

# HEALTHY BRAIN AGEING AND BRAIN FITNESS

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# Today's talk

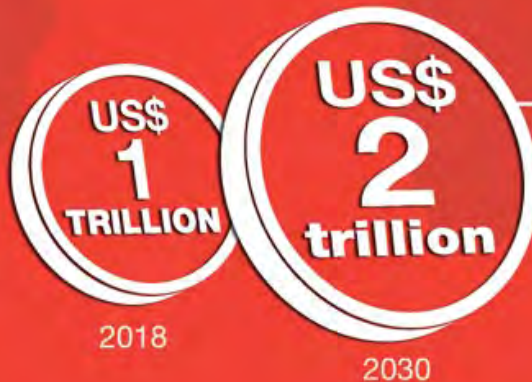
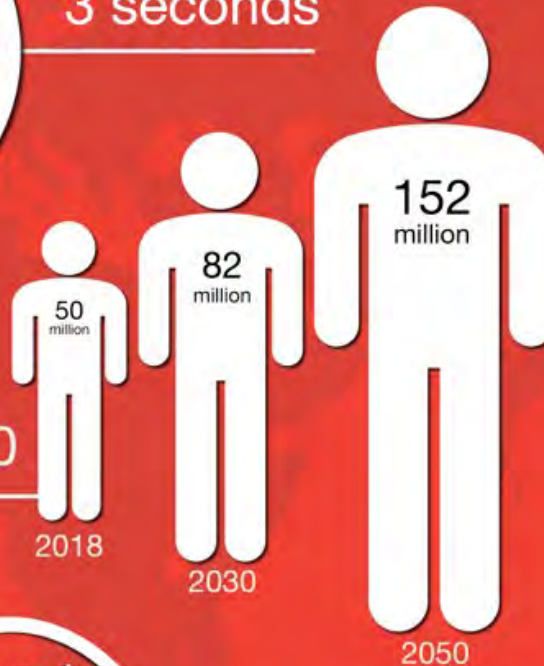
- Ageing & Dementia: a few facts & figures
- Maintaining healthy brains & gaining mental fitness – the latest scientific evidence
  - Protective factors against cognitive impairment
    - Cognitive reserve
  - Modifiable risk factors for cognitive impairment
  - Four pillars of a healthy lifestyle and possible Alzheimer's prevention
    - Mental activity
    - Physical exercise
    - Diet/nutrition
    - Sleep

# The global impact of dementia



Around the world,  
there will be one new case  
of dementia  
**every  
3 seconds**

50 million people worldwide are  
living with dementia in 2018.  
This number will more than  
**triple to 152  
million by 2050**



The total estimated  
worldwide cost of dementia  
in 2018 is US\$1 trillion.  
This figure will rise to  
**US\$ 2 trillion  
by 2030**



**Alzheimer's Disease  
International**

*The global voice on dementia*

# WHY?

Epidemic of ageing by 2050

65+ = approaching 15% → 25%

85+ = 0.4 m, 0.2% → 1.8 m, 5.1 %

Single biggest risk factor of dementia is age

**BUT.....**

**The incidence of new cases of dementia is falling??**

# Why is this topic so important?

The World Health Alliance was founded on 3 premises:

1. There is no health without brain health
2. Brain health and health begin with the mother and the child and their education
3. Our brains are our future!

# Why brain fitness matters

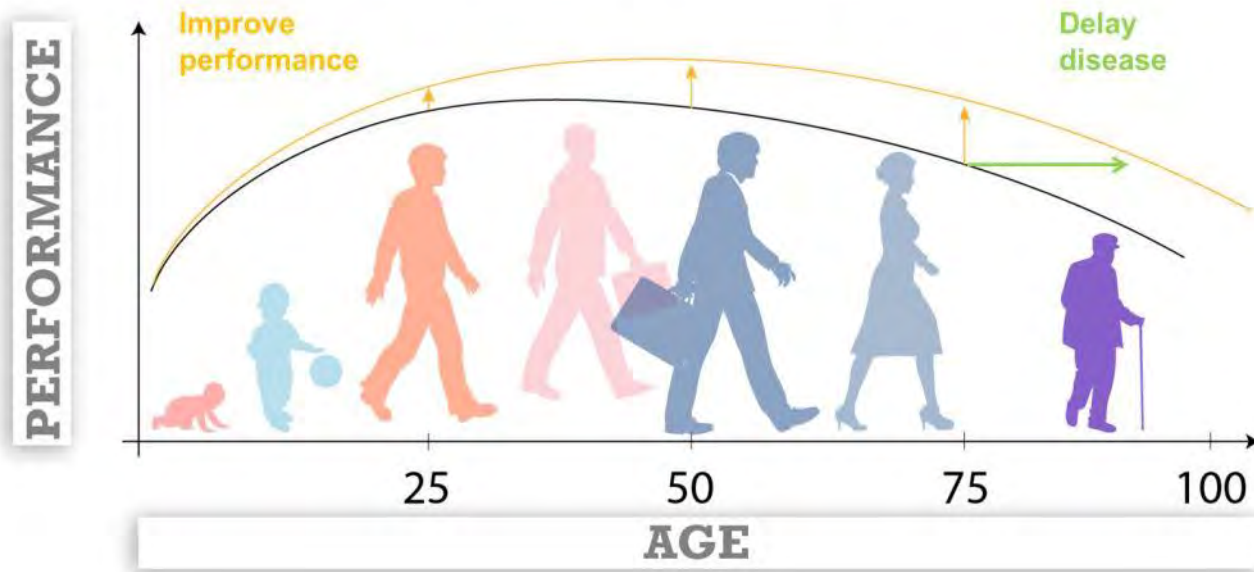


Image from SharpBrains.com (16.10.19)



SMH Good Weekend Oct 5 2019

   
Healthy Brains Positive Ageing

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*By Alvaro Fernandez*

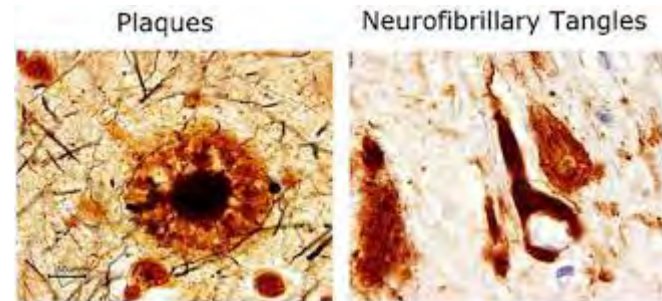
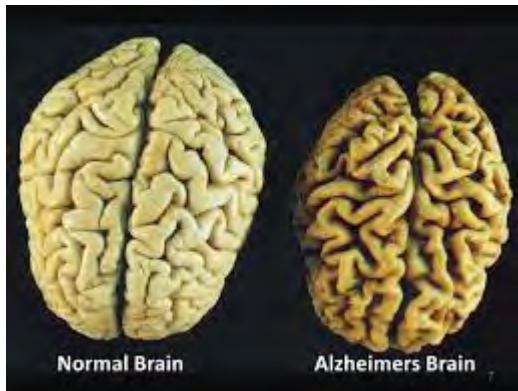
# Solving the Brain **Fitness** Puzzle Is the **Key** to **Self-Empowered** Aging

What works to preserve cognitive abilities?  
Much like the human brain, the answer is  
complicated, individual, and nuanced.



# Protective factors against cognitive impairment

- Resilience against dementia?
- Some people with Alzheimer's changes in their brains do not have dementia.



# The Nun Study



- 678 Sisters of Notre Dame across the USA
- Annual assessments of cognitive function
- Brains donated for neuropathological exam

# The Nun Study



- Some brains showed all the physical signs of Alzheimer's, yet the nuns had no symptoms in life & remained physically sharp into very old age.
- Sisters who read, wrote and kept intellectually stimulated during their early life had a better chance of staving off dementia later in life.

# Protective factors against cognitive impairment

- Resilience against dementia?
- Enriched lifetime experiences can help protect the brain against memory loss
- Observation that high education protects an individual from developing dementia



# Cognitive reserve

- an active & dynamic process that allows an individual to cope more successfully with disease-related brain changes.
- Cognitive reserve CR reflects lifetime of:

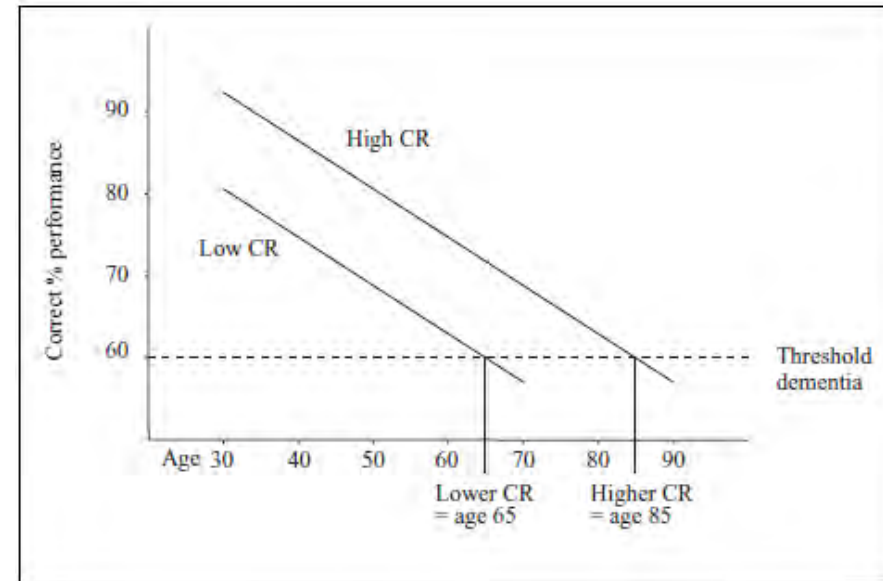
- education



- occupational roles



- mentally stimulating experiences



# Cognitive reserve – a secret to coping with neurodegeneration in the brain.

- Recent study (JAMA Neurology 2019) showed that the protective effects of CR can build throughout the lifespan
- Those with high CR accumulated through education, early-life cognitive activities, mid-life activities, late life activities & social activities in late life had a reduced risk of dementia in a dose-dependent manner
- Reduced dementia risk even in individuals with high degrees of Alzheimer pathology and cerebrovascular pathology (like mini-strokes)



# Modifiable risk factors for dementia

**Early life:** less education

**Mid-life:** hearing loss

high blood pressure

obesity

**Late life:** smoking

depression

physical inactivity

social isolation

diabetes

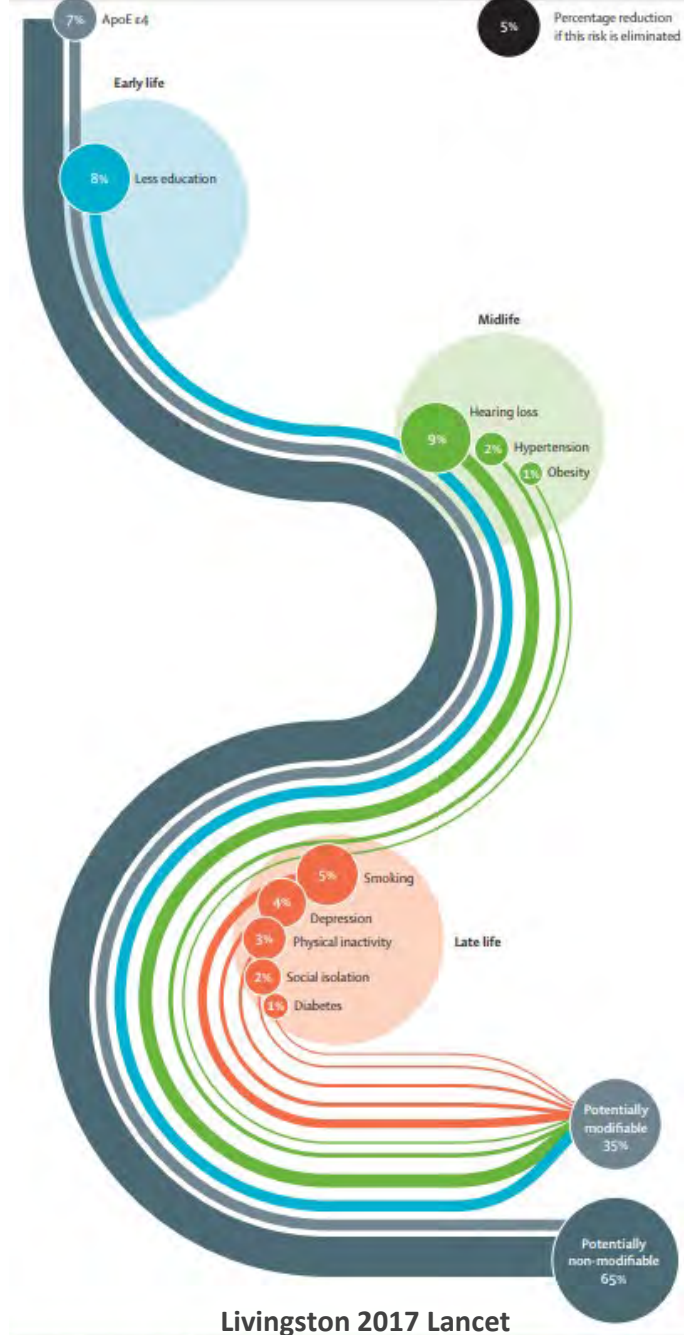


Figure 4: Life-course model of contribution of modifiable risk factors to dementia  
Numbers are rounded to nearest integer. Figure shows potentially modifiable or non-modifiable risk factors.

# Four pillars of a healthy lifestyle to maximise brain fitness

1. Mental activity
2. Exercise
3. Diet/nutrition
4. Sleep





# Mental activity

- Taking on new skills such as hobbies late in life is beneficial

New research: learning digital photography or how to use an ipad improved memory



# Mental activity

New, challenging, enjoyable



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"I always wanted to learn ...



... and now I can"



# Physical exercise



# Diet/ good nutrition

## Mediterranean diet

Olive oil

Legumes

Vegetables

Oily fish

(low dairy & meat)



## MIND diet

Mediterranean-DASH diet Intervention for Neurodegenerative Delay (MIND) diet specifically designed to be neuroprotective.

Similar to MED diet but also emphasises vegetables including green leafy vegetables, nuts, berries, beans, whole-grains, fish, poultry, olive oil, and wine

<https://www.neura.edu.au/news/mind-over-mediterranean-australian-study-suggests-mind-diet-reduces-the-risk-of-dementia/>

# Sleep



# Thank you!

