



**ELITE** PERFORMANCE  
SOLUTIONS



A COLLABORATIVE ONLINE EVENT

# PUSHING THE BOUNDARIES OF ACHIEVEMENT

A SERIES ON THE LATEST EVOLUTION OF APPLIED NEUROSCIENCE



Thank you for joining us today, along  
with our international partners.



# Your Panelists

**Alex Kitzes Ph.D.**

Clinical Psychologist & Co-Founder of Stronger Brains Inc, USA

**Cheryl Chia**

Physiotherapist & Founder of Singapore-based BrainFit

**Dave Stanley**

Director of Learning Ecosystems at LearnFast Australia

## Your Presenter - Henry Mahncke, PhD

Henry is the CEO of Posit Science. He joined Posit Science at its inception in 2003 as Vice President of Research & Outcomes, where he led the first large-scale clinical trials of a publicly available cognitive training program. He became CEO of Posit Science in 2011.

Previously, he served as consultant at McKinsey focused on health care and video games, and then as a science and technology advisor to the British government.

Dr. Mahncke earned his PhD in Neuroscience at the University of California, San Francisco.

# Building Better Brains

Posit Science  
March 2021



**brainHQ**  
*from* **Posit Science**

# Introduction to BrainHQ



<https://vimeo.com/328521490/dd26121ea2>

# A Brief Introduction to Posit Science



## Where We Came From

- **Founded** in 2003 to bring brain plasticity out of the lab and into the world
- **Spun out** of UCSF
- **Funded** by leading venture capital groups, NIH grants, and operations



## What We Do

- **Invent New Science:** Apply brain plasticity to build software-based cognitive training programs that work
- **Get Science to People:** Build programs that people love, and work with great partners to reach millions of people



## Where We're Going

- **Science to the people!**
- **Brain fitness as a core** part of everyone's life





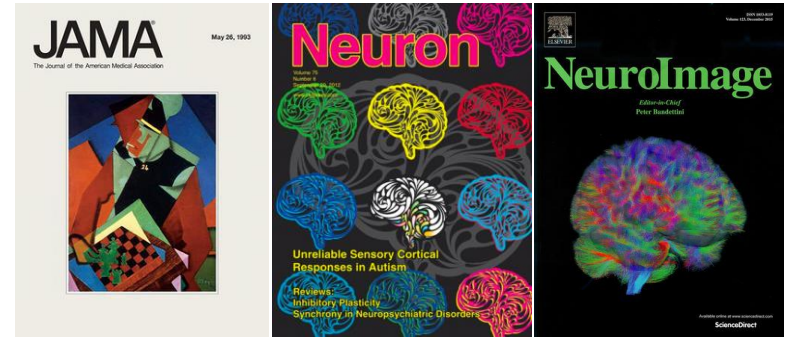
# What makes us unique in this field

## Basic Science



- Led by Dr. Michael Merzenich (UCSF), World leader in plasticity; Co-Inventor of cochlear implant, Kavli Prize Laureate, Honored by all three National Academies, 9 specials on PBS
- Global research network of 600+ university-based research co-authors
- \$12MM+ in direct grants; beneficiary of \$100MM+ indirect grants

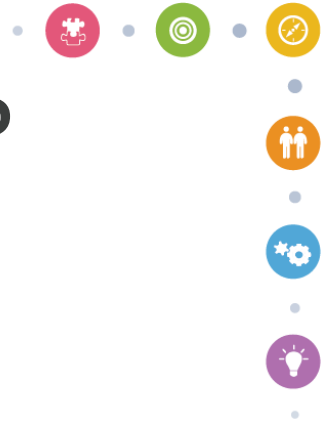
## Clinical Trials



- 200+ peer-reviewed published studies from RCTs with BrainHQ exercises
- 300+ ongoing RCTs (from planning through analysis) from independent investigators
- Benefits shown in cognitive, real-world, and brain imaging measures
- No other cognitive training program with this evidence base



# Brain plasticity – A “bottom-up” approach to improving memory and cognitive function



## “Brain Plasticity”

The brain’s ability to adaptively reorganize itself throughout life



**Brain Plasticity** is the biological correlate of learning, and includes:

- Structural changes
- Functional changes
- Chemical changes

# BrainHQ is a plasticity-based brain training program

Built on AWS; HIPAA and SOC-2 compliant; available on web, iOS, Android

The principles of brain plasticity guide the development of exercises...

...exercises are normed and refined using millions of real-world data points...

...and use adaptive algorithms to sequence exercises/stimulus sets

Speed

Accuracy

Adaptivity

Generalization

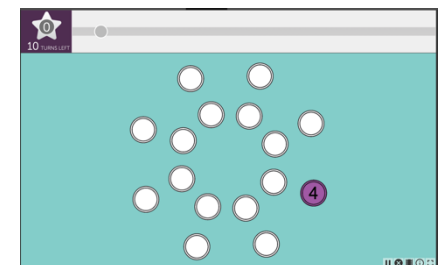
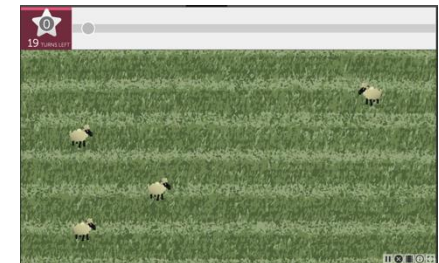
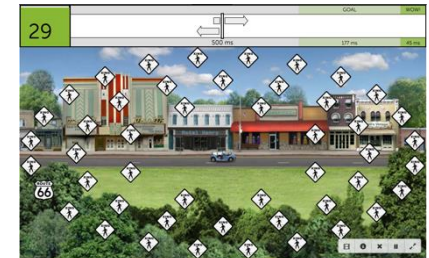
Engagement

Performance norms for demographic variables

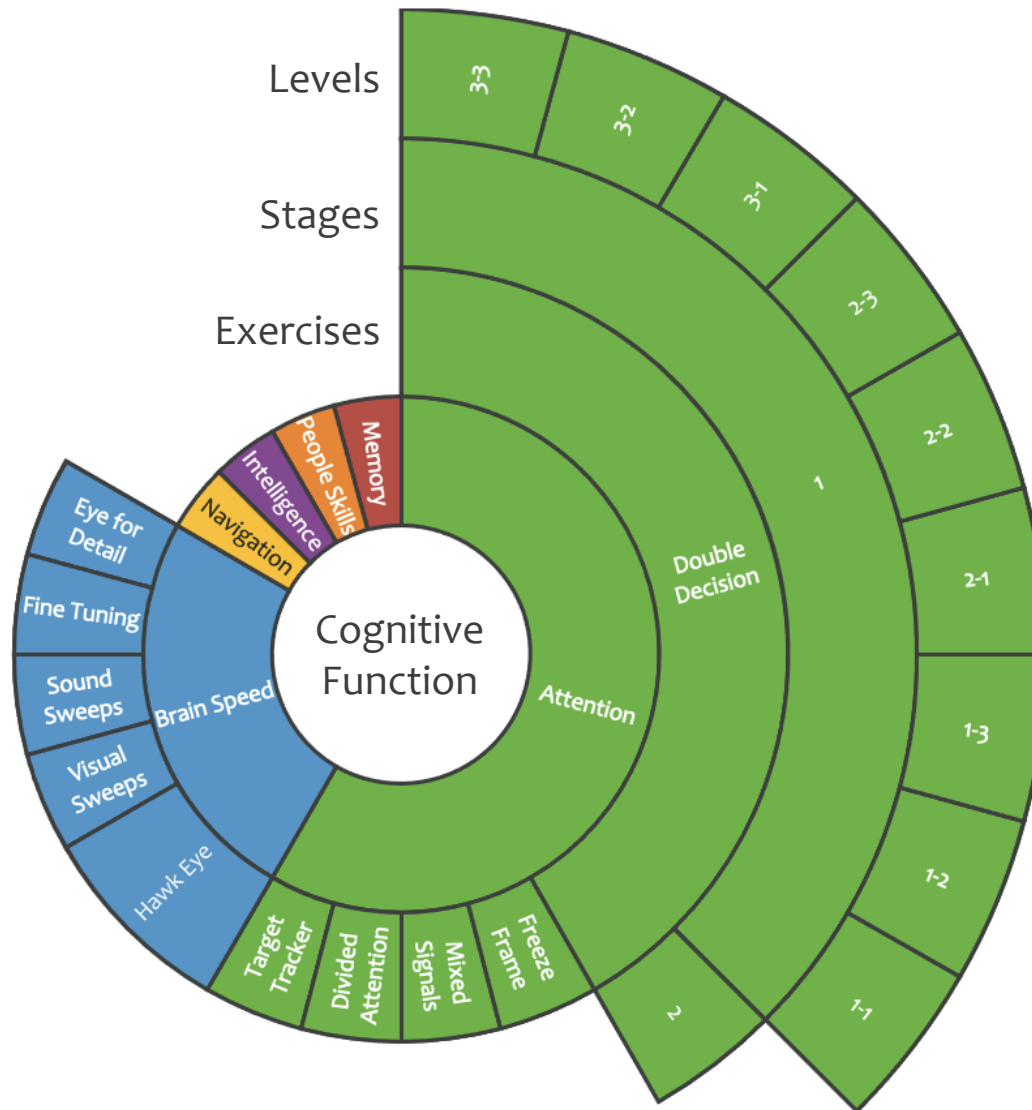
Optimize threshold demographic variables



Refine stimulus sets



# BrainHQ Is Organized Into Cognitive Domains



- BrainHQ is organized into 6 cognitive domains
- Trains Attention, Brain Speed, Navigation, Intelligence, People Skills, and Memory
- Over 800 levels of brain training content
- Each level adapts to a user
- Each level can be repeated to drive optimal performance
- Use the personal trainer to have BrainHQ pick an optimized schedule; or pick individual exercises

# Brain Training with BrainHQ

## Features to help people meet their goals

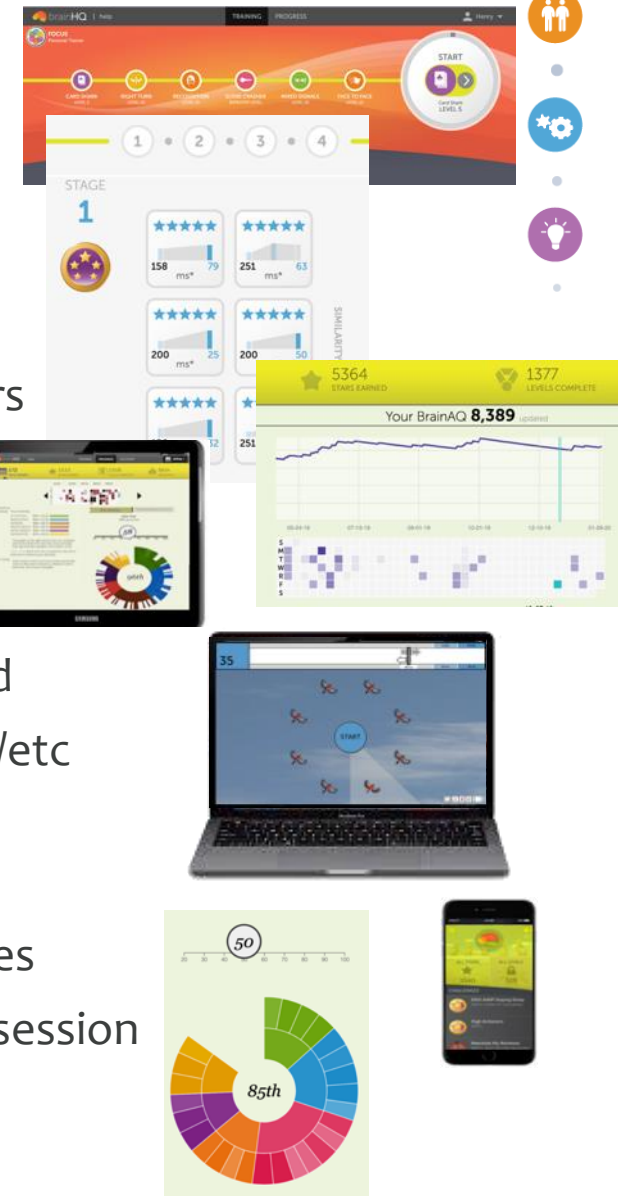
- Dozens of exercises
- Personalizes within minutes
- Track usage, progress, and performance
- Weekly challenges - with goals and email/txt reminders
- Comprehensive brain health information and advice

## Train on any device

- Computer, tablet, phone, Windows, Mac, iOS, Android
- Your own computer, or at a library/community center/etc

## Brain training your way

- Engagement ratio comparable to popular online games
- Average frequency 2-3X per week; 20-30 minutes per session
- Studies show gains after just 10 hours of training





# Who Benefits From BrainHQ

Regain Your Edge

Mental Illness



Military

Get Your Edge

Brain Injury



People Who Can Improve Their Lives With Better Brains

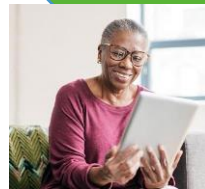


Workforce

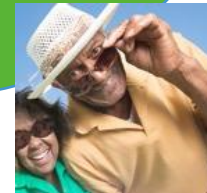
MCI



Sports



Independent Living



Residential Communities

Keep Your Edge



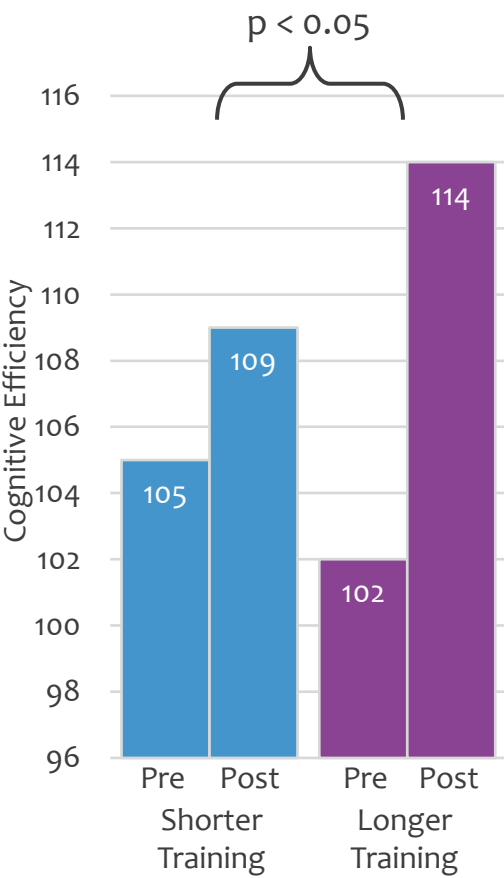


# BrainHQ Helps Knowledge Workers Get An Edge

Fujitsu Study: 22 working adults, all given BrainHQ;  
split into *shorter training* (average of 8.5 hrs of training) and *longer training* (average of 34hrs)

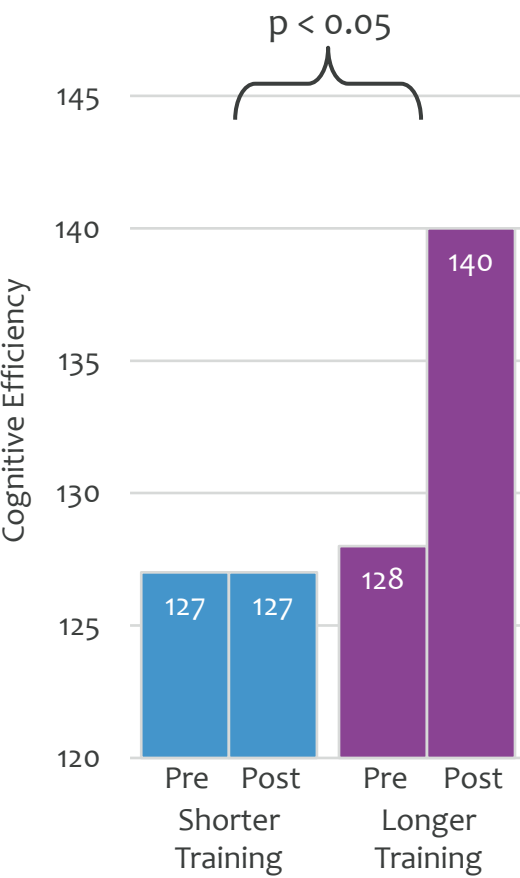
## Processing Speed

DANA Procedural Reaction Time



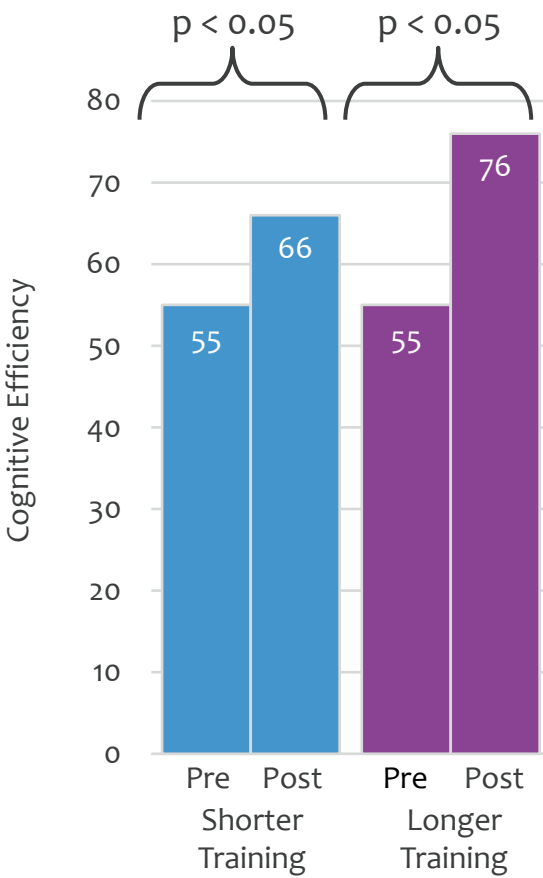
## Executive Function

DANA Go/No-Go



## Working Memory

DANA Match-To-Sample







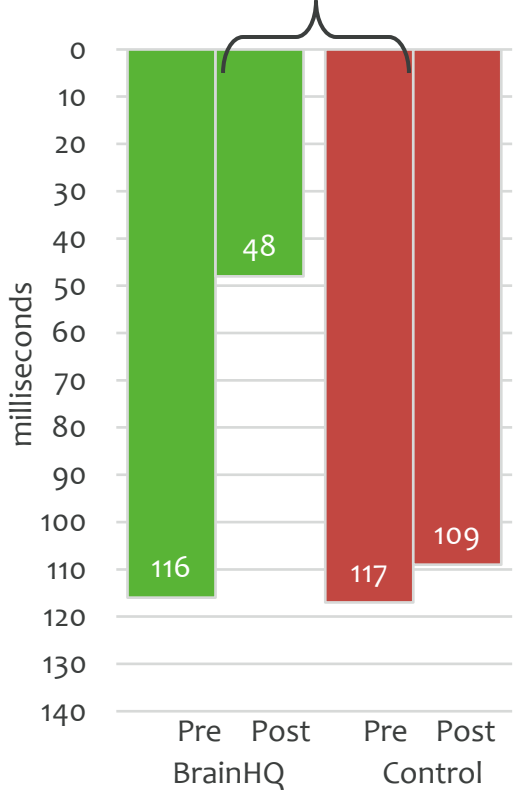
# BrainHQ Helps Older Adults Keep Their Edge

IMPACT Study: 487 adults aged 65+, 40hrs BrainHQ vs 40 hrs adult learning active control

## Processing Speed

High or Low  
(lower is better)

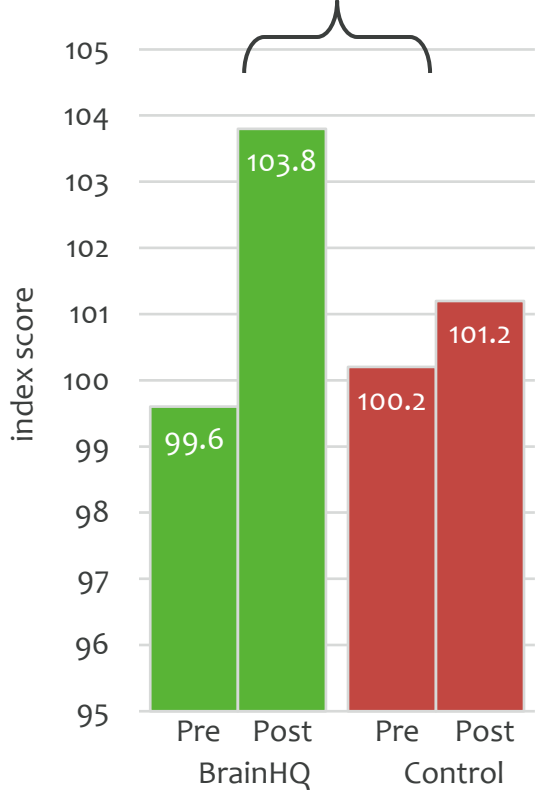
$p < 0.001$  / effect size 0.87



## Overall Memory

RAVLT, RBMT, Digits Backwards, LNS  
(higher is better)

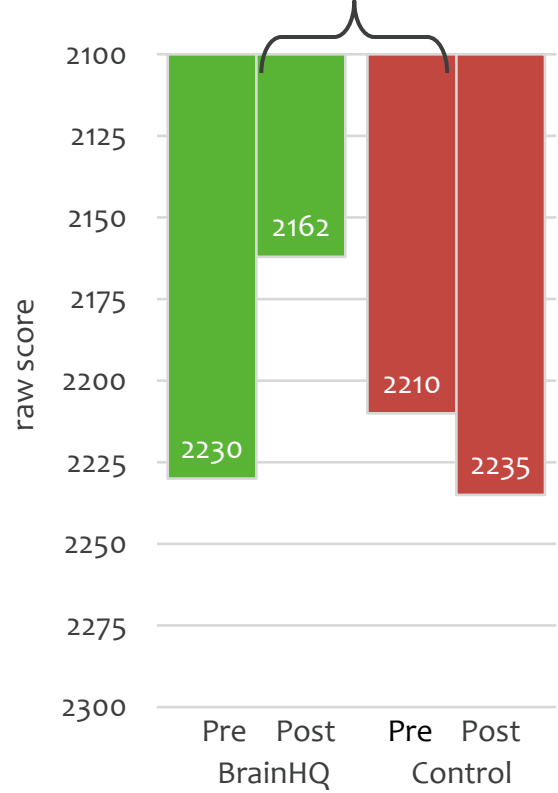
$p = 0.002$  / effect size 0.30



## Everyday Cognition

CSRQ-25 (PRO)  
(lower is better)

$p = 0.001$  / effect size 0.33

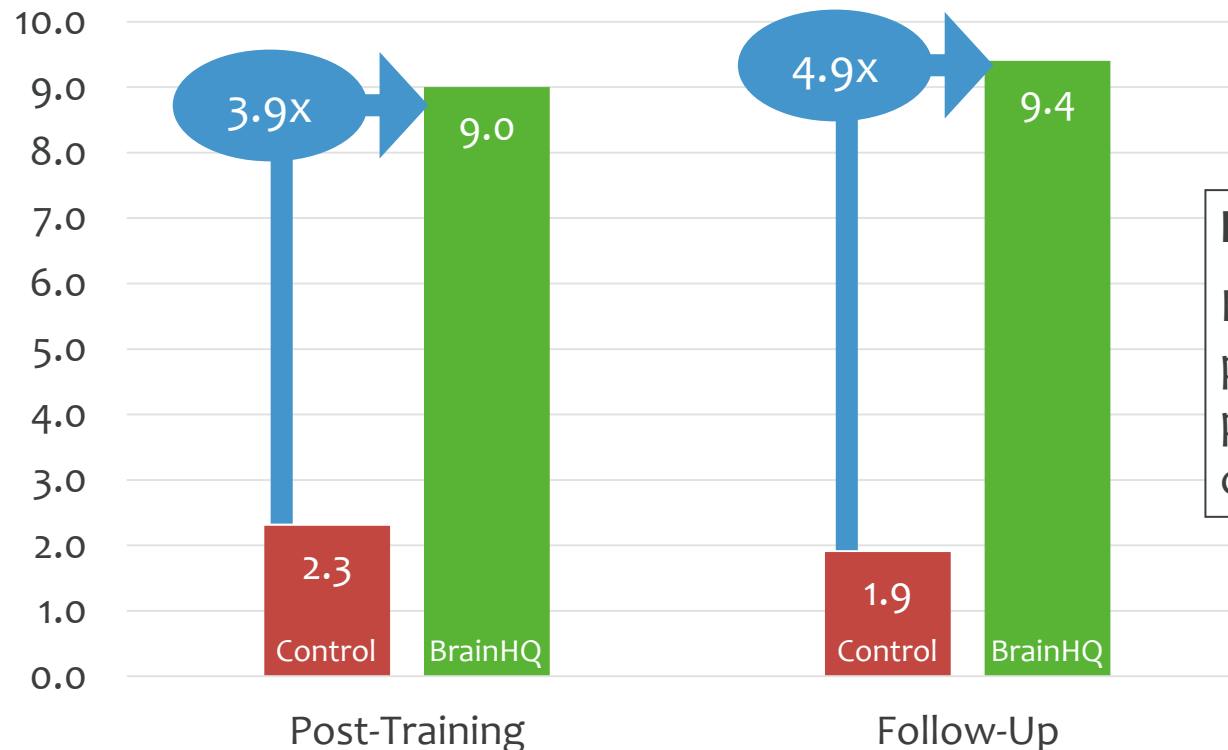




# BrainHQ Helps Servicemembers with Concussion Get Back Their Edge

BRAVE Study: 86 adults with cognitive impairment and a history of mTBI,  
60hrs BrainHQ vs 60 hrs computer games active control

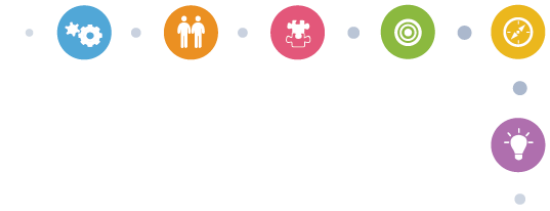
Change in Cognitive Function  
(standard score points)



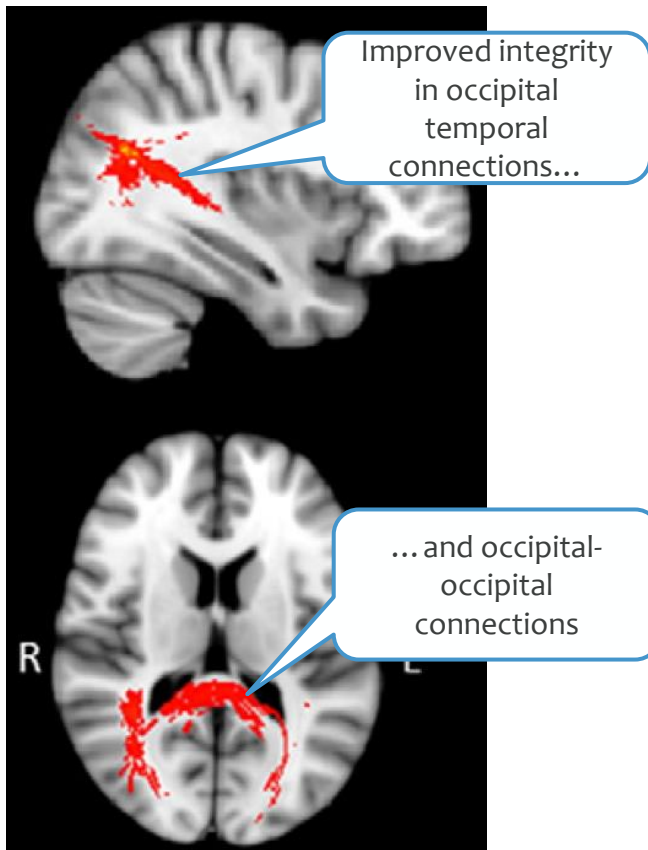
**How big is the change?**

Improvement moves  
population up +24  
percentile ranks in  
cognitive performance

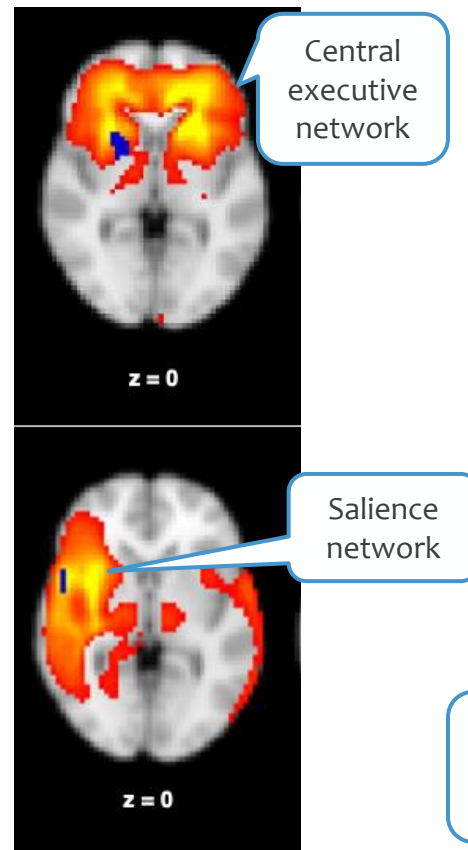
# BrainHQ Rewires Brains



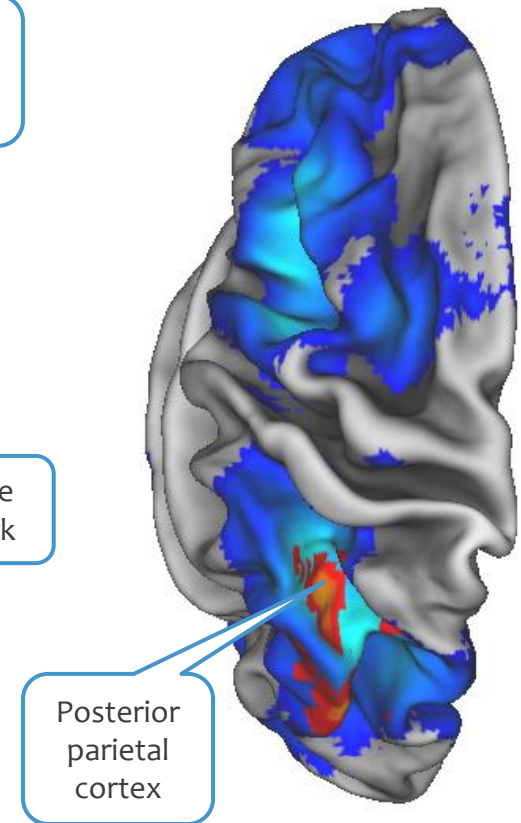
Diffusion Tensor Imaging (DTI)  
measures white matter tract integrity



Functional Connectivity Analysis  
measures cross-regional connectivity



Task-related fMRI  
measures brain activation during  
executive function task (flanker)



# People Love BrainHQ

I just feel like I remember things better and get confused less often. I have no other way besides my healthcare program to get such excellent brain exercises. I do read quite a bit and I find myself reading more now than before. It just seems more enjoyable now. I plan on continuing the exercises for a long time. **-KB**

“I really, really like BrainHQ. **I really enjoy it.** I feel it’s sharpened my cognitive abilities. **I would definitely recommend BrainHQ to others.**” - ML

I was inspired to use BrainHQ because I know I need to keep my brain active. Since beginning to use the program, I feel more engaged with life. **-BC**

Since starting BrainHQ, I enjoy trying to remember things and seeing improvements. I've noticed being more alert and looking forward to what the exercises will be. Since I don't drive, it helps me engage my mind on something. **-SS**

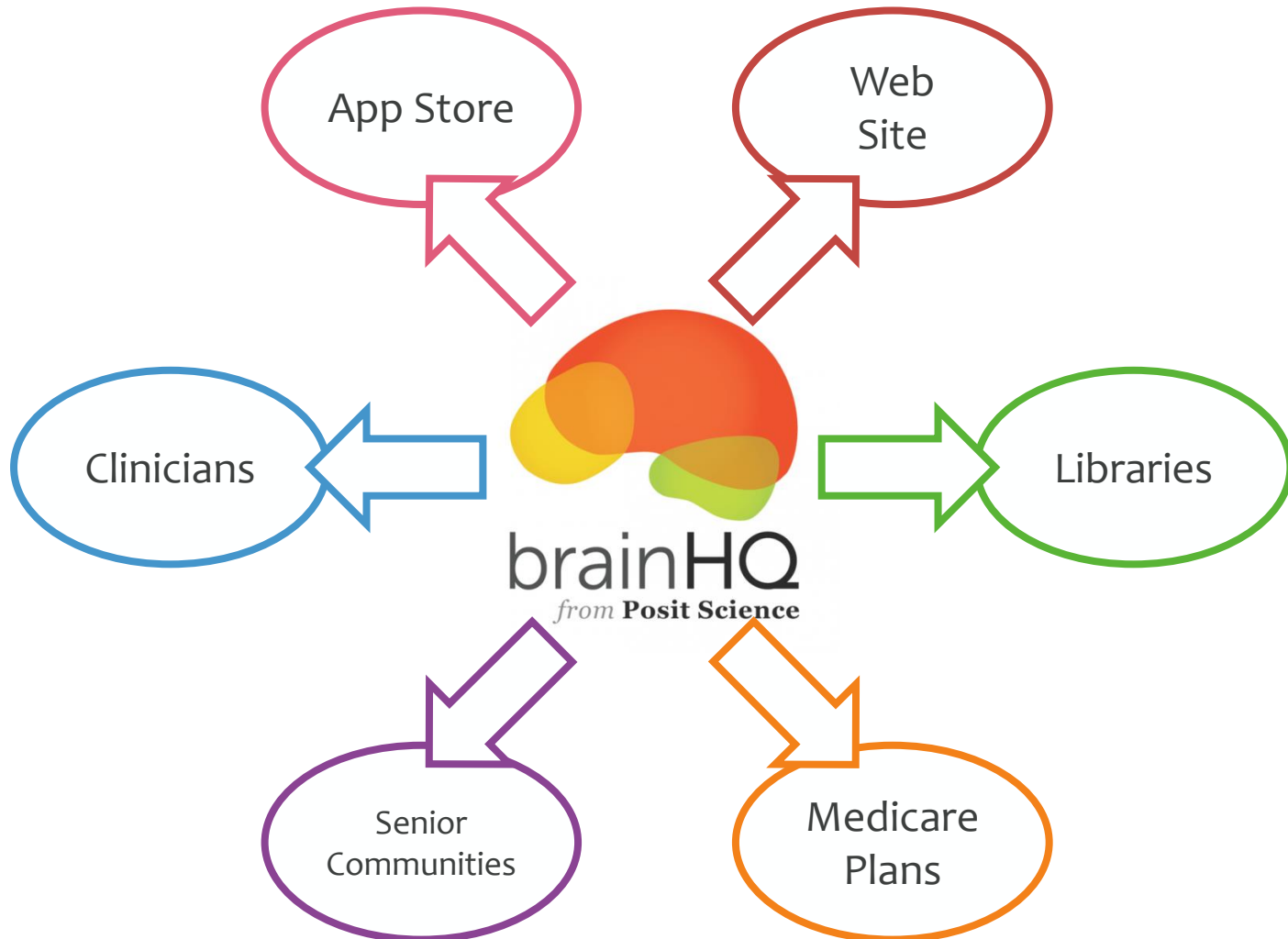
BrainHQ It helps me to concentrate and focus more. ‘Not a day goes by without me training. I look forward to it! :)’ **-PG**

I had a mild traumatic brain injury, and eventually retired my career as a physician from some degree of cognitive dysfunction. I think that [since starting BrainHQ] I do have better ability to concentrate and remember; I also think that my eyes work better than they did for years after my head injury. **-MT**

I enjoy the challenge of BrainHQ. For me, personally, it is just right. I’ve realized more confidence in myself and believe that I can do better. Keep up the great work you are doing! Thank You! **-TL**

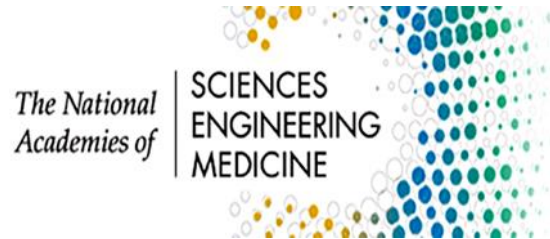


# How People Get BrainHQ

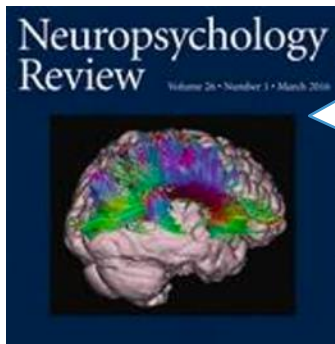


# Key Authorities Have Spoken – And Brain Training is Ready for Use

*New clinical guidelines* from thought leaders on brain training



*New standards* that show which programs have been shown to work...



“Multiple peer-reviewed articles evaluating Posit Science programs have fulfilled the gold standard for clinical trials.”



“Posit Science training drives improvements that are significantly better than other types of cognitive exercise.”

***A new way to improve the lives of everyone with a brain***





## Panel Discussion & Questions

Elite Performance Solutions provides our software and services through our partners:



Thank you again for joining us!

Join us again next month (May 18 or 19) for,

**Team Building & The Impact on Resilience**  
with Brandon Larson.



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