yes/no question evaluating whether the individual had restful sleep for the most part of the past week) and sleeping pill use (past month frequency) in relation to mortality risk. Covariates included age, sex, marital status, education, income, comorbidities, smoking, alcohol consumption, and physical activity level.

Results: We found no association between self-reported sleep quality or experiencing restful and mortality risk after 4-6 years. On the other hand, when compared to individuals who did not take sleeping pills during the past month, hazard ratios (HR) for death were, respectively, 1.79 (1.11–2.88, p = 0.016) and 1.31 (1.03–1.65, p = 0.026) for those who took medication 1–2 times a week and those who took medication 3 or more times a week. Taking sleeping pills less than once a week had no association with mortality. While the top 3 mortality causes for individuals who did not use sleeping pills were stroke, myocardial infarction and diabetes, the top 3 causes for heavy users were myocardial infarction, lung cancer and chronic obstructive pulmonarydisease.

Conclusions: Insomnia must be adequately treated, but awareness of medication risks is vital. This study highlights higher mortality risk with frequent sedative-hypnotic use in older adults. Warranting non-drug treatments and careful hypnotic use could enhance health outcomes.

P16: The Efficacy of a Novel Multimodal Personalized Physical and Cognitive Training System for Neurocognitive Protection and Enhancement in Older Adults

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Summary: Age-related neurocognitive decline is often an irreversible health issue from onset. The concomitant costs could be exponential if left unchecked. There is a need to be able to delay the onset of age-related neurocognitive decline or possibly avoid it altogether. Previous studies have shown that there is a strong positive relationship between the fitness of neurocognitive function and cognitive training. Our laboratory conducted two pilot trials (Lee et al., 2013 & 2015) and one larger scale randomised controlled trial (RCT) (Yeo et al., 2018) investigating the usability and efficacy of a brain-computer interface (BCI) based attention and memory cognitive training system on older adults between ages 60 to 80. The participants across all three trials found the different iterations of our attention-memory training system to be usable and acceptable, with adherence rates surpassing 90%.

Interestingly, a growing number of studies suggest combined cognitive training and physical activity may result in a better neurocognitive outcome as compared to only cognitive training. Combining the insights from those studies and our previous trials, we developed a novel personalized multimodal BCI-based cognitive and physical training system, NeeuroCycle, for neurocognitive protection and enhancement in older adults. NeeuroCycle comprises of a stationary recumbent bicycle and a gamified cognitive training system paired with real-time frontal electroencephalogram (EEG) neurofeedback. The cognitive training program consists of six different tasks that target attention, immediate/working and delayed memory, decision- making, and visuospatial abilities. Certain parts of the gameplay are directly impacted by the partcipant's own real-time EEG signals. NeeuroCycle has also been designed to include locally relevant stimuli and designs for our Singaporean older adult participants. Evaluation of NeeuroCycle's efficacy is ongoing. The current study employs a three-arm RCT approach (physical-and-cognitive training [mBCI], cognitive training only [nBCI], and active control [AC] groups). We hypothesise that mBCI par1cipants will perform significantly better on cognitive assessments compared to nBCI and AC participants. Findings of the study will be presented at the IPA Congress. If tested to be effective, we expect

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NeeuroCycle to be an accessible, safe, and cost-effective way for older adults to maintain or improve cognitive health, which is beneficial for ageing societies.

P18: Differences in cognitive decline in amnestic mild cognitive impairment due to primary age-related tauopathy and Alzheimer's disease

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Objectives: Primary age-related tauopathy (PART) is associated with cognitive impairment, characterized by the presence of neurofibrillary tangles composed of tau protein, independent of amyloid plaque deposition. In this study, we examined the differences in neuropsychological assessments between PART and Alzheimer's disease (AD) over a three-year follow-up period in patients with amnestic mild cognitive impairment (amnestic MCI).

Methods: Ten patients (mean age = 75.9; SD = 7.0; Global Clinical Dementia Rating Scale = 0 or 0.5) were recruited from Memory Clinic at Keio University Hospital. They were classified into two groups of five patients with amnestic MCI or subjective cognitive impairment due to either PART (amyloid-/tau+) or AD (amyloid+/tau+) based on the results of [18 F]PM-PBB3 and [18F]Florbetaben Positron Emission Tomography imaging scanning. A battery of neuropsychological tests: Mini-Mental State Examination (MMSE), Alzheimer's Disease Assessment Scale (ADAS), Logical memory test of Wechsler Memory Scale–Revised, Word fluency, Trail Making Test (TMT), was administered at baseline (the first visit) and after three years.

Results: All patients remained as MCI (Global CDR = 0.5) at three-year follow-up. Although ADAS score was deteriorated more in AD than PART group at three-year follow-up ($p < 0.05$), PART and AD groups did not differ in overall cognitive abilities including memory. However, in PART group, the TMT A & B completion time tended to be prolonged compared to AD group ($p = 0.98$). On the other hand, TMT B/A indicated as executive function was indifferent in both groups.

Conclusions: Patterns of cognitive decline trajectory differed between PART and AD in amnestic MCI, suggesting a difference in the neuropathological course leading to progression to AD. PART may show greater decline in visuospatial attention compared to AD. It implies that PART has distinct neuropathological and clinical features compared to AD.

P19: Design of ADEPT-2, a phase 3, parallel group study to evaluate xanomeline and trospium as a treatment for psychosis associated with Alzheimer's disease dementia

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Background: Psychosis represents a major unmet medical need in patients with Alzheimer's disease (AD) dementia. With no approved medications for AD dementia psychosis (ADP), current treatment relies on off-label uses of antipsychotics with limited efficacy and significant safety concerns. Xanomeline is an M1/M4 preferring

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