed, handgrip strength, tandem stance (balance), depression screen (Geriatric Depression Scale)



ABC Old People's Home for 4 Year Olds

Series 1: Results

- Overall clinically and statistically significant improvements in all primary outcome measures, with all participants improving
- Effect sustained over 12 months in many participants
- Interactions between children and older people have continued
- Awarded an International Emmy 2020: 'Best non-scripted entertainment'



ABC Old People's Home for 4 Year Olds

Series 2

- A pre-post intervention study of frail and pre-frail older people living alone in the community in late 2020
- Intervention over 6 weeks: interaction with ten 4 year-olds
- N = 11, mean age 85.5 years (range 76-94)
- Primary outcomes: frailty including walking speed, handgrip strength, tandem stance (balance), depression screen (Geriatric Depression Scale - Brief), QoL (Visual Analogue)



ABC Old People's Home for 4 Year Olds

Series 2: Results

- Overall improvement in all primary outcome measures
- Participants improved particularly in components of **frailty** (6 improving significantly from frail to pre-frail or robust) and **quality of life** (all rating 7 out of 10 or higher) with average improvement from 6.3 to 8.5
- Effect sustained 6 months later
- Interactions between children and older people continue



Dementia prevention
Dementia research update
Dementia drugs



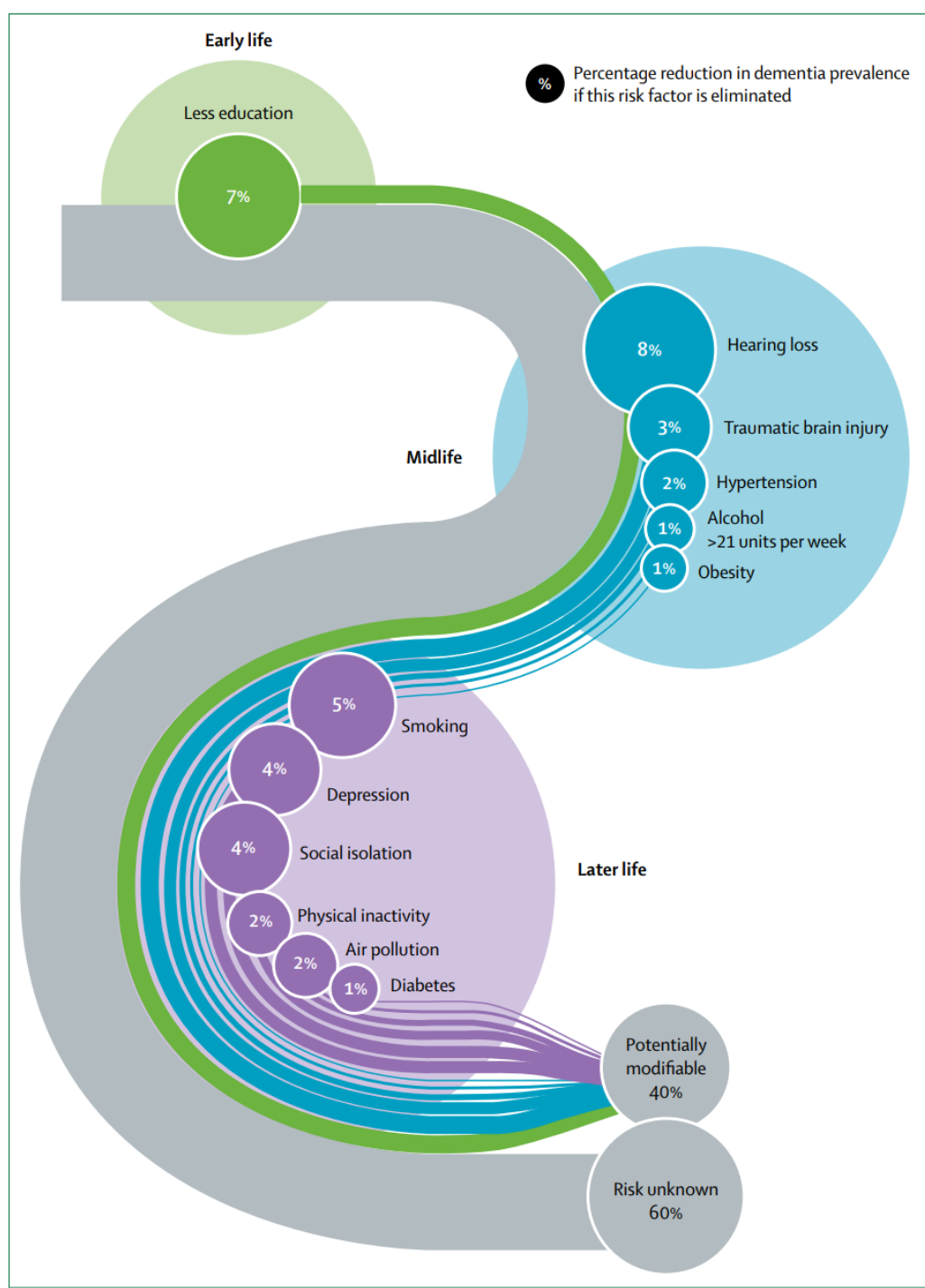
Dementia Prevention:

40% of dementia is preventable



Risk factors that can be modified to reduce dementia risk

Lancet 2020



Dementia prevention – reduce these risk factors

1 Physical inactivity

2 Smoking

3 Excessive alcohol consumption

4 Air pollution

5 Head injury

6 Infrequent social contact

7 Less education

8 Obesity

9 Hypertension

10 Diabetes

11 Depression

12 Hearing impairment

12
dementia
risk factors

Source: Livingston et al. A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission

www.alzint.org

Dementia research update

from AAIC July 2023

- Increasing importance of TDP-43 (protein) detected in brain of people with dementia. Already known to be implicated in most motor neuron disease and 40% of fronto temporal dementia
 - LATE – limbic predominant age related TDP-43 encephalopathy – seen in 30 to 50% of dementia
- Importance of neighbourhood greenness – people in greener environments have lower risk of AD and VaD (? Related to air pollution). Shown in several very large cohort studies
- Importance of treating mid life deafness to prevent cognitive impairment
- Exposure to oestrogen (incl HRT) inversely related to risk of dementia ie. Longer exposure to oestrogen lowers dementia risk

Update on drugs for Alzheimer's disease

- Cholinesterase inhibitors (donepezil, rivastigmine, galantamine) and memantine
 - provide symptomatic treatment and can improve memory and function
 - ChEI appear to slow progression of the disease and reduce all cause mortality in a systematic review of 24 studies
- Monoclonal antibodies targeting amyloid in the brain
 - A number of failed studies
 - Lecanemab – 18 months study – cleared amyloid from brain, and difference in CDR-SB was 0.45 points (in 18 point scale). Significant side effects and requires 2 weekly IV infusions and 3 monthly MRIs
 - Donanemab – 18 months study – cleared amyloid from brain, and difference in CDR-SB was 0.6 points (in 18 point scale). In people with high tau levels there was no effect. 25% side effects and 3 deaths in 860 people). Requires monthly IV infusions and 3 monthly MRIs. Gain of between 3 and 7 months of time.
 - Have to show amyloid and tau on neuroimaging for inclusion



The Dementia Guide

For people living
with dementia, their
families and carers.

[dementia.org.au/
the-dementia-
guide](https://dementia.org.au/the-dementia-guide)



Questions



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