

Maintain Your Brain

Henry Brodaty and the MYB Research Team



UNSW
SYDNEY



**MAINTAIN
YOUR BRAIN**

CHeBA
Healthy Brains Positive Ageing

Maintain Your Brain (MYB) - Aims

- 1. Develop a new MYB digital platform that delivers multi-modal, personalised and sequential modules that target dementia risk factors via the Internet**
- 2. Evaluate the efficacy of the MYB digital platform to reduce the rate of cognitive decline in non-demented community dwelling persons aged 55 to 77 yrs**

Maintain Your Brain (MYB) - Aims

- 3. Examine the impact on reduction in risk factors, improvement in specific module targets (physical activity, nutrition, depression, individual cognitive domains); and**
- 4. Evaluate the relative cost effectiveness of the platform.**

MYB - Hypotheses

Primary hypotheses (intervention vs control)

- **less cognitive decline (3 yrs)**

Secondary hypotheses

- **relationship between intervention fidelity (compliance & adherence) and cognitive outcomes**
- **less categorical cognitive impairment in the intervention group compared to the control**
- **dementia risk profile will improve significantly more in the intervention group**
- **risk profile improvement will correlate with better cognitive outcomes**
- **less incident all-cause dementia (8 yrs)**

MYB - Outcomes

Primary Outcomes

- **Decreased cognitive decline over 3 years**

Secondary Outcomes

- **Decreased incidence of dementia (at 3 years)**
- **Risk factor score**
- **Specific cognitive domains**
- **Physical exercise, weight/ obesity**
- **Diet**
- **Others**

Primary Analysis: ITT

Secondary: Completer

MYB - Sample

Recruit from *45 and Up Study*

- 10% NSW 45yo +, Medicare list, 267,000, \approx 2007
- Target = 55-77yo^s, > 2 risk factors for dementia
- Internet, computer, consent
- No dementia

Four basic modules



Physical activity



Diet & nutrition



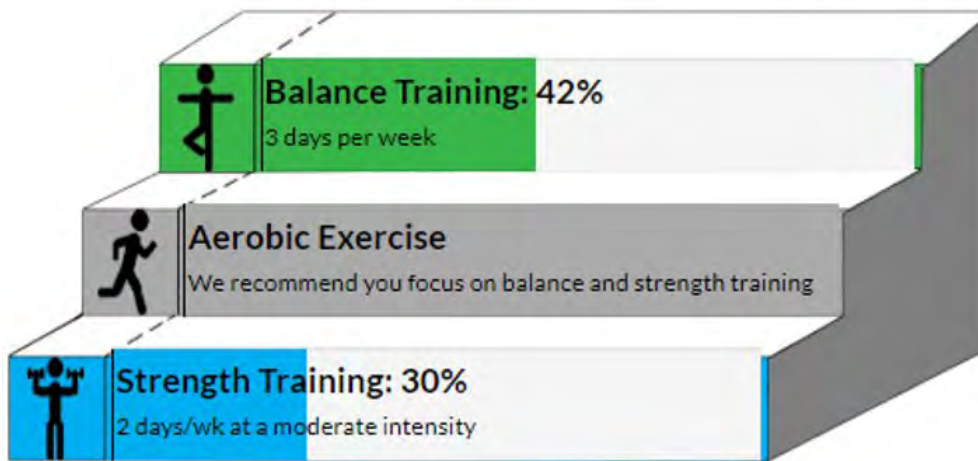
Brain training



Depression

Physical Activity

Welcome to the Physical Activity Module



My Current Activity Level



My Physical Activity Goals



My Feedback History



Strength Training

Your goal for this week is: **Increase the number of exercises you are doing to 4 upper and 4 lower body exercises that you can perform safely, so that you are achieving 45 minutes of strength training per session.** You can find out more information about Strength Training below.




Strength Training
Information and Factsheets



Strength Training Video and
Exercise Cards

Nutrition

Welcome to the Nutrition Module 

How to piece it together

The Mediterranean pyramid

The Mediterranean cuisine and lifestyle

The Mediterranean pantry and shopping list

Sample menu plan

Meal and snack ideas

Recipe library

Food allergies, intolerances and drug interactions

Scientific literature

 My Mediterranean Goals

The Mediterranean Diet



The Ideal Mediterranean Diet

MYB - Interventions

- **Year 1, up to 4 modules of 10 weeks each**
- **Internet coaching**
 - **Brain training + socialisation**
 - **Physical activity**
 - **Nutrition**
 - **Depression/anxiety treatment**
- **Information group**
 - **10 wks static advice; xpt Brain training module: National Geographic video + Qs**

MYB - Boosters

- **Coaching group**
 - Every month Yr 1-3
- **Information group**
 - Every quarter Yr 1-3
- **No boosters for depression/anxiety module**

MYB – Online Evaluation

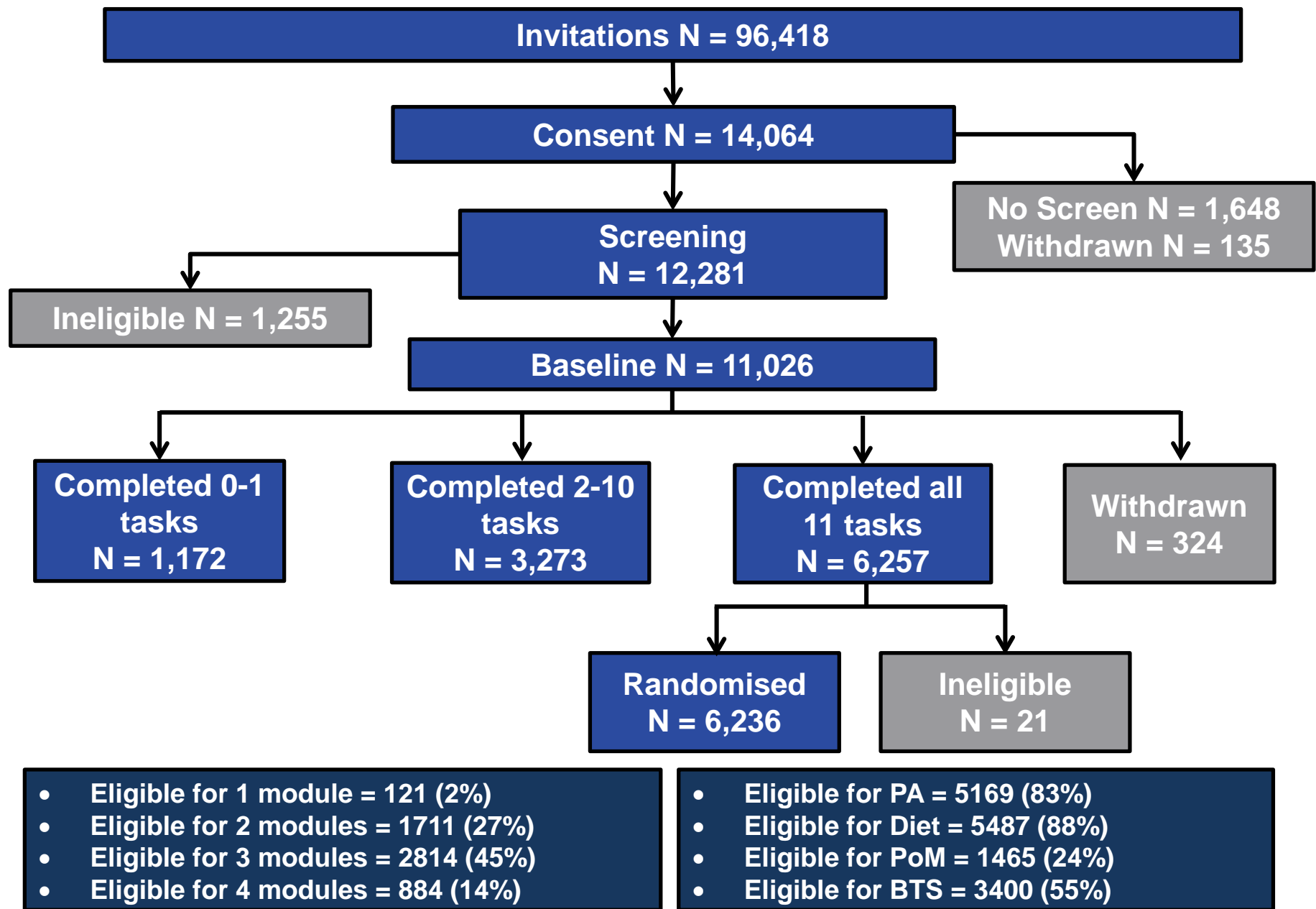
- **Cognition – COGSTATE + Cambridge Brain Science**
 - Domains: verbal PALT, visual memory, executive function, speed of information processing, working memory
 - LOGOS: word list learning & delayed recall
- **Function – Short-Amsterdam-IADL (informant)**
- **Short ANU- ADRI baseline and annually**

MYB – Compliance

- **Self-report**
 - **Physical activity**
 - **Diet**
 - **Weight**
 - **etc.....**
- **Monitor activities online**
 - **Logins, activities accessed, activities complete**
 - **Help (“tickets” and email)**

MYB – Timeline

- **Completed Validation**
- **Completed Pilot study**
- **Jun-Oct18 – recruitment for main trial**
- **7/18-10/19 – 4 quarterly modules + assessments**
- **2019-21 – cumulative boosters**
- **2019-21 – annual assessments**



Recruitment summary

Randomised (enrolled)
N = 6,236

Tranche A
N = 5,628 (90%)

Tranche B
N = 608 (10%)

Active
N = 5,398 (86%)

Withdrawn
N = 230 (4%)

Active
N = 576 (9%)

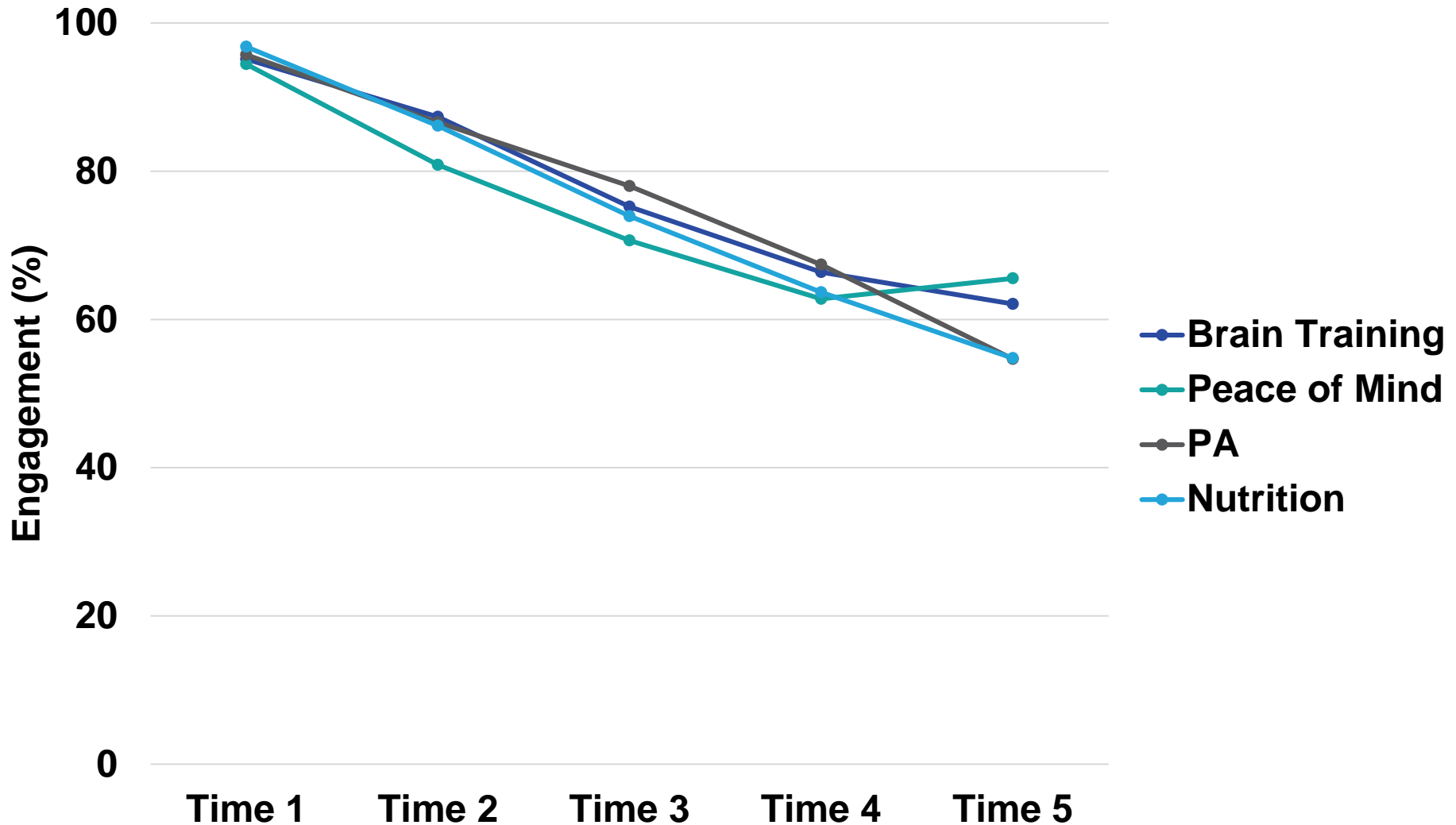
Withdrawn
N = 32 (1%)

- Withdrawn at Time 1 = 23 (<1%)
- Withdrawn at Time 2 = 56 (1%)
- Withdrawn at Time 3 = 93 (1%)
- Withdrawn at Time 4 = 47 (1%)
- Withdrawn at Time 5 = 29 (<1%)

- Withdrawn from PA = 274 (5%)
- Withdrawn from Diet = 292 (5%)
- Withdrawn from PoM = 124 (7%)
- Withdrawn from BTS = 239 (6%)

Trial progression

MYB – Module engagement



MYB – Challenges

- **Building IT platform**
- **Clinicians and IT communication**
- **Engagement & adherence to training programs**
- **Maintaining participant enthusiasm**
- **Engaging informants of participants**
- **Completion of quarterly and annual assessments in year 1**
- **Navigation of the MYB site and modules**
- **IT issues**

MYB – IT Challenges

- Outdated computers no longer supported by browsers and third parties (eg, Chrome, CBS)
- Computer settings incompatible with third party applications (eg, COGSTATE requires screen resolution to be at least 1024x768)
- Third party applications can only be used with certain internet browsers (eg, CBS has ‘freezing’ issue with Internet Explorer)
- Brain Training exercises require Flash to be activated
- Provider changes platform eg Flash → Unity
- IT challenges with LOGOS (eg, difficulties understanding accents, call back issues) - *resolved*

MYB – Annual Assessment

Yr 1 Annual Assessment completion as percentage of total randomised (n=6,236).

	Total %	
Withdrawn	4	
0 completed	31	
Completed 1-5 assessments	3	
Completed 6-8 assessments	6	} 62%
Completed all 9 assessments	56	

MYB – Outcomes

A positive (successful) trial outcome will be based on the primary outcome

- 1. Better cognition from baseline to three years***

Success = scalability nationally and globally

Internet-based therapies: advantages

- Home-based
- Geographically isolated individuals
- Scalable
- Relatively cheap (but not free)

Current trials:

- Richard E_HATICE_BMJ Open 2016;6(6):e010806
- Richard E et al, Lancet Digital Health, 2019; 1(8), Pe424-e434
- MYB (Heffernan M et al, Journal of Alzheimer's Disease, 2019;70(s1): S221-S237)

Disadvantages

- Requires IT Platform development ++**
- Requires Central HQ to run and monitor**
- Not everyone has computer or internet access or is tech-savvy**
- Not yet proven to work**



Acknowledgements

- ***Maintain Your Brain*** was funded by a National Health and Medical Research (NHMRC) Dementia 19 Research Team Grant (APP1095097).
- MYB is a registered trial at the Australian New Zealand Clinical Trials Registry ACTRN 12618000851268
- This research was completed using data collected through the 45 and Up Study www.saxinstitute.org.au The 45 and Up Study is managed by the Sax Institute in collaboration with major partner Cancer Council NSW; and partners: the National Heart Foundation of Australia (NSW Division); NSW Ministry of Health NSW Government Family & Community Services – Ageing, Carers and the Disability Council NSW; and the Australian Red Cross Blood Service. We thank thousands of people participating in the *45 and Up* Study.