Measures of Exercise and Cognition in Individuals at High Risk for Alzheimer’s Disease
Sonum Tharwani, Danielle Verble, MA, Alexandra Brown, Whitney Wharton PhD
Emory University: Department of Neurology, Atlanta, GA

Purpose

Alzheimer’s disease (AD) is the most common form of dementia and has emerged as one of the biggest threats to public health and personal well being among older adults.1 Individuals with a parental history of AD are more likely to become afflicted with AD than those without.1 African Americans are 64 percent more likely to develop AD than Caucasians, which increases the public health burden of AD in the US as the non-Caucasian population becomes the majority.3 Thus, in an effort to prevent AD, we must identify high risk individuals and implement economically feasible and modifiable treatment regimens. Increased physical activity has been shown to exert a positive neurophysiological effect on cognitively normal, older people at high risk for AD.3,4 Potential racial differences on the impact of exercise on cognition is unknown. Here, we investigate the potential relationship between exercise and cognition in Caucasians and African Americans with a parental history of AD.

Participants

➢ Seventy nine subjects ages 59.4 +/- 6.5 years with a parental history of AD.

➢ Exercise patterns were assessed utilizing a short, multiple choice questionnaire on the frequency, time of day, duration and intensity of their cardiovascular exercise routine.

Cognition

➢ Use variety of tasks to measure cognitive domains including executive function, working memory, and verbal and visuospatial ability.

Exercise and Cognition

➢ Significant relationship between exercise on cognitive measures of working memory (r=372, p=.03; r=.360, p=.01) and visuospatial memory (r=.382, p=.05), such that longer exercise duration was reported to better cognitive performance. Notably, this benefit was only seen in Whites.

➢ Racial differences on cognitive performance in high risk individuals with a parental history of AD.

➢ The differences in cognition cannot be explained by age or education in our healthy, middle-aged subjects.

➢ Exercise duration may partially explain racial differences on cognitive test performance.

Future Directions

➢ Physiological measures, such as percent body fat, peak VO2, and blood pressure could also be considered.

➢ Future studies should incorporate more sensitive exercise measures such as an implemented aerobic exercise program.

Table 1: Participant Demographics by Race.

Table 2: Cognitive Data for All Participants.

Table 3: Exercise Measures and Data for All Participants.

Table 1 shows our high risk sample is middle aged, mostly female and highly educated. While Blacks and Whites are similar on age and education, our Black participants consist of a higher percentage of females and report significantly less income compared to Whites.

Tables 2 and 3 show results of our exercise and cognitive measures. Cognitive test performance differed significantly in Blacks and Whites, such that Whites outperformed Blacks on 8 of 9 tests. Blacks and Whites did not significantly differ on any exercise measure. All correlations controlled for age, sex, and education.

REFERENCES