brainHQ
from **Posit Science**

BrainHQ: OPTIMIZING COGNITIVE DECISION-MAKING FOR SUCCESS

The NTOA's new development and resiliency partnership

BY JEFF SELLEG

> "When I came across BrainHQ, I knew it could dramatically change policing for the better, by giving officers the tools they need — not only in the split seconds that often really matter, but in all aspects of police work."
>
> THOR EELLS, NTOA EXECUTIVE DIRECTOR

The NTOA has partnered with BrainHQ from Posit Science to offer a unique program that benefits all branches of public safety. Dozens of online exercises created by neuroscientists will enhance cognitive abilities, maximize personal performance and increase brain health for resiliency/long-term wellness. Studies show that law enforcement officers will benefit from increased recognition of environmental conditions, awareness, and speed of decision-making. They will gain better impulse control and de-escalation capabilities and reduce use of force, traffic collisions and citizen complaints. Ultimately, agencies will maximize risk mitigation and reduce liability through their officers' use of brain science exercises.

This program should be a part of any wellness and resiliency program, and is used by the U.S. military and professional and Olympic athletes. BrainHQ is the only program supported by over 200 scientific studies. Offered to public safety only through the NTOA, this program provides proven results unmatched by any other public safety training.

Read on to find out how the program works, how law enforcement will benefit, the results science has shown from the program, and more on the NTOA's public safety-only curriculum.

How the program works

It is sometimes hard for me to fathom that it was almost 40 years ago that I enlisted in the U.S. Army. At that time, in the mid-1980s, exercise focused on a balance of lifting weights, cardio and calisthenics. Bench, squat and deadlift were the primary lifts. Cardio included running, biking and sometimes swimming. Calisthenics were push-ups, sit-ups and pull-ups. Fast forward to modern times, and we have witnessed dramatic improvements in functional fitness and tactical strength training. Today there is a wide range of options, from CrossFit to hot yoga, plyometrics, isometrics, and all the variations in between. Organizations that need peak performers also have realized that improving cognitive performance is the next step in holistic fitness evolution.

What makes BrainHQ unique is that it is the only cognitive exercise program with multiple scientific studies directly linking the increases in cognition to the efficacy of the exercise. Unique to this exercise regimen is the time commitment. No one would expect significant gains in physical fitness by dedicating just one hour a week to the gym. Yet that's all that's needed to improve your cognitive performance significantly. The BrainHQ regimen asks for approximately 15 minutes a day, four days a week.

BrainHQ exercises have been shown to be effective in improving workplace performance. Leaders have embraced them and focused on improving system-wide peak performance in areas where split seconds can be decisive, including policing, sports and the military. After all, the brain controls the split-second decisions essential to winning in high-stakes, high-pressure situations. The brain controls the movements of the body to execute those decisions.

Equipping Law Enforcement with the Latest Science and Technology to Succeed

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Figure 1: Cognitive Abilities

- **Attention**
- **Balance**
- **Decision-Making**
- **Gait and Mobility**
- **Listening**
- **Memory**
- **Mobility**
- **Multiple Object Tracking**
- **Planning**
- **Peripheral Vision**
- **Social Cognition**
- **Reaction Time**
- **Reasoning**
- **Speed of Processing**
- **Suppression of Distraction**
- **Visual Acuity**
- **Visual Search**
- **Useful Field of View**

> "The brain is an inherent optimizer looking for minimal effort and maximum output. The brain can't grow through ease; it must be challenged."
>
> CLINT BRUCE, U.S. NAVY SEAL

BrainHQ specifically targets and exercises brain speed and accuracy, allowing the officer to make better decisions faster by improving processing speed and accuracy. The exercises sharpen the brain's ability to accurately record information so that you can create a more precise memory that's easier to recall and remains longer in your durable memory. They work to improve inhibitory control, exercising executive control over what you do, even when making seemingly instinctual reactions. Specific BrainHQ exercises train the brain to better suppress distraction, remain in a relaxed-focused ready state and exert greater control over impulses.

Brain science exercises will help you:

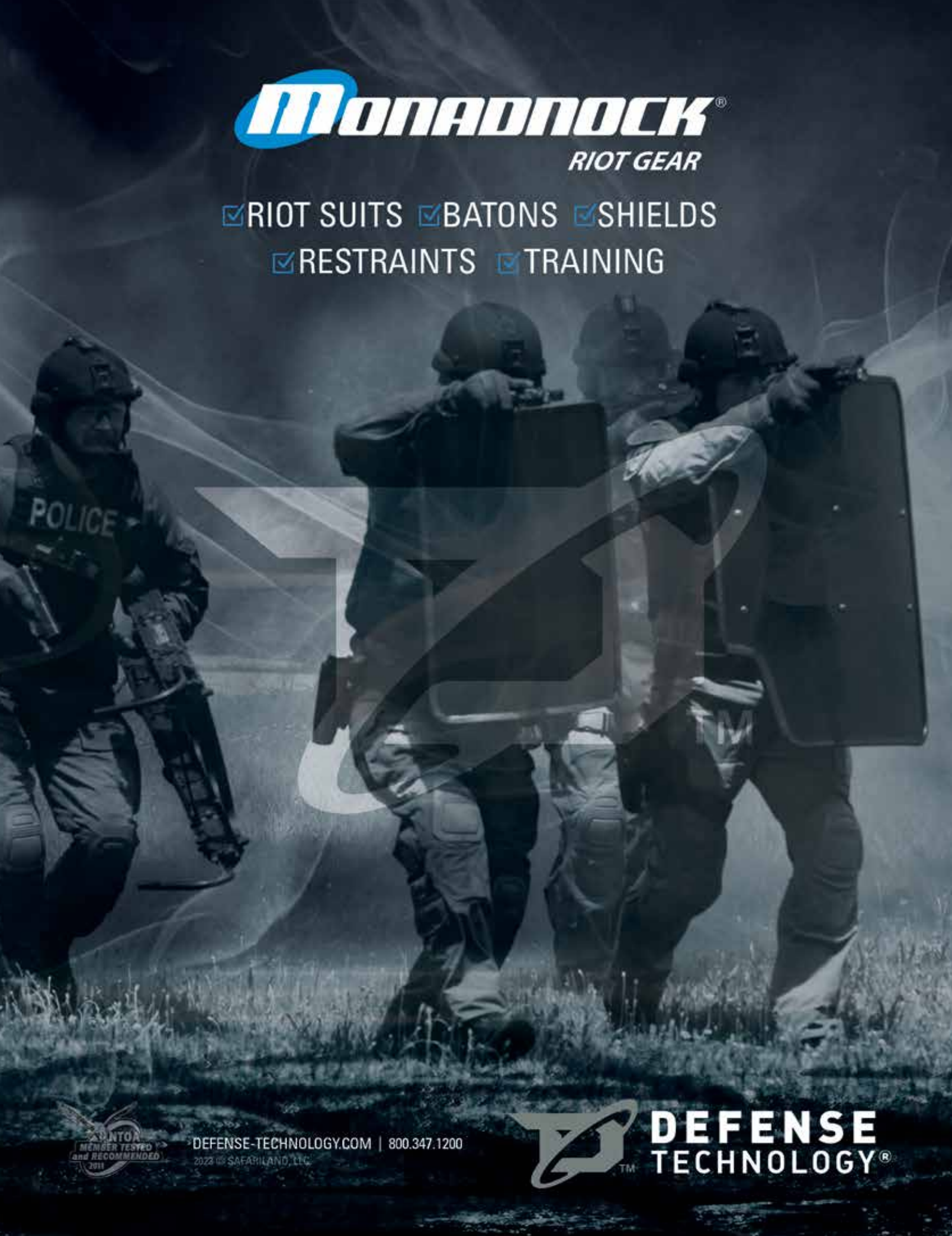
- Drive faster and more accurately process for better decision-making
- Strengthen inhibitory control over impulses
- Improve social cognition and recognize changes in emotions

How subscribers will benefit and what the science says

Research shows that with focused, deliberate practice, subscribers should see dramatic increases in cognitive abilities. (See Figure 1) All of these cognitive abilities play a crucial role in responder performance. The key is focused deliberate practice. The old adage, "If you put garbage in, you will only get garbage out," rings true with all training. But the commitment of one hour a week for these gains provides a considerable return on time invested. More information on the benefits of BrainHQ can be found on NTOA's[1] and BrainHQ's[2] websites.

Brain science also offers personal and professional benefits, and has proven to reduce cognitive decline related to conditions such as dementia and Alzheimer's. Studies have shown many benefits in users' daily lives, including gains in standard measures of cognition (e.g., speed, attention, memory, decision-making), quality of life (e.g., depression, anxiety, confidence, health-related quality of life), and in real-world activities (e.g., balance, gait, driving, everyday tasks).

Just as physical conditioning helps the body become more resilient, cognitive conditioning helps the brain become more resilient. For example, the ACTIVE Study tracked 2,800 older adults for 10 years and found that those who engaged in BrainHQ training for just 18 hours lowered their incidence of dementia by more than 40 percent, compared to a control group.[3]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BrainHQ is a great way to measure and improve your cognitive performance. As with physical exercise, more is generally better, but unlike physical exercise, these brain exercises can drive significant improvement in a modest amount of time. BrainHQ takes a baseline on each exercise and continuously monitors progress over time.

The science

Simply stated, what makes BrainHQ unique is the science. BrainHQ is built on the foundation of the science of brain plasticity — the brain's ability to change chemically, structurally and functionally in response to sensory and other inputs. BrainHQ co-founder Dr. Michael Merzenich won the top honor in neuroscience, the Kavli Prize, for discovering that the brain remains plastic throughout life. He is also the inventor of the cochlear implant, the tiny electronic device that allows some with profound deafness to hear. The implant is founded on the same science of brain plasticity.

The world's leading experts designed BrainHQ to harness that natural plasticity to make the brain perform better. More than 500 university-based scientists came together to design, test, refine and validate the exercises and assessments in BrainHQ. A recent independent review of brain training apps found that most had no studies showing they worked, and only BrainHQ had multiple high-quality studies. More than 200 peer-reviewed medical and research journal articles about the wide range of benefits exist.[4]

Who is using BrainHQ?

The NTOA and Brain HQ founder Posit Science have partnered to design a specific curriculum to benefit public safety responders (police, fire, corrections, EMS, and search and rescue). Many other organizations requiring individuals to achieve peak performance have also partnered with Posit Science, including the National Football League, Major League Baseball and National Hockey League, U.S. Olympic athletes, and peak performance training organizations like TB12, Bigger, Stronger, Faster, NICoE and Microgate. The most famous proponent is NFL quarterback Tom Brady, who started his subscription in 2014.

> "I see more; I see it more quickly, and I make better decisions faster."
>
> NFL QUARTERBACK TOM BRADY

More germane to our needs are the military units using this science. The U.S. Special Operations Command (SOCOM) maintains 25,000 subscriptions across all the SOCOM component forces, including MARSOC, AFSOC, USSOC, and NSWG among ground troops and pilots. The Army Center for Enhanced Performance at West Point, many of the Veterans Administration's medical centers, Walter Reed Medical Center, the Air Force Academy, Intrepid Spirit Center at Camp Lejeune and Fort Belvoir's Hospital Brain Fitness Center all use the program for improving cognitive development, resiliency, and wellness. NASA is a large subscriber of the program, as are many NATO Special Operations Forces.

If your department will make the news, let it be for your leadership in getting your officers the cutting-edge technology used by Special Forces and the world's greatest athletes to support your officers and improve performance.

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Figure 2: Core Exercises

Double-Decision: Trains visual speed, acuity, divided attention, distractor suppression, working memory and useful field of vision.[5]

Target Tracker: Trains tracking multiple objects, visual speed, distractor suppression, working memory and useful field of view.[6]

Mind Bender: Exercises brain speed, attention, inhibitory control, rapid decision-making, mental set-shifting and executive brain function.[7]

Visual Sweeps: Trains on detecting initial movement and the direction of that movement to improve visual speed, visual acuity, visual tracking, motion detection and detecting the edges of movement. This exercise is frequently used by professional athletes, pilots and professional fighters.[8]

Freeze Frame: Impacts visual speed, acuity, tonic alertness, phasic alertness, impulse control and threat vs. non-threat recognition.[9]

Face to Face: Trains facial recognition, emotional cue recognition, visual speed and visual acuity. This exercise develops the critical skill in recognizing micro expressions and the rapid change in emotional expressions.[10]

"If you want to live a long, healthy life, you have to sustain basic brain health,"

KAVLI AWARD WINNER
DR. MICHAEL MERZENICH

The NTOA curriculum

BrainHQ uses smart algorithms to continuously challenge subscribers across seven core regiments across every major system in the brain. The cognitive improvement regiments are attention, brain speed, memory, people skills, intelligence, navigation, and driving sharp. Each has numerous exercises with many levels of difficulty. The algorithms assess each subscriber's unique development needs, leading to an individualized development journey.

The public safety curriculum focuses on six exercises as a core curriculum, which will take approximately 10 to 12 weeks to complete. Subscribers usually perform two to three of these exercises daily, which generally require 12 to 15 minutes. The algorithms then begin to pull exercises from other regiments based on subscriber performance to challenge the users continually. (See Figure 2)

The six exercises in the NTOA's focused curriculum are designed to improve subscribers' observation skills, brain speed, intelligence and vision. This directly impacts their ability to observe faster, more accurately, and pay closer attention to what's essential now, while suppressing distractions. Equally important is analyzing what they see more quickly and comparing it to their previous experiences more efficiently. Many of you will recognize the critical decision-making aspects of Boyd's cycle. By making the first half of Boyd's cycle (observe and orient) more efficient, users can benefit from more time in the crucial second half (decide and act) of the cycle.

The NTOA is proud to bring this partnership to the public safety community. We feel so strongly that the program will dramatically impact our communities for the better that we are offering it to all public safety personnel. NTOA membership is not a prerequisite. The NTOA is offering subscriptions to public safety organizations and individual users. Posit Science is assisting the NTOA in providing these subscriptions at a deeply discounted rate, including free performance coaching and IT support. The subscriptions are $10 a month, discounted by approximately 60% of the average costs for a specially designed curriculum with performance coaching. Organizations that subscribe can track performance and usage through designated administrators.

Visit our website at ntoa.org/brainhq to discover more about the partnership. Departments interested in learning more also can contact the program's manager at jselleg@ntoa.org or (800) 279-9127, ext. 120 to schedule a personalized program overview to provide specifics on how their members will benefit.

Endnotes

1. https://www.ntoa.org/brainhq/
2. https://www.brainhq.com/world-class-science/the-proven-benefits-of-brainhq/
3. https://www.brainhq.com/world-class-science/published-research/active-study/
4. https://www.brainhq.com/world-class-science/information-researchers/
5. https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/attention/double-decision/
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7. https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/intelligence/mind-bender/
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10. https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/peopleskills/face-to-face/

About the author

Jeff Selleg manages the BrainHQ implementation project for the NTOA. He began his career in law enforcement in 1996 and retired as a commander from the Port of Seattle (WA) Police Department in 2022. He served as a member of Valley Regional SWAT from 2000 to 2022, starting on the entry team and further serving as an explosive breacher, sniper, sniper team leader, entry team leader and team commander. Jeff also served as a patrol and administrative services commander with collateral duty commands over the Explosive Detection Canine Unit, the Bomb Disposal Unit and SWAT. He served as a member of the Washington State Tactical Officer's Association board of directors from 2007 to 2020, including several years as president. Jeff currently chairs the NTOA's Tactical Command section.

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