# Dementia prevention, practical risk reduction.

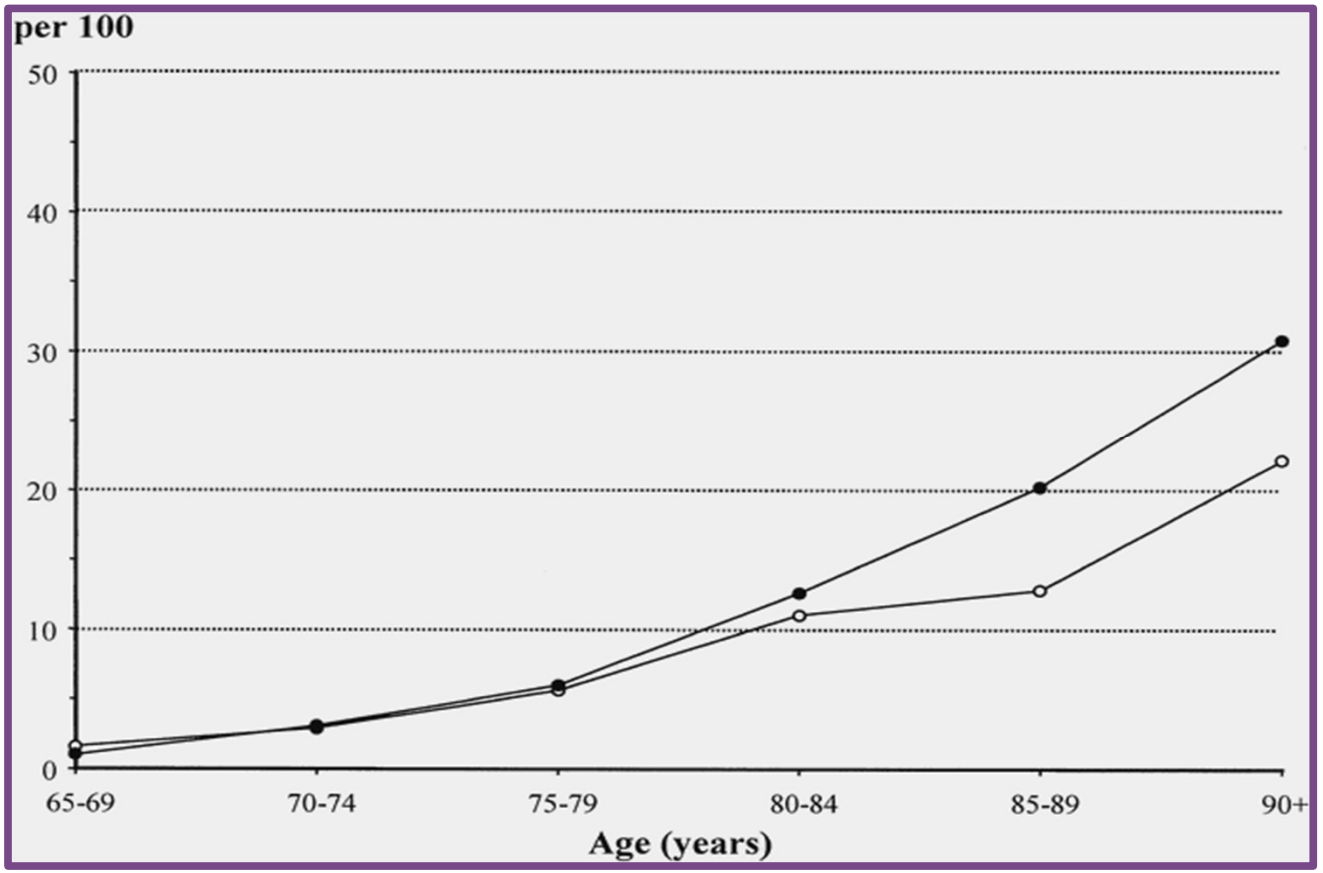

Dr Ruth Peters

- Dementia, how common is it and what causes it?
- What are the lifestyle and clinical factors that increase our risk of dementia?
- Where is the strongest evidence for risk reduction?
- How can we operationlise risk reduction?

# Prevalence of dementia

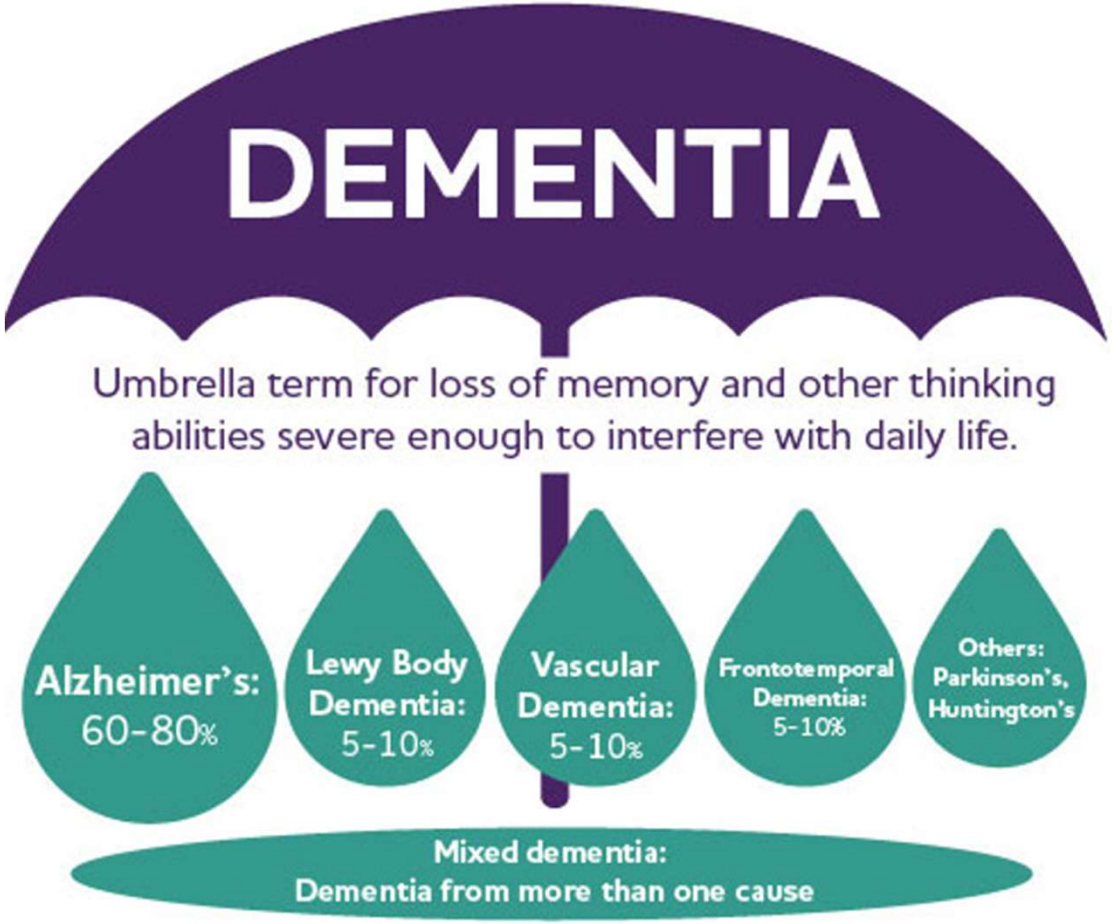
White circles=Men

Black=Women




Lobo et al Neurol 2000

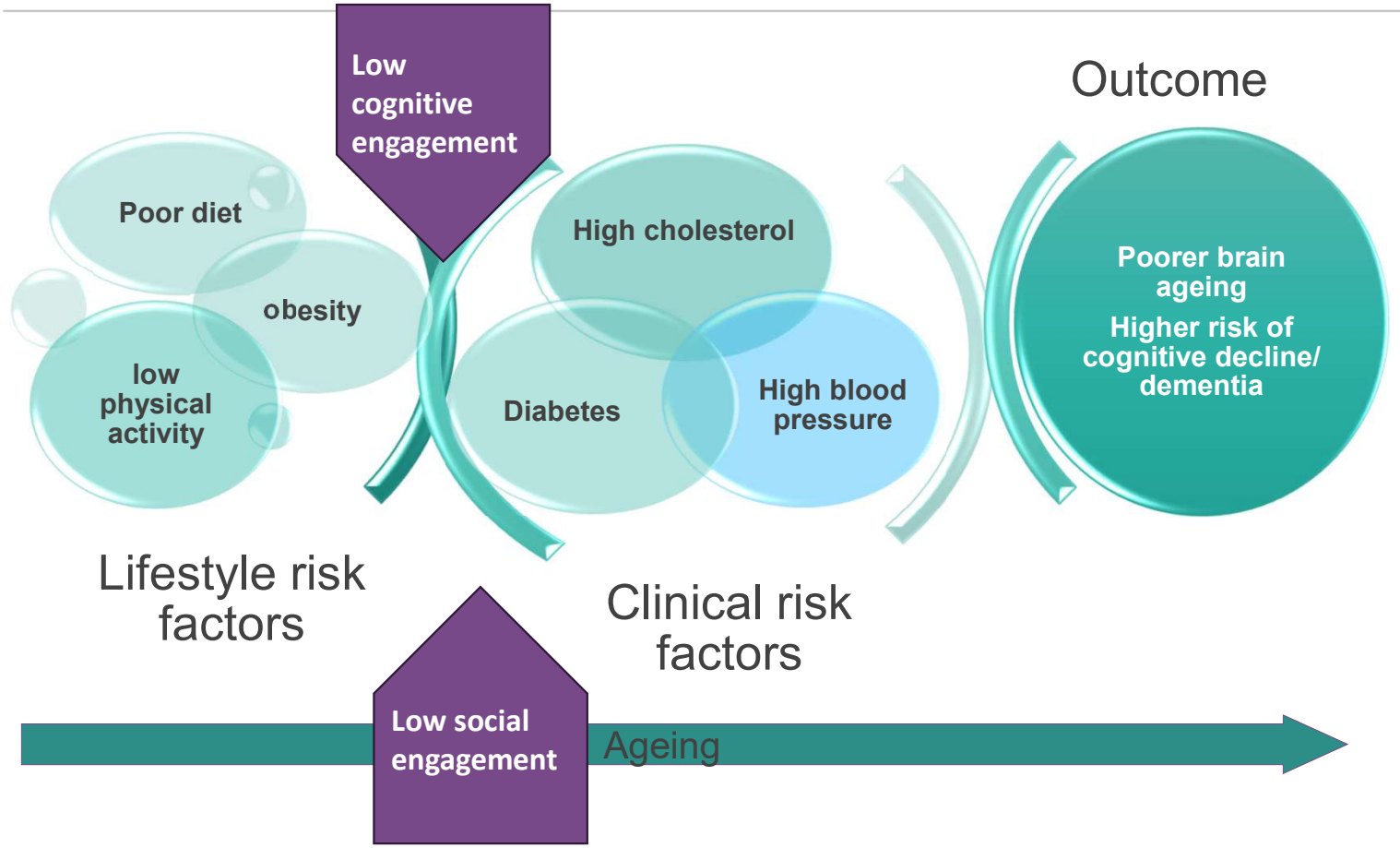
# What causes it?



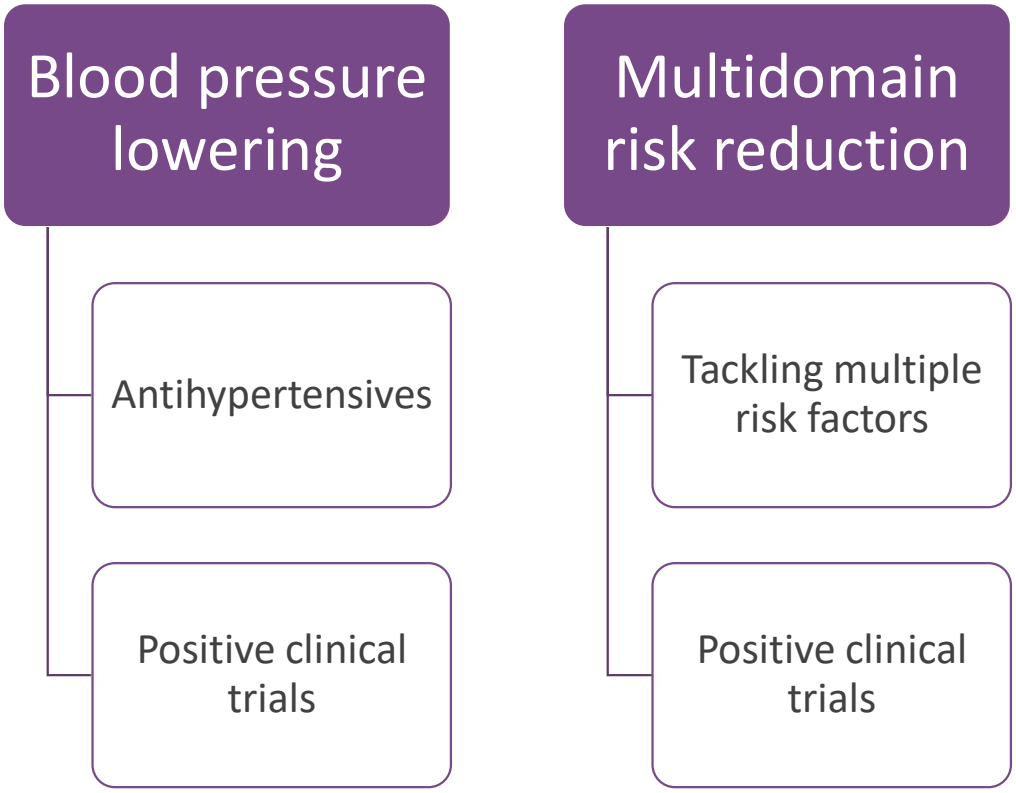

Different dementia types have different pathological pathways

**Diagnosis is based on cognition + difficulties with day-to-day living**

# What are the lifestyle and clinical factors that increase our risk of dementia?



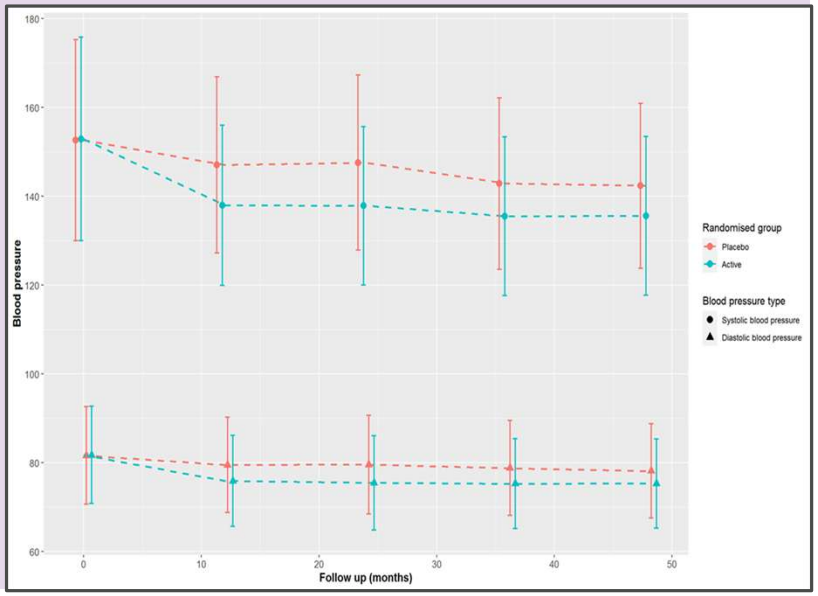
# What is the strongest evidence for risk reduction?



# Single stage individual patient data meta-analysis

## (ADVANCE, HYVET, PROGRESS, SHEP, SYST-EUR)

- n=28,008 from 20 countries
- Randomly allocated to antihypertensive treatment or matching placebo
- Mean age 69.1 [SD 9.3] years
- Female 46.8%
- Median follow-up 4.3 (IQR 3.5-
- 4.5) years.
- Baseline BP 155.8 (SD21.5) mmHg systolic/82.9 (SD10.7) diastolic.
- Mean BP lowering of 10/4mmHg.
- 861 incident dementia cases.

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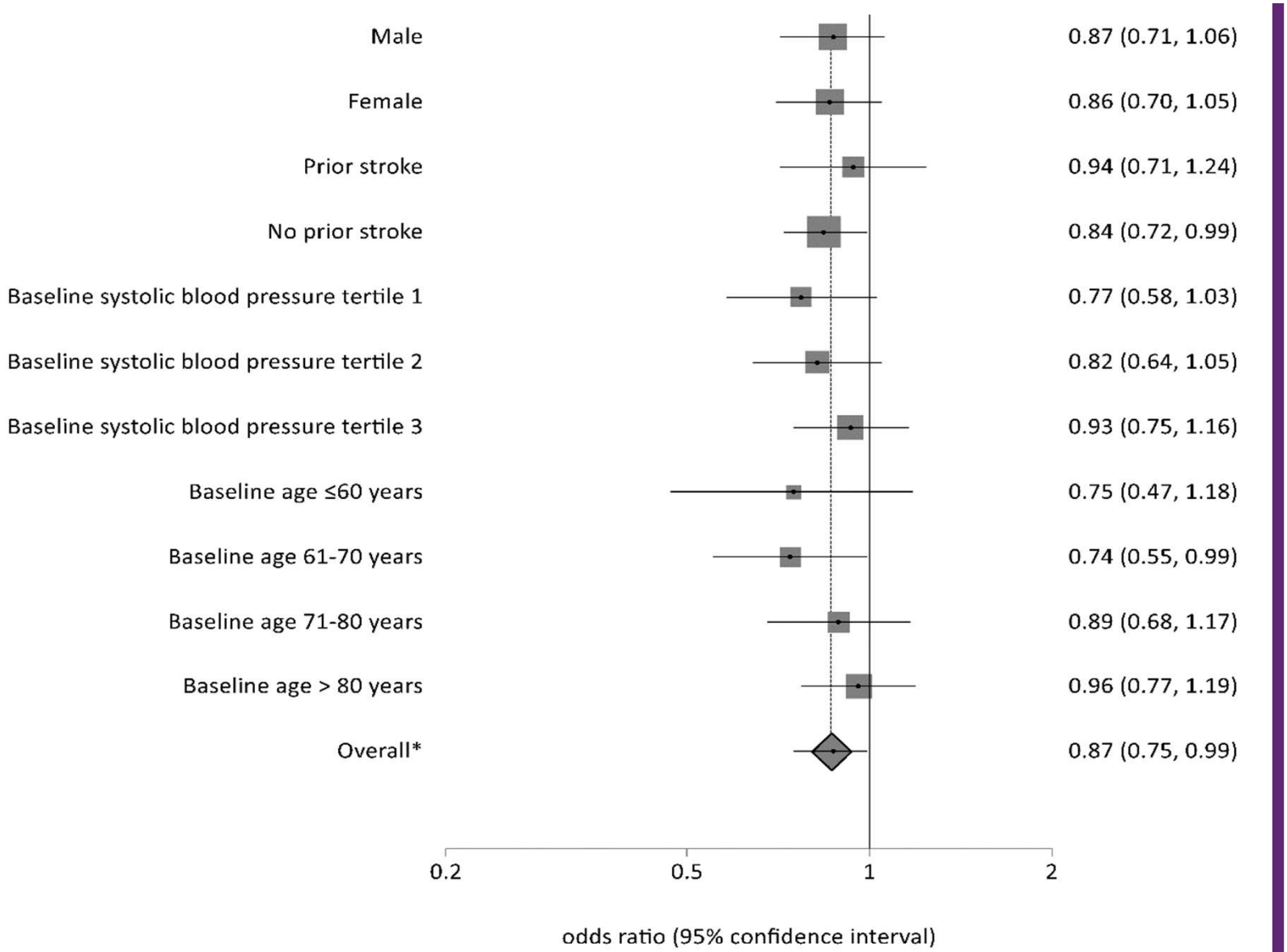
# Antihypertensives and incident dementia

- Incident dementia
  - 403 (2.9%) in those randomized to antihypertensives
  - 458 (3.3%) in those randomized to placebo
  - OR 0.868 (95%CI 0.756, 0.996) unadjusted
  - OR was 0.865 (95%CI 0.752, 0.994) adjusted age, sex, history of stroke,
  - OR 0.860 (95%CI 0.748, 0.989) adjusted age, sex, history of stroke, BMI and diabetes mellitus.

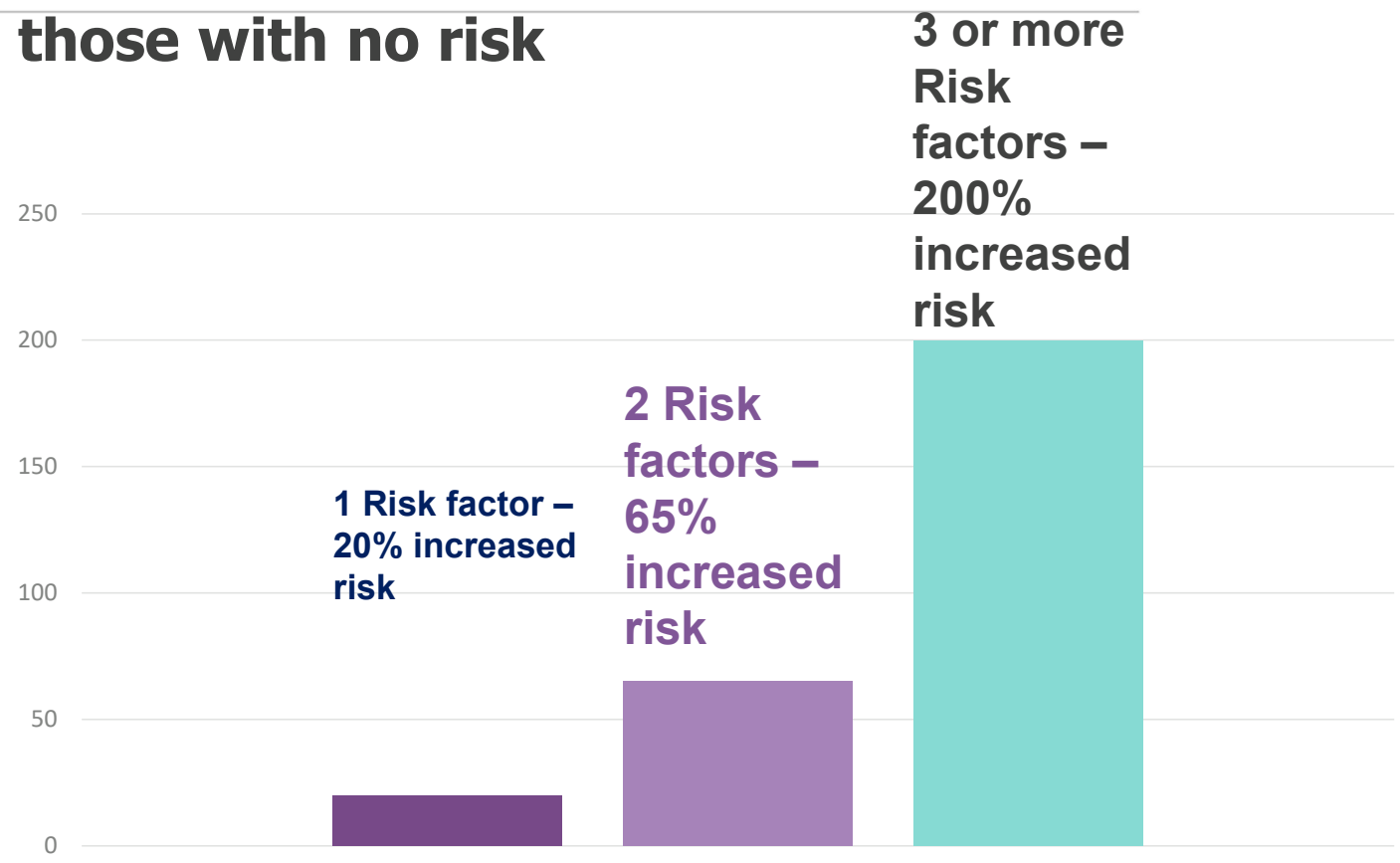


Peters et al Eur Heart J 2022

# Subgroups


Male
0.87 (0.71, 1.06)
Female
0.86 (0.70, 1.05)
Prior stroke
0.94 (0.71, 1.24)
No prior stroke
0.84 (0.72, 0.99)
Baseline systolic blood pressure tertile 1
0.77 (0.58, 1.03)
Baseline systolic blood pressure tertile 2
0.82 (0.64, 1.05)
Baseline systolic blood pressure tertile 3
0.93 (0.75, 1.16)
Baseline age ≤60 years
0.75 (0.47, 1.18)
Baseline age 61-70 years
0.74 (0.55, 0.99)
Baseline age 71-80 years
0.89 (0.68, 1.17)
Baseline age > 80 years
0.96 (0.77, 1.19)
Overall*
0.87 (0.75, 0.99)
0.2
0.5
1
2
odds ratio (95% confidence interval)

# Risk of developing dementia compared to those with no risk factors



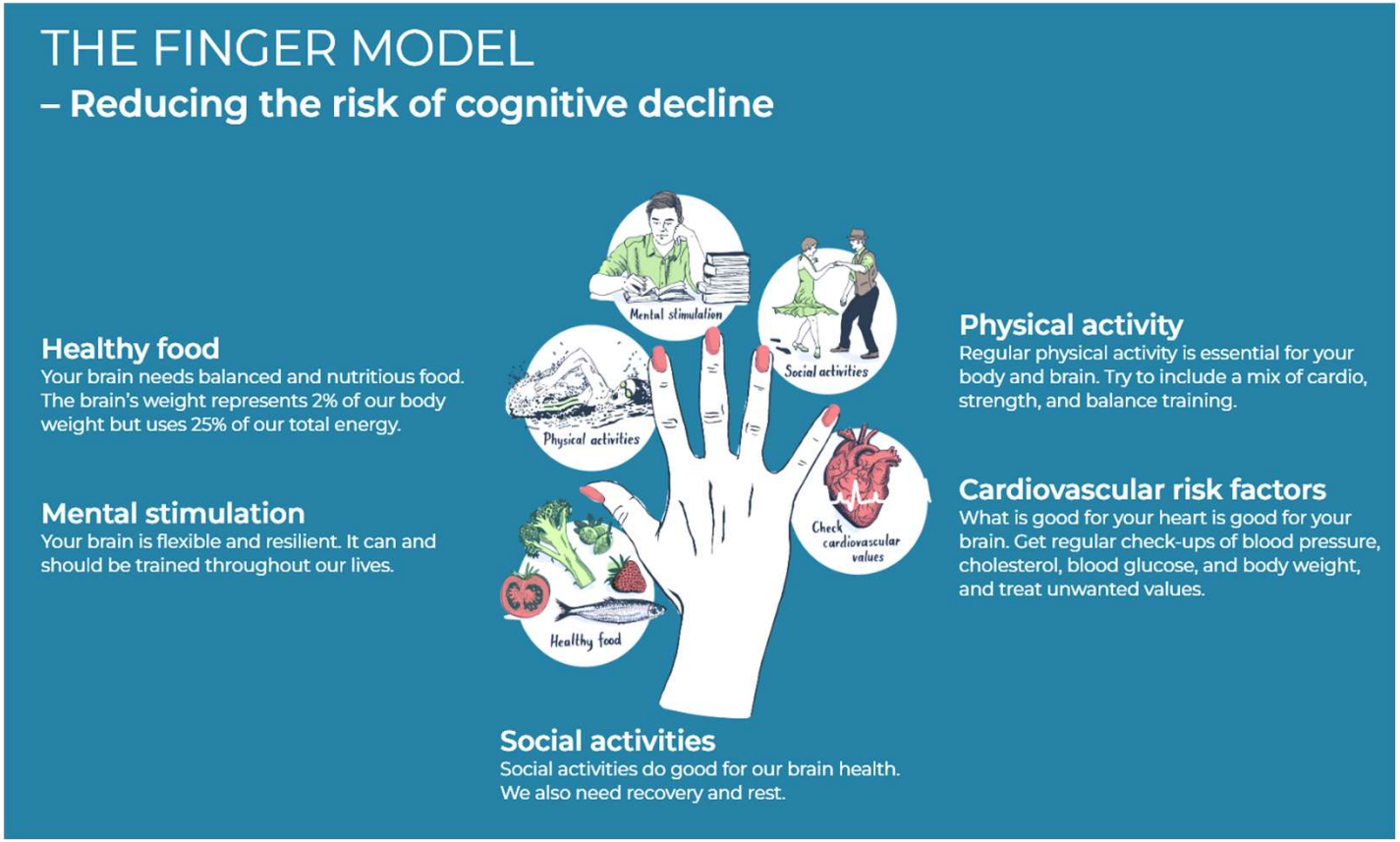
# Multidomain risk reduction

**Multiple risk factors at the same time**

Research ongoing

Lots of questions around modality and intensity

Two important trials published



# How can we operationalise risk reduction?

- Personal engagement in health behaviours
- Societal support
- Community engagement
- **Our approach to multi-domain risk reduction**
  - **Intergenerational practice**
  - **Bringing two non-adjacent generations together for mutual benefit**

# Intergenerational programs

Two non-adjacent generations brought together in structured activity for mutual benefit

We focus on adults >65 and preschool children

## For adults

Delivers multimodal risk reduction - the gold standard for reducing risk of frailty and dementia

Plus opportunities for generativity and transfer of knowledge and culture

## For children

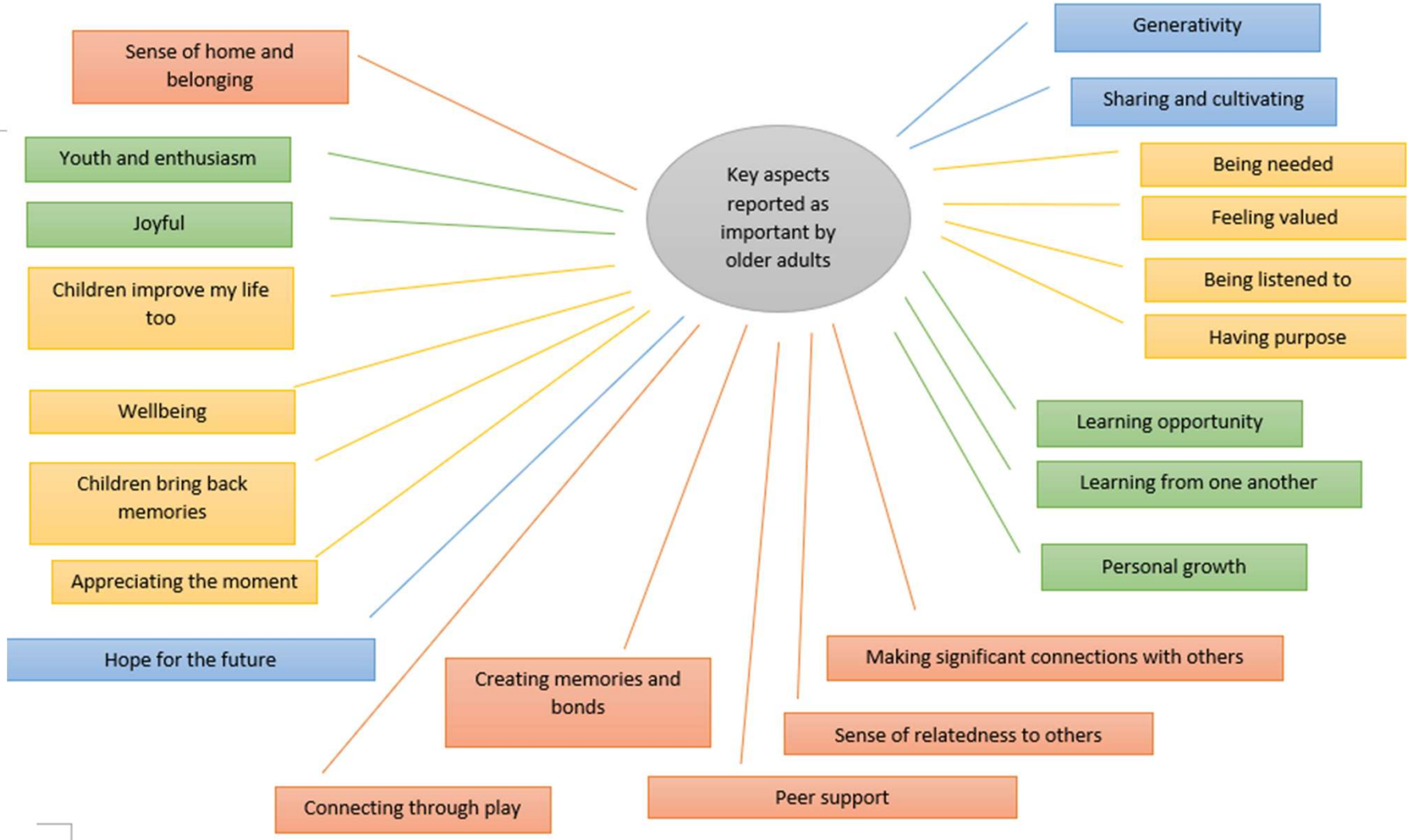
Delivers language, empathy theory of mind – translates to increased school readiness for children

**Plus: it's lots of fun**

Builds relationships within and between the generations and in local communities.

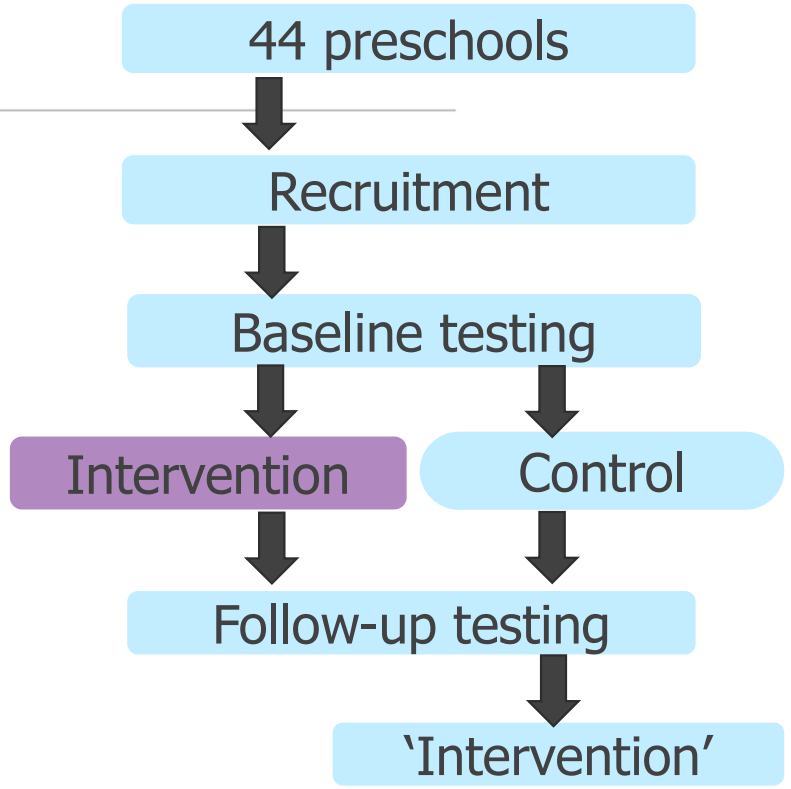
| Example tasks | Potential impact pathways for intergenerational practice | | | |
|---|---|---|---|---|
| | Mechanisms | Biomarkers | Short term outcomes | Long term outcomes |
| Physical activity<br><br>e.g. physical games, challenges and tasks, such as performing actions to a song, throwing bean bags to hit a target, musical statues. | Improved strength, balance, dexterity, fitness, sleep | Increased muscle mass, cardiovascular health (reduced blood pressure increased $VO_2$ max etc) | Better mobility, improved instrumental activities of daily living, decreased frailty, decreased risk of dementia, decreased falls | Increased independent living<br><br>Reduced care needs<br><br>Decreased cost of health and social care<br><br>More integrated societies<br><br>Decreased age stereotyping |
| Cognitive activity<br><br>e.g. cognitive games and challenges such as remembering items on a tray, planning a construction with boxes. | Improved memory, executive function, attention, concentration and reaction time | Increased regional brain volume / function | Better cognitive function | |
| Social activity<br><br>e.g. tasks that require working together and communicating, working in intergenerational pairs making puppets of each other and talking about who we are | Increased self-confidence, self-determination, friendships, and social network | | Improved quality of life, decreased social isolation, increased social support | |

**Multimodal activities have also been shown to be beneficial for outcomes including cognition and frailty**


Key aspects reported as important by older adults
Sense of home and belonging
Youth and enthusiasm
Joyful
Children improve my life too
Wellbeing
Children bring back memories
Appreciating the moment
Hope for the future
Connecting through play
Creating memories and bonds
Peer support
Sense of relatedness to others
Making significant connections with others
Personal growth
Learning from one another
Learning opportunity
Having purpose
Being listened to
Feeling valued
Being needed
Sharing and cultivating
Generativity

## INTErGenerational intervention to Reduce fraIlTY trial (INTEGRITY)

- Community co-designed
- Cluster randomized wait-list controlled trial
- Facilitated structured intervention
- 20 weeks 2 hours a week (10 community-dwelling adults >65 and 10 preschool children)
- In local preschools across Sydney



# Outcomes

| | |
|---|---|
| Adult | • Online cognitive tests<br>• Quality of life<br>• Mood<br>• Physical performance*<br>• Social connectedness<br>• Frailty (FRAIL scales and FI)<br>• Falls/fear of falling<br>• Common diagnoses<br>• Physical activity<br>• Brief diet questionnaire<br>• Sleep |
| Child | • Language<br>• Empathy<br>• Theory of mind |
| Educator | • Child conduct<br>• Child confidence |

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# Summary

- Practical ways to operationalise risk reduction (BP, multidomain)
- Potential for implementation? (antihypertensives, Intergenerational practice as a potential solution)
- Intergenerational practice
  - Likely to suit a proportion on the older adult population
  - May have multiple health and social connection benefits
  - Fast expanding research area


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