"The Center for BrainHealth has created a world-class environment for researchers to pursue advancements in cognitive health," said Michael Gregory, CIO and Global Head of Highland Alternative Investors. "Their pioneering research was reason enough for our recent partnership, but it was their ability to translate this research into cognitive therapies for former military personnel through its Brain Performance Institute that truly warranted our financial support.*

When veterans leave military service, many of them are leaving the most cohesive, helpful and reliable network they’ve ever experienced. With new experiences, wisdom and skills, they are leaving their familiar brothers and sisters in arms to embark on a journey in uncharted territory as they transition back to civilian life.

"In the military, you are serving your country, but in combat, your focus is simplified to the warrior to your left and your right," said Mike Rials, former Marine Corps sergeant and head of training at the Center’s Brain Performance Institute. "In the service, you have a sense of purpose and a built-in group of individuals who are your mentors, your brothers, your sisters and your best friends who will give and have given their lives for you, if necessary. But that purpose and trust are difficult to emulate or replace when you come home."

Thanks to a $1 million gift from Highland Capital Management, the Center for BrainHealth’s new Brain Performance Institute will have a dedicated Highland Warrior Lounge, where active duty service members, veterans, and military spouses and caregivers can gather, unwind, and unite in camaraderie.

"We were really drawn to the idea of creating a zen-like room specifically for warriors and their families, a place to relax and socialize before and after training," Gregory said. In October, the Center for BrainHealth will celebrate the ground breaking of its state-of-the-art Brain Performance Institute – the cutting-edge facility dedicated to translating leading-edge science to scalable solutions for the public at large. Thanks to private philanthropy, the Warrior Initiative was established in 2012 to provide high performance brain training to current and former military service men and women and their families. This patriotic endeavor has inspired new partners like Highland Capital Management to support the Institute’s building campaign.

"I’m excited for our friends at Highland Capital Management to meet the warriors who will spend hours in this room sharing stories and transforming their lives," said KeeShaun Coffey, former Navy religious program specialist and head of business development for the Warrior Training Team. "The Highland Warrior Lounge will serve as a launching point for our veterans and their families to reach their maximum cognitive capabilities through SMART, our signature brain training program."

In addition to the Highland Warrior Lounge, the Brain Performance Institute will organize and host five Highland Capital Warrior Reunions. Warriors who have participated in the Brain Performance Institute programs will be invited back to reconnect, network and return for supplementary brain boosting sessions months and even years after their initial training.

“We look forward to inviting our military heroes back to the Institute to engage with one another, interface with their clinicians and receive incremental training," Gregory said. "Highland Capital Warrior Reunions will be a forum for warrior families to gather, participate and connect to a place that has become very meaningful to a lot of folks. We are grateful to be a part of this inspiring initiative and proud that our gift will enhance the lives of warriors for years to come."
Dean Promotes Rapid Brain Translation

Since 1989, Dean Moore has led the rapid growth and expansion of the School of Behavioral and Brain Sciences (SBBS) at The University of Texas at Dallas, of which the Center for BrainHealth is part. His commitment to ensuring that students are exposure to the research underly while also encouraging innovation to expand the range of brain-related research into actual use has led to a dramatic increase in interest in neuroscience and put UT Dallas on the map as a leader in the field. During his 26-year leadership, the number of SBBS students has risen from 500 to more than 2,400, partnerships with University department have flourished and the development and expansion of new brain-browsing and innovation have taken root.

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Young Professionals Make $25,000 Gift for Mindfulness Research to Treat Depression

The Think Ahead Group (TAG) awarded $25,000 to Lundh & Himes to study the effectiveness of mindfulness training to treat depression. Depression affects more than 350 million people worldwide. Himes, a research and cognitive neuroscience graduate student, is seeking to uncover a way to treat it without reliance on prescription medication. Mindfulness training is a non-invasive practice that encourages a person to focus on the moment without pursuing any thoughts or sensations. It is also known to reverse the depression-related atrophy of the hippocampus, an area of the brain critical to emotional functioning. Himes hopes to validate mindfulness training’s low cost and sale effect with the help of the grant.

Each year TAG, a young professionals’ organization, raises funds through membership and its annual Charity Derby Party to support Center for BrainHealth research. TAG members voted to fund Himes’ study from a pool of proposals.

“Everyone knows someone who has been or will be affected by depression at some point in their lives,” explained Preston Robertson, TAG co-president. “We’re pleased to support a research project with such promise and potential to reach a large population in need of life-enhancing brain health.”

Study Reveals Brain Network Responsible for Cognitive Changes in Multiple Schizophrenia

Approximately half of the 2.3 million individuals living with MS experience changes in cognition such as impaired concentration, attention, memory, and judgment. But the underlying brain basis for these effects has been largely elusive. New findings published in Neuropsychology reveal that decreased connectivity between network-specific brain regions are to blame for the aforementioned cognitive changes associated with MS. Researchers at the Center for BrainHealth, in collaboration with UT Southwestern Medical Center, found individuals with MS presented with exacerbated connectivity between brain networks compared to those with healthy controls. The researchers believe that the diminished connections are likely the result of decreased white matter fiber size and density.

“While white matter is essential to efficient network communication, white matter degradation is symptomatic of MS. This study really highlights how tightly coupled connectivity is to performance,” explained BrainHealth principal investigator Dr. John Hart, Jr. for the study.

Study Finds Nicotine Changes Marijuana’s Effect on the Brain

Annually 70% of marijuana users also smoke tobacco, yet few studies have included tobacco users in marijuana research. Center for BrainHealth’s Francesca Filby, Ph.D., Director of Cognitive Neuroscience of Addictive Behavior, and her team recently published a study in the journal Behavioural Brain Research, exploring the effects on the brain of using both. The study found that using both marijuana and tobacco causes neurochemical changes that may result in nicotine dependence. The smoking of the marijuana and nicotine using group. The team also found an association between numbers of cigarettes smoked and hippocampal size of non-users predicted a direct relationship to memory function; the smaller the hippocampus, the better the memory performance. In contrast, hippocampal size of non-users predicted a direct relationship to memory function; the smaller the hippocampus, the better the memory performance. There were no significant associations between hippocampal size and memory performance in individuals who only use tobacco or only use marijuana. “We have always known that each substance is different and that effects on the brain and behavior that their interaction may not simply be a linear relationship,” said Dr. Filby. “Future studies need to address these compound effects of substances.”

C E N T E R  G O I N G S - O N

S A N D I  C H A P M A N ,  P h . D .
P r o f e s s o r  a n d  S c h o o l  D i r e c t o r ,  C e n t e r  f o r  B r a i n H e a l t h

P r o m i n e n t  U . K .  N e u r o s c i e n c e j o i n s  t h e  B r a i n H e a l t h  T e a m

Understanding the Brain

Prominent U.K. Neuroscientist Joins the BrainHealth Team

“Understanding how the brain works and improving brain function is key to quality of life,” said T. Boone Pickens, Energy investor and philanthropist. “I believe in the potential of the young talent at the center. The Center for BrainHealth is developing brainbreakthroughs in this field. I am impressed with the student; their creativity and their contributions to brain science.”

Robertson is one of the Center’s most promising neuroscientists. He is a very talented researcher and cognitive neuroscience graduate student, is seeking to uncover a way to treat it without reliance on prescription medication. Mindfulness training is a non-invasive practice that encourages a person to focus on the moment without pursuing any thoughts or sensations. It is also known to reverse the depression-related atrophy of the hippocampus, an area of the brain critical to emotional functioning. Himes hopes to validate mindfulness training’s low cost and sale effect with the help of the grant.

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Alzheimer’s Update

Although no conclusive test exists to predict who will develop Alzheimer’s, new research from the Center for BrainHealth is attempting to identify a potential biomarker that could offer a more complete picture of who is at most risk.

In a study published in the latest edition of the Journal of Alzheimer’s Disease, researchers identify a specific variation in brain waves of individuals with amnestic mild cognitive impairment (aMCI), those at twice the risk of others in their age group of progressing to Alzheimer’s disease. The findings depict a pattern of delayed neural activity that is directly related to the severity of impairment in cognitive performance on a word finding task and may indicate an early dysfunction of progression to Alzheimer’s.

The potential diagnostic approach utilizes electroencephalogram (EEG) technology, a more affordable and non-invasive alternative to other available methods such as MRI or a spinal tap, to measure neural responses while participants access general knowledge and concepts.

“This is a promising start at looking at a group of MCI patients. The long-term goal is whether this can be applied to individual patients one day,” says study principal investigator John Hart, Jr., M.D., medical science director at the Center for BrainHealth.

“The majority of EEG research in aMCI has focused on looking at the mind ‘at rest’, but we are looking at the brain while it is engaged in the object memory retrieval process. We think this might be more sensitive and specific in pointing out certain cognitive deficits, in this case semantic memory, than other non-EEG methods available, because EEG reflects direct neural activity,” explained study lead author Hsueh-Sheng Chiang, M.D., Ph.D., a research doctoral student at the Center for BrainHealth at the time of the study. “This protocol could potentially provide complementary information for diagnosis of pre-dementia stages including MCI and identify neural changes that can occur in cases of Alzheimer’s disease.”

This work is in collaboration with Raksha Anand Mudur, Ph.D., from the University of Illinois at Urbana-Champaign, and researchers from UT Southwestern Medical Center and Johns Hopkins University School of Medicine.

Study funding was made possible by grants from the National Institutes of Health (RC1-AG035954, P30AG12300), RGK Foundation, Alzheimer’s Association New Investigator Grant (NIRG-11-17851), Berman Research Initiative at the Center for BrainHealth, and the Linda and Joel Roubic Friends of BrainHealth New Scientist Award.

The Alzheimer’s Association’s newly-released report was a call to action for Americans to redouble efforts to prevent and fight this progressive, and ultimately fatal, brain disease. With the number of people age 65 and older with Alzheimer’s expected to grow from 5.1 million to 7.1 million in the next ten years, two Dallas-based organizations are taking charge to further the Center for BrainHealth’s leading-edge research to change the trajectory of this devastating disease. The AWARE Fund of The Dallas Foundation and Sammons Corporation provided funding to advance Alzheimer’s-related research aimed at finding treatments that could potentially stave off Alzheimer’s disease in individuals at risk for dementia.

“As a company, we have seen firsthand the effects of Alzheimer’s disease on our parents and grandparents,” said Christie Anderson, director of corporate communications for Sammons Corporation. “By partnering with Center for BrainHealth, we are supporting advancements that will slow the progression of the disease so that future generations may live longer, healthier and happier lives.”

“Our grant review committee was very impressed with the Center for BrainHealth’s research in the area of slowing the progression of Alzheimer’s disease,” said Janet Broyles, president of AWARE. “It is important to us that we keep our grant dollars in the Dallas and North Texas communities, and that we support such fine non-profit organizations as Center for BrainHealth, who are actively making a difference in the fight against Alzheimer’s disease.”

The Center’s research focus lies with those faced with mild cognitive impairment (MCI), a state in between normal aging and Alzheimer’s disease, a previous randomized clinical trial was aimed at determining whether strategy-based cognitive training could significantly slow disease progression.

Preliminary findings suggest that eight hours of strategy-based cognitive training improves brain function, including strategic attention and abstraction in individuals with MCI. With support from AWARE and Sammons Corporation, BrainHealth researchers will now add a session of brain stimulation, a small electrical charge delivered to specific brain areas, before each training session. Additionally, the project will use imaging technology to measure change in brain energy metabolism and to measure global brain blood flow and connectivity.

“By combining this targeted neurostimulation device with our proven high performance brain training, we hope to prime the brain and enhance plasticity to incrementally increase brain health and performance,” said Sandi Chapman, Ph.D., founder and chief director of the Center for BrainHealth. “We are grateful to Sammons Corporation and AWARE for their commitment to improving the brain’s resilience and better understanding markers of brain health and decline.”
From school children to corporate executives and warriors to athletes, we can all change our minds.

Next month Center for BrainHealth at The University of Texas at Dallas will break ground on its Brain Performance Institute — the first facility of its kind, solely focused on translating and delivering scientifically validated programs that increase brain performance, enhance brain resilience and incite brain regeneration across the lifespan.

Proclaimed “one of the jewels of the UT System” by UT System Board of Regents Vice Chairman R. Steven Hicks, the Brain Performance Institute’s mission is to provide the information—and the tools—the public needs to enhance their brain health at all stages of life. Initial Brain Performance Institute offerings will include high performance brain training for people of all ages, virtual reality training for teens and adults on the autism spectrum, and BrainHealth Physicals.

“Understanding how the brain works and improving brain performance is key to quality of life. The Center for BrainHealth is developing breakthroughs in this field.”

T. BOONE PICKENS
Texas Energy Executive

“We never stop to think how we might use our brains to enhance our energy, health, emotions or our clarity and creativity of thought. The SMART program lets us understand the potential methods of using our brains.”

LUCY BILLINGSLEY
Entrepreneur, SMART graduate

People who have made this vision possible
Our reach goes far beyond Texas

We’ve already helped unlock the brain potential of more than 40,000 Warriors, First Responders, Military Spouses & Caregivers, Executives & Teens.

And the number is growing exponentially.

Thanks to private philanthropy, programs for warriors, first responders, and military spouses and caregivers are provided at no cost to them. State and private funding have provided programs to students in more than 106 middle schools.

"Training from the Brain Performance Institute has helped me in my classes and to get better grades. It changed how I thought about myself and made me look differently at school."

LAUREN
8th Grade Student

"I struggle with relationships and mathematical tasks. The strategies I have learned here will help me with both of those things. I wish I had done this sooner!"

OTTO
First Responder, Army Veteran

Targeted programs offered at the Brain Performance Institute

Healthy Teens and Adults • Social Cognition • Military Veterans, Service Members, Spouses and Caregivers • Mild Cognitive Impairment • Post-Traumatic Stress Disorder • Professionals in High-Stress Environments • Autism • Traumatic Brain injury • Alzheimer’s Disease

Our brains are adaptable. Repairable. And trainable.

With the creation of the Brain Performance Institute, we are able to ensure that life-enhancing, scientifically validated programs will be available — both at this location and beyond — via mobile and virtual training teams.

Randomized clinical trials have shown that Center for BrainHealth-developed programs offered through the Brain Performance Institute have been documented to cultivate the following:

- 30% INCREASE in standardized test scores
- 50% GAIN in higher-level reasoning
- 8%-12% INCREASE in global brain blood flow
- 14% INCREASE in neural connectivity
- 86% IMPROVEMENT in the social brain for those on the autism spectrum

"It gave me hope after a traumatic situation, and I think it would do the same for others going through difficult experiences. Also my mother has Alzheimer’s, so that is a concern. The BrainHealth Physical and SMART training help to address any worries you might have, as well as give you many tools to continue improving your brain health."

SUSAN SELKE
Mother of a veteran

"High Performance Brain Training for Warriors
Marine Corps Base Hawaii — Kaneohe Bay"