

who are struggling on exercises or protocol adherence, such that on-line trainers can be “called up” during training to instruct, mentor and motivate. **Conclusions:** Overall, next generation brain training focuses more on the nature of delivery, supervision and wider training context rather than exercise content alone. We aim to socialize the online brain training experience, connecting participants with like-minded peers, expert trainers and their own social network for long term engagement and sustained cognitive benefit.

F4-05-03

THE COLLABORATIVE AGING RESEARCH USING TECHNOLOGY (CART) INITIATIVE: BUILDING SCALABLE, ECOLOGICALLY VALID INFORMATION COMMUNICATION TECHNOLOGY RESEARCH CAPACITY



Jeffrey Kaye^{1,2,3}, Stephen Agritelle⁴, Lisa L. Barnes⁵, Patrick Chiang⁶, Kathleen Crowe⁴, Sara Czaja⁷, Hiroko Dodge^{1,2,3,8}, Deniz Erten-Lyons^{2,3}, Jason Karlawish⁹, Judith Kornfeld^{1,3}, Nicole Sharma^{1,2,3}, Nina Silverberg¹⁰, ¹Oregon Center for Aging & Technology (ORCATECH), Portland, OR, USA; ²NIA-Layton Aging & Alzheimer's Disease Center, Portland, OR, USA; ³Oregon Health & Science University, Portland, OR, USA; ⁴Intel, Hillsboro, OR, USA; ⁵Rush Alzheimer's Disease Center, Chicago, IL, USA; ⁶Oregon State University, Corvallis, OR, USA; ⁷University of Miami Miller School of Medicine, Miami, FL, USA; ⁸University of Michigan, Ann Arbor, MI, USA; ⁹University of Pennsylvania, Philadelphia, PA, USA; ¹⁰National Institute on Aging/NIH, Bethesda, MD, USA. Contact e-mail: kaye@ohsu.edu

Background: During the past decade, a profusion of technologies and protocols have been developed to address the need to more effectively assess and deliver care to persons with cognitive impairment. These technologies take advantage of important developments in sensing and pervasive computing, wearable technologies, mobile and wireless communications, health information technology and “big data” analytics. Despite this abundance of opportunities, the true value of these approaches has yet to be fully developed, implemented or evaluated. The NIH Collaborative Aging (in Place) Research Using Technology (CART) initiative was established to address this needed research capability, building a research infrastructure which will ultimately scale-up to 10,000 technology-enabled homes. **Methods:** CART builds upon a home-based sensing and computing platform deployed in older persons homes continuously providing data regarding key outcomes: physical activity and mobility, sleep, computer use, life activities, driving and medication adherence. Each participant undergoes a conventional clinical and cognitive battery at baseline and reports weekly on-line changes in health and medications. Three-hundred-sixty participants will enroll across the US representing four diverse populations at high risk for loss of independence and cognitive decline: seniors residing in low-income housing (Portland, USA); veterans (rural Pacific Northwest); African Americans and Latinos (Chicago and Miami). Over three years the technology system will be iteratively tuned leading to a final version deployed in a year-long demonstration trial testing the hypothesis as to *whether the system provides evidence for sustained independence and can be widely deployed in research*. **Results:** Enrollment commenced in January, 2017 and is ongoing. The technologies have been well accepted by study participants. The full platform is readily deployed within an hour at home. Version 1.0 of the platform reliably provides over 4 MB of continuous multi-domain functional and health data per home. Promising metrics for sensitive detection of dementia-relevant outcomes are sleep times, computer use, medication taking and driving behaviors. **Conclusions:** Easily deployed unobtrusive technologies for objective assessment of cognition and everyday function in the community

can be readily achieved in diverse populations. This approach promises to greatly expand the opportunities for more objective, ecologically valid assessments and interventions in dementia research.

F4-05-04

HEALTHY AGEING THROUGH INTERNET COUNSELLING IN THE ELDERLY



Edo Richard, Radboud University Medical Center, Nijmegen, Netherlands. Contact e-mail: Edo.Richard@radboudumc.nl

Background: Cardiovascular disease and dementia share a number of risk factors. It is unknown whether treatment of these risk factors reduces the risk of dementia. eHealth offers great opportunities for large-scale delivery of prevention programs encouraging self-management of risk factors. We aim to investigate whether a multi-domain interactive internet intervention to optimise self-management of cardiovascular risk factors can improve the cardiovascular risk profile and reduce the risk of CVD, cognitive decline and dementia. **Methods:** We developed an interactive internet-intervention with coach-support based on 1) previous experiences in three dementia prevention trials (preDIVA, MAPT and FINGER); 2) existing national and European guidelines on CVRM; 3) focus groups with the target population and nurses involved in CVRM. We currently test this internet-intervention in a multi-national, multi-centre, prospective, randomised, open-label blinded endpoint (PROBE) trial with 18-months intervention in persons ≥ 65 years at increased risk of cardiovascular disease and dementia. The trial runs in the Netherlands, Finland and France. The intervention group uses an interactive internet-platform supported by a coach to stimulate a healthy lifestyle. The control group has access to a static platform with general health information. Primary outcome is a composite score of systolic blood pressure, low-density-lipoprotein and body mass index. Main secondary outcomes include effect on individual cardiovascular risk factors, incident CVD, mortality, cognitive functioning, mood and cost-effectiveness. **Results:** Between March 2015 and August 2016 we have recruited 2725 persons. Median age is 69 (IQR67-73), 40% has higher education and 30% has a history of cardiovascular disease. During the first 12 months of the trial, adherence to the intervention was good with over 50% logging in at least 5 times per 3 months and only 20% logging in less than 2 times per 3 months. The 18-months follow-up is expected to be complete in December 2017. **Conclusions:** A large multi-national RCT using an internet intervention to improve the cardiovascular risk profile and prevent cardiovascular disease and cognitive decline is feasible. Whether this leads to a reduction in risk of CVD and dementia is under investigation. Final trial results are expected in mid-2018.

WEDNESDAY, JULY 19, 2017
FEATURED RESEARCH SESSION

F4-06

NOVEL CONCEPTUAL MODELS OF DEMENTIA: DISCUSSION-DEBATE ON PUTATIVE SYNERGIES AMONG MAJOR HYPOTHESIS (CALCIUM, INFLAMMATION AND AMYLOID) MEDIATING SYNAPSE LOSS-DENDRITE PRUNING

F4-06-01

UPDATE OF THE CALCIUM HYPOTHESIS: A FRAMEWORK FOR INTEGRATING NEW EVIDENCE INTO A COMPREHENSIVE THEORY OF PATHOGENESIS



Grace E. Stutzmann¹ and Dean Hartley², ¹Rosalind Franklin University of Medicine and Science, North Chicago, IL, USA; ²Alzheimer's Association, Chicago, IL, USA. Contact e-mail: dhartley@alz.org