ASSESSMENT OF iADL FUNCTIONING IN INDIVIDUALS WITH SUBJECTIVE COGNITIVE DECLINE USING THE VIRTUAL REALITY FUNCTIONAL CAPACITY ASSESSMENT TOOL (VRFCAT)

BACKGROUND

• Continuing advances in the understanding of Alzheimer’s Disease (AD) progression have ignited widespread interest in the development of disease-modifying therapeutics intended for use in preclinical populations.
• Basic activities of daily living (ADLs) are largely preserved in prodromal AD. There is ample evidence for decline in more complex aspects of functioning in preclinical and even prodromal disease.
• Deficits in instrumental activities of daily living (iADLs) are associated with worse outcomes, including quality of life, functional decline, and mortality.

Virtual Reality Functional Capacity Assessment Tool (VRFCAT)

• The VRFCAT was developed as a direct performance-based assessment of functional capacity that is sensitive to declines in more complex aspects of functioning in prodromal and even preclinical disease.
• In previous studies, the VRFCAT has demonstrated high test-retest reliability and has shown sensitivity to demographic and clinical factors in cognitively unimpaired individuals and in those with mild cognitive impairment (MCI).

METHODS

SUBJECTS

A total of 640 subjects were enrolled (253 healthy Younger Adults (YAs) ages 25-54 with a mean of 39.08 and SD of 7.31; 387 Healthy Older Adults (OAs) ages 55-91 with a mean of 68.08 and SD 8.78 (167 females) as well as 55 older adults with Subjective Cognitive Decline (SCD) ages 56-97 with a mean of 71.18 and SD of 6.28 (44 females)). Participation in the longitudinal iADL study includes 11 subjects with current diagnoses of MCI and 7 subjects with Mild AD who were assigned to the SCD group, indicating subjective decline in a minimum of four areas.

METHODS OF FUNCTIONAL ASSESSMENT

• The VRFCAT includes a total of 12 objectives and a subject’s ability to complete instrumental activities associated with a shopping trip, including searching the Internet, calling the store, and buying groceries.

RESULTS

VRFCAT Sensitivity to SCD

• We found that the VRFCAT was sensitive to the cognitive changes detected in SCD, as evidenced by total completion time, error rate, and number of forced progressions.
• All outcome measures demonstrated strong sensitivity to differences between groups (p<.001 for all omnibus and pairwise comparisons).
• DAIs task significantly longer than YAs on all VRFCAT tasks; age differences in completion time were larger for objectives 9, 10, and 12.
• DAIs made significantly more errors on objectives 3, 7, 9, 10, and 12.

CONCLUSIONS

• Assessment of functional capacity in primary prevention and preclinical MCI/AD trials requires measures with improved sensitivity to changes in non-impacted individuals.
• Many studies only use pattern reported measures that lack sensitivity to subtle but important impairments, and performance-based measures represent a viable alternative.
• The VRFCAT is a reliable performance-based measure with sensitivity to age-related differences in functional capacity.
• 40% of DAIs indicated a high degree of familiarity and comfort with computers, indicating computerized testing is appropriate in this population.

ACKNOWLEDGMENTS & DISCLOSURES

• All Keefe currently in the past 5 years has received investigator-initiated research funding support from the Department of Veterans Affairs (VA)/Geriatrics Institute for Medical Research, Genentech, National Institute of Mental Health, Novartis, Pfizer. Genentech, Research Foundation for Mental Illness, Inc., and the Singapore National Medical Research Council. Keefe currently in the past 3 years has received honoraria from Abbvie, Akebia, Amgen, Astellas, Asubio, AviNeuro/ChemRar, BiolineRx, Biogen, Boehringer-Ingelheim, Bristol-Myers Squibb, Eli Lilly, FORUM, Helicon, Lundbeck, Merck, Merck-Achillion, Otsuka, Pfizer, Roche, Shire, Supernus, Teakeda, Targetted, St. Amelie receives royalties from the BAX435 testing battery and the MAPIERZ Battery (MAPIS Symbol Code). He is also a shareholder in NeuroCog Trials, Inc. All Arkhis, All Ingenium, SG Davis and I Stroescu are employees of NeuroCog Trials, Inc.

REFERENCES


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