

# Reducing dementia risk: best evidence & challenges ahead

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KR founded Ardea Outcomes (formerly DGI Clinical), which has contracts with pharma and device manufacturers for individualized outcome measurement, including in dementia.

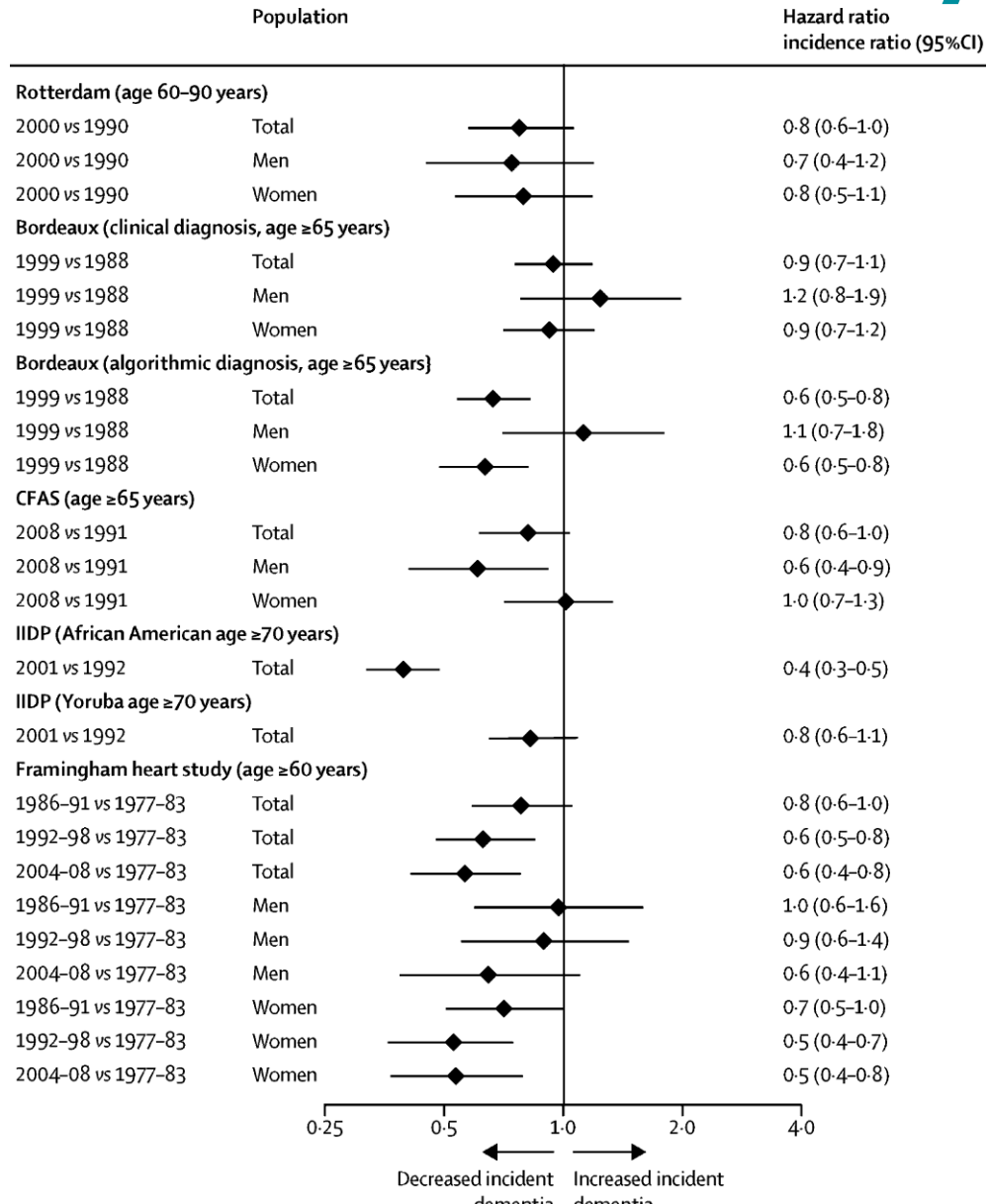
LM has no disclosures.

# Number of People with Dementia is Rising – but that's not the whole story

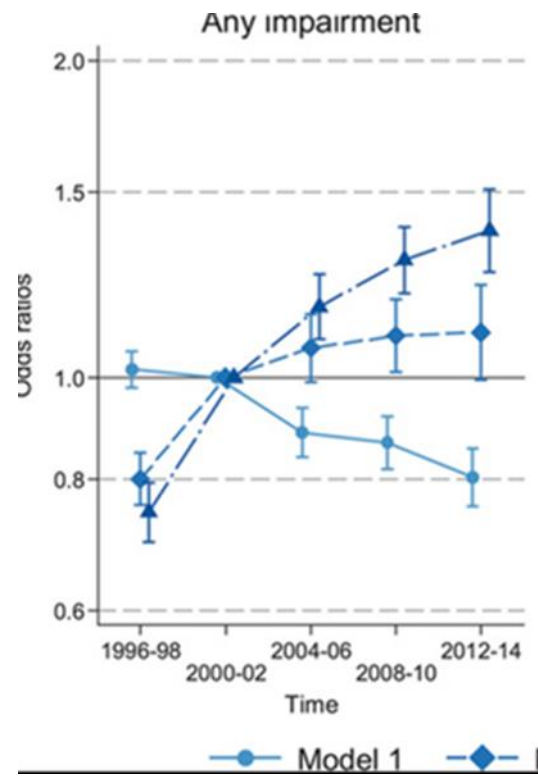
## Falling dementia incidence?

Livingston et al.,  
Lancet 2020 396;413-446

Wolters FJ et al.  
Neurology 2020; 95(5)  
E-pub Aug 4  
doi.org/10.1212/WNL.000000000010022



## Or rising cognitive impairment?

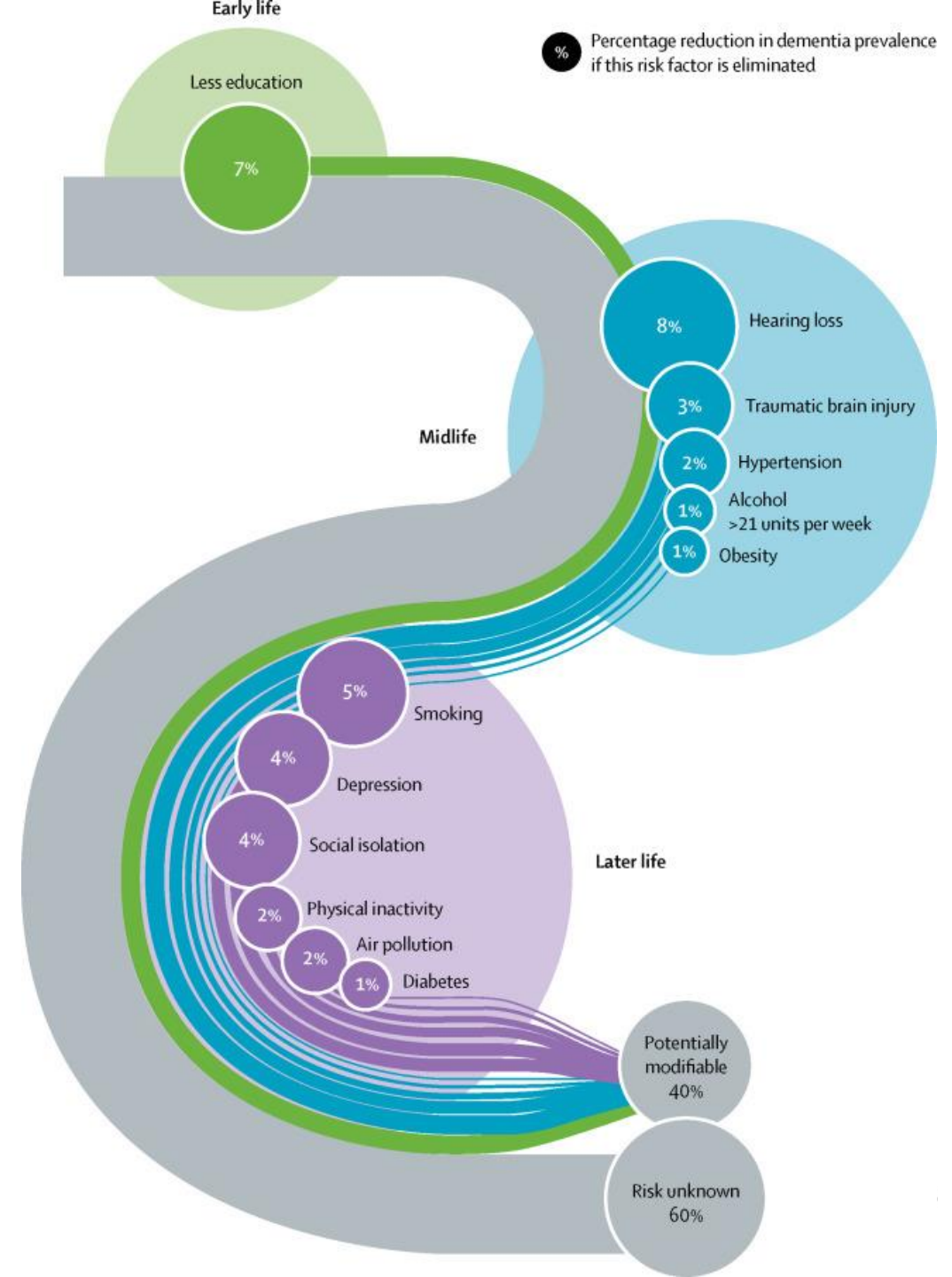


Hale et al.  
Epidemiology  
31:745-574

# Population Attributable Fraction

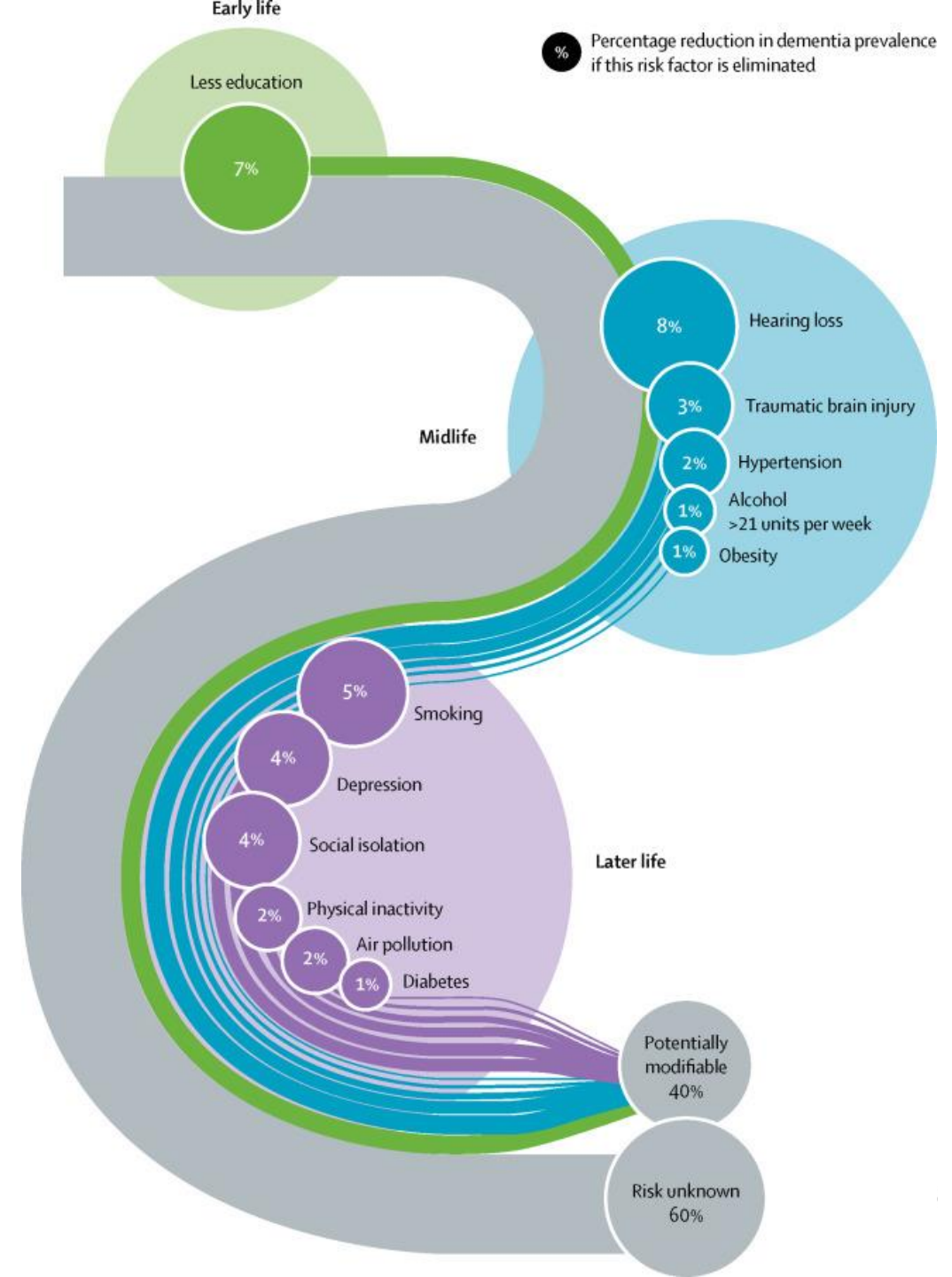
“Although behaviour change is difficult and some associations might not be purely causal, individuals have a huge potential to reduce their dementia risk.”

-Livingston et al.  
2020



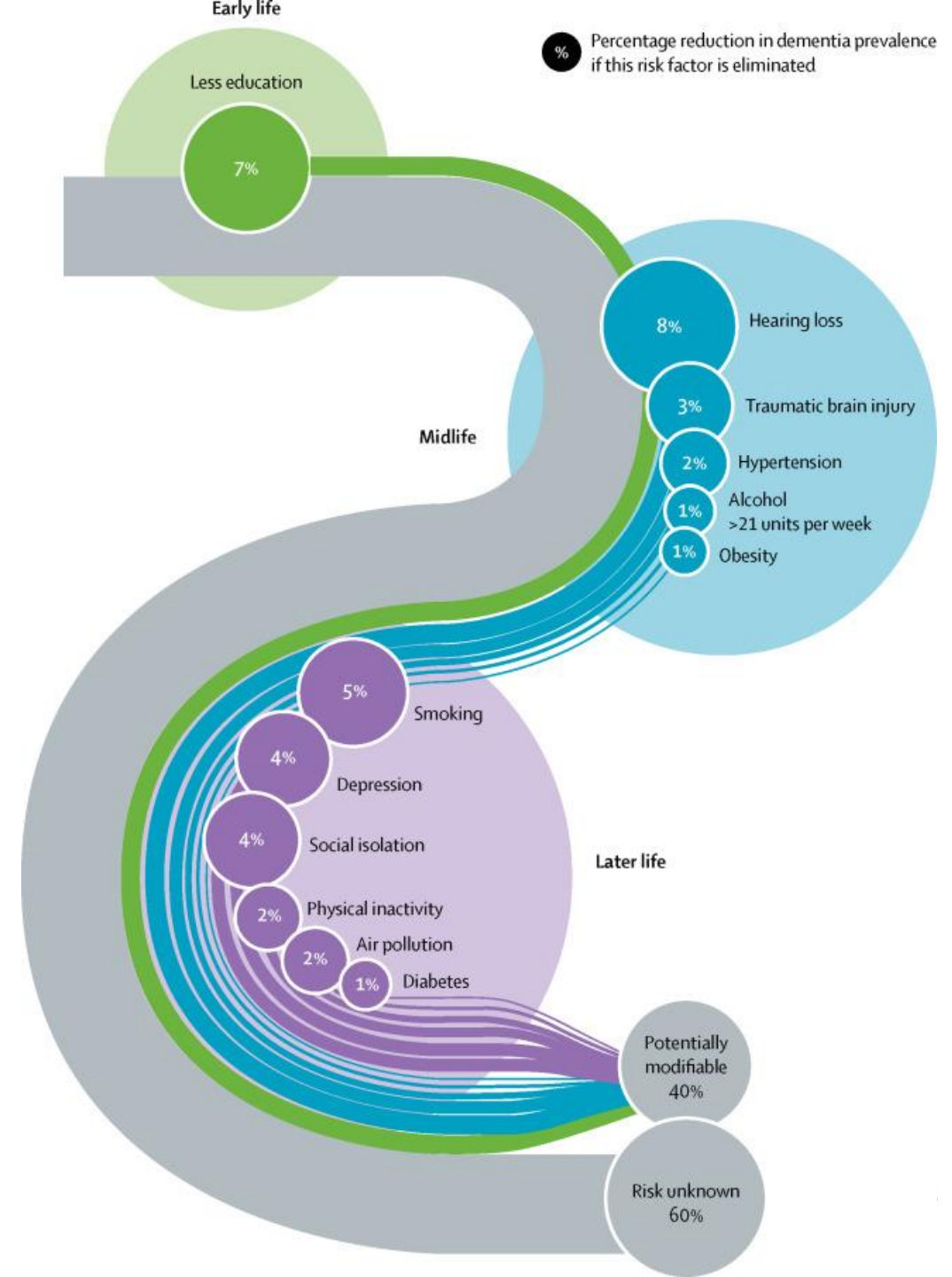
# A Canadian update: Consensus Conference on the Diagnosis of Treatment of Dementia

- Physical exercise
- Social engagement & education
- Nutrition
- Hearing loss
- Frailty
- Cognitive training & rehabilitation
- Sleep
- Medications
- \*Vascular risk factors covered elsewhere



# A Canadian update: Consensus Conference on the Diagnosis of Treatment of Dementia

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PRONOUNCEMENT

**Practice guideline update summary: Mild  
cognitive impairment**  
Report of the Guideline Development, Dissemination, and Implementation  
Subcommittee of the American Academy of Neurology

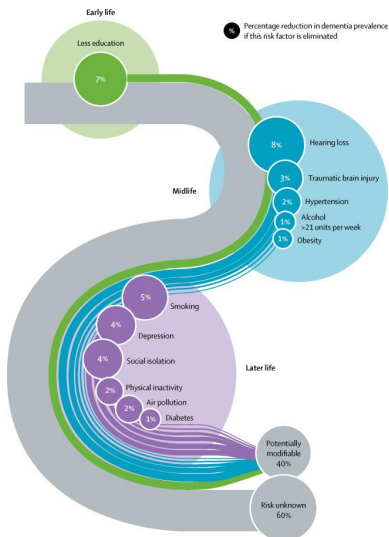
Ronald C. Petersen, MD, PhD, Oscar Lopez, MD, Melissa J. Armstrong, MD, MSc, Thomas S.D. Gitchoin,  
Mary Ganguli, MD, MPH, David Gloss, MD, MPH&TM, Gary S. Gronseth, MD, Daniel Marson, JD, PhD,  
Tamará Pringsheim, MD, Gregory S. Day, MD, MSc, Mark Sager, MD, James Stevens, MD, and  
Alexander Rae-Grant, MD

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Neurology® 2018;90:1-10. doi:10.1212/WNL.0000000000004826



2018 Physical Activity  
Guidelines Advisory  
Committee  
Scientific Report



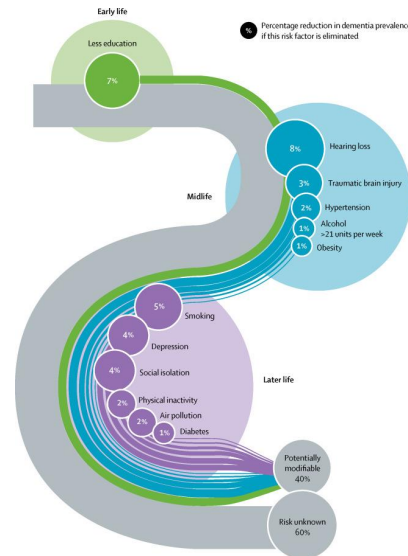
We recommend physical activity interventions of at least moderate intensity to improve cognitive outcomes among older adults and adults with mild cognitive impairment

- Aerobic exercise
- Resistance training
- Tai Chi

We recommend physical activity interventions to reduce risk of dementia, including Alzheimer's disease and vascular dementia.



2018 Physical Activity  
Guidelines Advisory  
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Scientific Report



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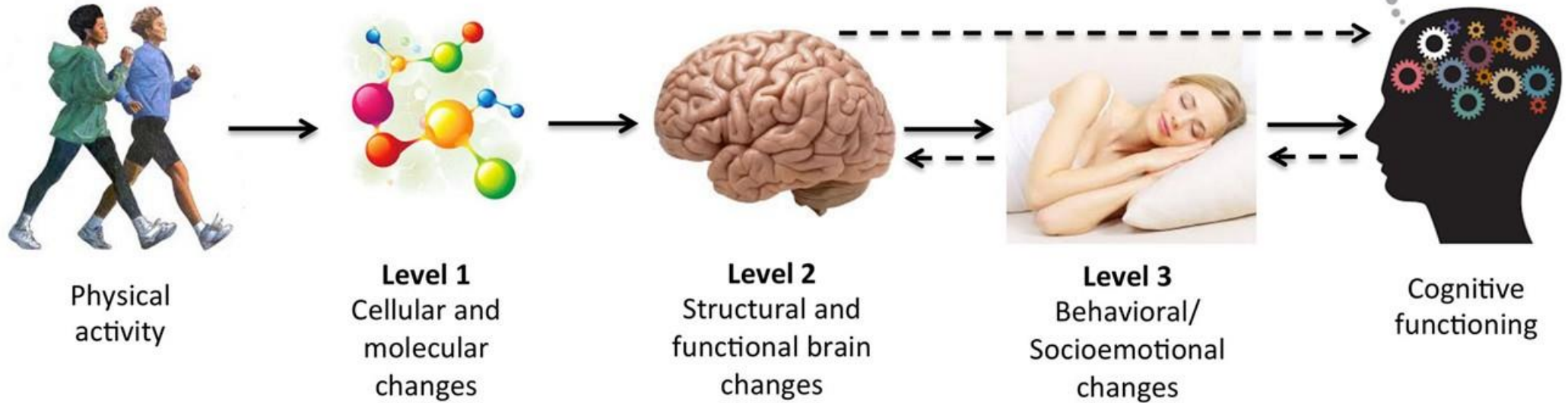


# Indications for Type of Exercise

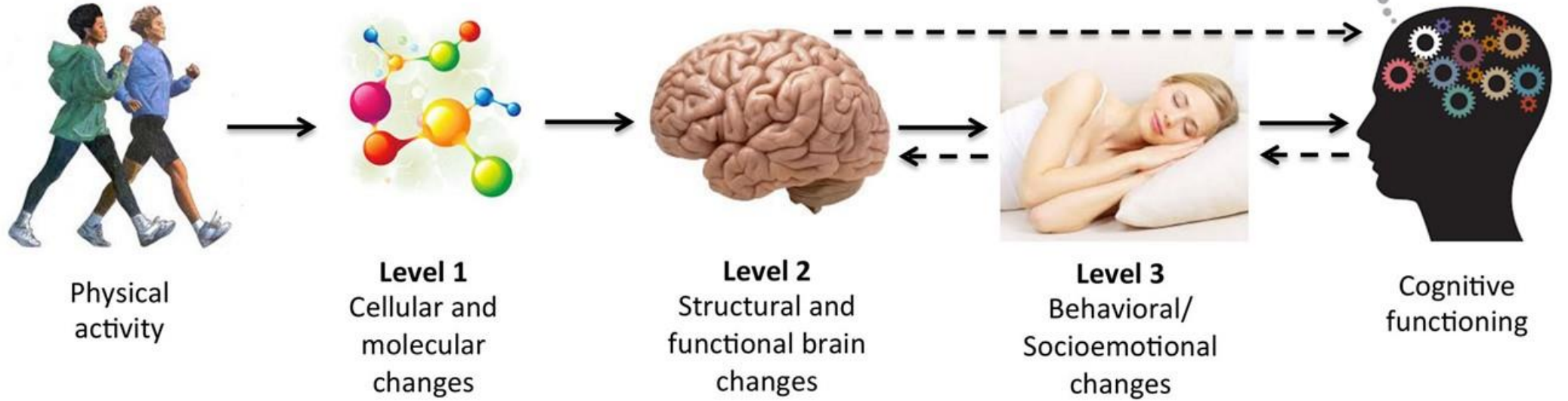
| Characteristic | Recommendation                                                                                                                                                                                  |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency      | <input checked="" type="checkbox"/> Low-high frequency (1 to 7 days/week)                                                                                                                       |
| Intensity      | <input type="checkbox"/> Low intensity<br><input checked="" type="checkbox"/> Moderate-high                                                                                                     |
| Time           | <input type="checkbox"/> ≤45min per session<br><input checked="" type="checkbox"/> >45min per session                                                                                           |
| Type           | <input checked="" type="checkbox"/> Aerobic exercise<br><input checked="" type="checkbox"/> Resistance exercise<br><input checked="" type="checkbox"/> Tai chi<br><input type="checkbox"/> Yoga |



# But how does physical activity work?



# But how does physical activity work?



# And what's the risk? If you do get dementia:



**BENEFITS OF PHYSICAL ACTIVITY**

IMPROVED ABILITY  
TO MAINTAIN DAILY  
FUNCTION AND  
INDEPENDENCE  
**DESPITE DEMENTIA**

IMPROVED  
AEROBIC FITNESS

IMPROVED  
STRENGTH

IMPROVED BALANCE  
AND MOBILITY

IMPROVED  
COGNITIVE ABILITIES

# So how do I get started?

**“Brush your teeth”**

**“If you love your work, you’ll never work a day in your life”**

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↓  
**“Brush your teeth”**

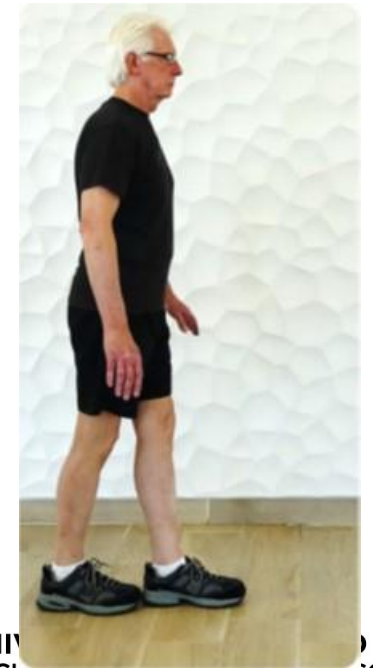
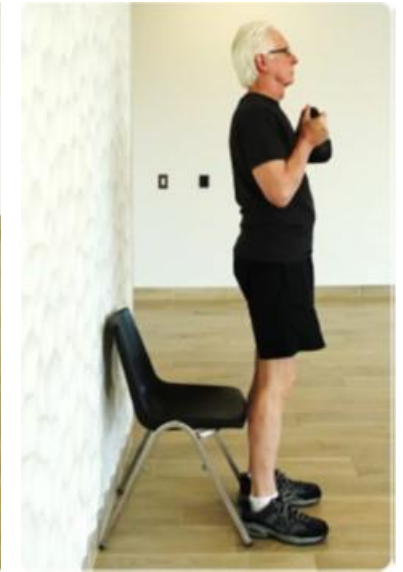
1. Walk most days
  - Start with what you can do
  - Work up to 45-60min/day
2. Challenge your muscles
  - Bodyweight, weights, bands
3. Challenge your balance control



# So how do I get started?

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# So how do I get started?

**“Brush your teeth”**

**“If you love your work, you’ll never work a day in your life”**

- Do something you love
- With someone you like
- Do it often



# Do everything you can to support change

“Although behaviour change is difficult and some associations might not be purely causal, individuals have a huge potential to reduce their dementia risk.”

-Livingston et al. 2020



## #1: Find someone to:

- Support you
- Encourage you
- Celebrate your successes
- Coach you

+ Knowledge

+ Skills

+ Location

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- + Knowledge
- + Skills
- + Location

Nutrition  
Sleep  
Cognitive, social  
engagement

# Further argument for social engagement & support

We recommend attention to social circumstances and supports across the life course, including poverty reduction strategies and opportunities for social engagement.

- Social isolation and loneliness is linked with increased dementia risk -- may not be causal
- Difficult to study in a trial, but many interventions are delivered in group (social formats)

# Hearing Loss: New Kid on the Block

Hearing loss has been associated with dementia in several longitudinal, observational studies.

Some trials suggest better cognition with properly fitted, worn, and adjusted hearing aids.

The biological rationale has become ever more sophisticated.

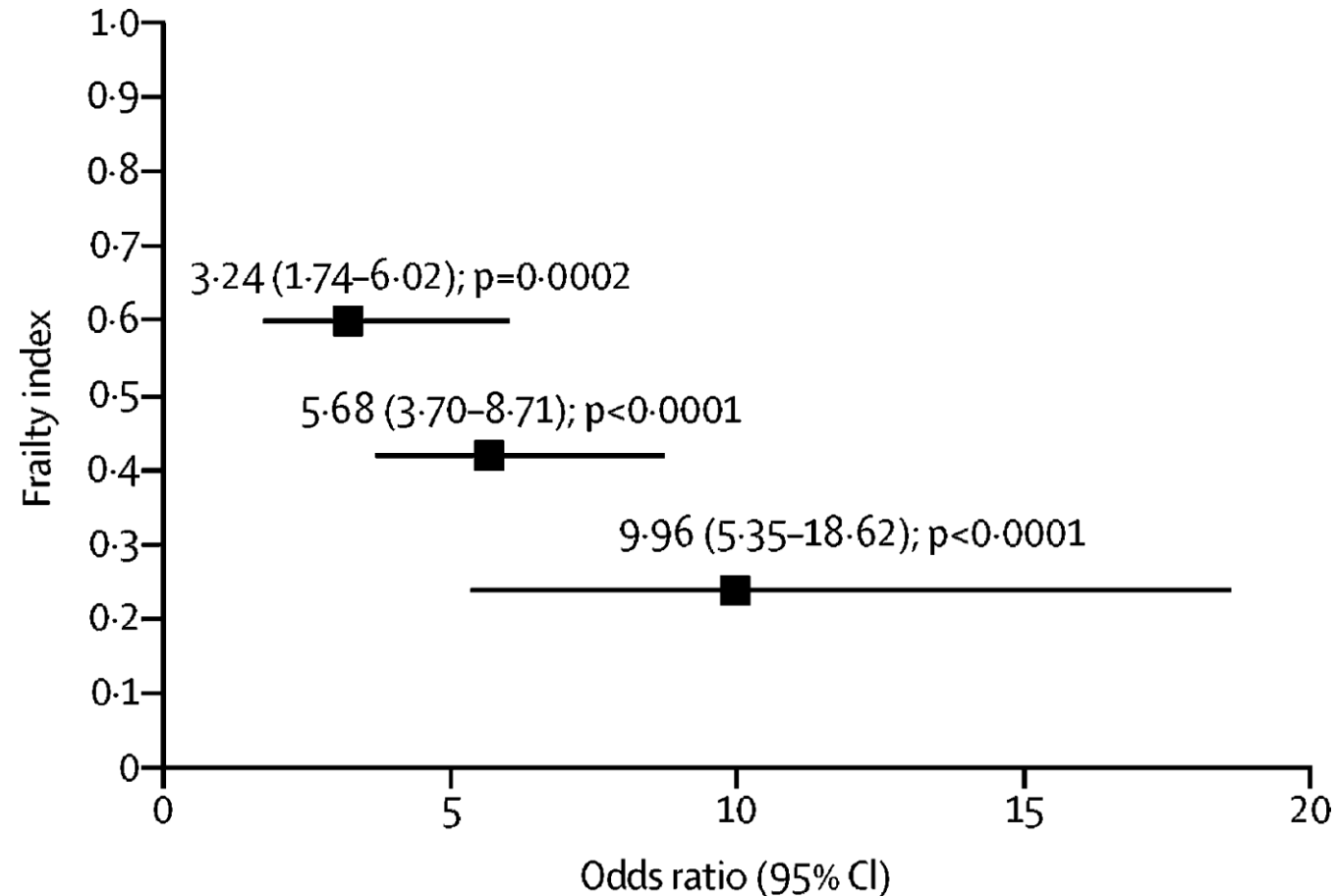
-Griffiths TD et al., *Neuron* August 31, 2020 DOI.org/10.1016/neuron.2020.08.003

# Risks for dementia – nuance since 2017 from the Rush studies / D.A Bennett

- Neuropathological features of Alzheimer disease account for about for about half of late life dementia – i.e. a lot of mixed dementia.
  - Boyle et al., *Ann Neurol.* 2019;**85**:114-124
- Only 8% of people had “pure” Alzheimer disease.
  - Boyle et al., *Ann Neurol.* 2018;**83**:74-83.
- People who have Alzheimer disease without developing dementia tend to be less frail than those in whom dementia is diagnosed.
  - Wallace LMK, et al., *Alzheimers Dement* 2018;**10**:394-40. Wallace LMK, et al., *Lancet Neurol* 2019;**18**:177-184

Whenever age is important, frailty is likely to be so too.  
The higher the frailty index, the weaker the relationship with neuropathology  
in a person diagnosed with dementia.

Moderation analyses of  
the relationship  
between Alzheimer's  
disease pathology  
and a clinical  
diagnosis of  
Alzheimer's  
dementia (adjusted  
for age, sex, and  
education)



# Final words...

Be **ambitious** about prevention.

Prevention is about **policy and individuals**. In addition to population strategies, policy should address high-risk groups to increase social, cognitive, and physical activity; and vascular health. **Behaviour change**.

Contributions to the risk and mitigation of dementia begin early and continue throughout life, so it is never too early or too late.

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- Andrew Lim
- Natalie Phillips
- Lindsay Wallace



# Thank you!

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