

The **IMPACT** Study Design

Improvement in **M**emory with **P**lasticity-based **A**daptive **C**ognitive **T**raining

The first multi-center, randomized, prospective, controlled clinical trial of a widely available, non-invasive cognitive training program designed for adult use

STUDY DESIGN

- Multi-center
- Prospective
- Randomized
- Controlled
- Double-blind

INCLUSION CRITERIA

- Cognitively healthy adults
- Aged 65 and over

PRINCIPAL INVESTIGATORS

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ENDPOINTS

Quantitative Participant-reported Outcomes

- Cognitive Self-Report Questionnaire

Neuropsychological Outcomes

- Repeatable Battery for the Assessment of Neuropsychological Status (RBANS)
- Rey Auditory Verbal Learning Test (RAVLT)
- Rivermead Behavioral Memory Test (RBMT)
- WMS III Digit Span Backwards
- WMS III Letter-Number Sequencing

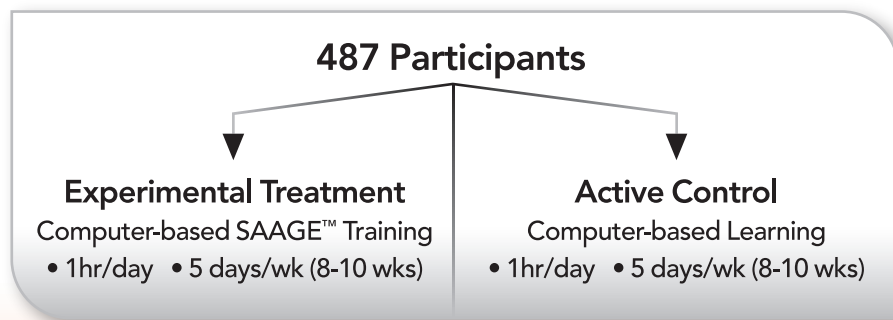
The Issue: Brain Health in Aging

Today's older adults are different from their predecessors. They live longer, have lower disability rates, and are proactive in demanding higher levels of healthcare. And their numbers are swelling: the U.S. population of senior citizens is set to double in the next 25 years, reaching 72 million by 2030.

Brain health is a major issue for these millions of people, even when their brains are aging normally. More than ever before, older adults are looking to their physicians for evidence-based guidance on how to best maintain their brain health. They are wise to do so: clinical research shows that early signs of age-related cognitive decline (defined as normal changes in cognition that accompany aging, e.g., memory lapses) can precede changes in activities of daily living (e.g., ability to manage finances), which in turn often precede changes in living situations (e.g., moving into skilled nursing facilities).

IMPACT: A Landmark Study in Cognitive Aging

The **IMPACT** study was designed to demonstrate that Posit Science's brain-plasticity-based cognitive training (a publicly available program) is statistically superior to non-specific approaches aimed at staying "cognitively active." In addition, **IMPACT** will show the extent to which older adults notice the benefits of training in their everyday lives.



+ Routine Health Examinations

+ Physical Health Maintenance (Diet, Exercise)

+ Ongoing Medical Management

+ Cognitive Health
(SAAGE-based Cognitive Training)

◀ **IMPACT Results:**
Posit Science SAAGE-based Training Is the Missing Piece in Older Adult Care

The Posit Science Program and SAAGE™ Protocols

Unique from other “brain training” approaches, the Posit Science program used in the **IMPACT** study is based upon a specific, data-driven understanding of the root causes of age-related cognitive decline. Incorporating the feedback of world-renowned neuroscientists and physicians, we have developed the **SAAGE™** protocols that allow the Posit Science program to directly improve fundamental brain function. A brain fitness program must employ all five elements of **SAAGE** to successfully improve cognitive function.

SAAGE-Compliant Program Design

SAAGE™	What to look for to effectively improve cognitive function	Why this design feature is essential
<p>SPEED</p> <p>S</p>	<p>A training program based on a rigorous set of scientifically verified compliance protocols that drives the brain to process information more quickly at the millisecond level</p>	<p>The aging brain slows down, becoming less able to keep up with the rapid pace of incoming information. It must relearn to take in this information at the speed of everyday life.</p>
<p>ACCURACY</p> <p>A</p>	<p>A training program based on a rigorous set of scientifically verified compliance protocols that refines the brain’s ability to accurately resolve the range of confusable inputs from basic to complex</p>	<p>The aging brain processes information less accurately, leading to problems correctly classifying confusable inputs. Those inputs must be resolved correctly.</p>
<p>ADAPTIVITY</p> <p>A</p>	<p>A training program based on a rigorous set of scientifically verified compliance protocols that continuously adapts to challenge the individual on a trial-by-trial and session-by-session basis</p>	<p>Exercise challenge must be maintained at a precise level customized for an individual at each specific point in time in order to drive brain change.</p>
<p>GENERALIZABILITY</p> <p>G</p>	<p>A training program based on a rigorous set of scientifically verified compliance protocols with specific design features, such as naturalistic stimuli and multiple stimulus types, to drive “real-world” improvements</p>	<p>To be of real value to users, improvement on a training program must generalize to improvement in real-world activities so that they see changes in their everyday life, not just in the exercise task.</p>
<p>ENGAGEMENT</p> <p>E</p>	<p>A training program based on a rigorous set of scientifically verified compliance protocols that engages and disengages attention, reward, and novelty systems several hundred times per training hour</p>	<p>The brain systems that gate learning and memory—including acetylcholine, dopamine, and norepinephrine—gradually turn off with age. These systems must be re-engaged.</p>



Your brain will thank you.®

About Posit Science Posit Science was established to transform recent discoveries in neuroscience research into practical computer-based training programs that can change lives. Its programs are designed by a team of more than 50 scientists (led by Dr. Michael Merzenich of UCSF) and are rooted in the science of neuroplasticity—the brain’s ability to “rewire” through intensive, specific and progressively challenging activity. Posit Science has received several grants from the National Institutes of Health (NIH) and holds more than 70 U.S. and foreign patents. For more information, please call 800 514 3975 or visit www.PositScience.com.