

I-PAS™ Chosen by Department of Defense to Baseline West Point Cadets

Pittsburgh, PA. October 10, 2018: Researchers at Keller Army Community Hospital, West Point, NY have begun a study investigating the integration of emerging technologies into the evaluation of concussion. This study includes Neuro Kinetics, Inc.'s (NKI) new I-PAS™ (I-Portal® Portable Assessment System), an FDA-cleared and highly sensitive neuro-functional assessment tool that runs an extensive ten-minute battery of oculomotor, vestibular and reaction time (OVRT) tests.

The Defense and Veterans Brain Injury Center reports 383,947 diagnoses of traumatic brain injuries (TBIs) among service members during the period of 2000 -2018 worldwide, of which more than 80% were classified as mild (mTBI), more commonly termed concussions. While the vast majority of concussion symptoms resolve in the short-term, these injuries can lead to long-term cognitive deficits, behavioral changes, and even contribute to some degenerative diseases. Furthermore, concussions may result in prolonged or permanent neurologic injury, especially if the patient incurs subsequent head trauma before being sufficiently healed. Within the military, concussions and their consequences significantly impact military readiness. The current lack of objective assessment tools to diagnose concussion injuries and make informed decisions about clearing soldiers to return to duty are significant gaps in clinical care in this population.

While concussions are a concern at all levels of military leadership, as they are within the population at large, the FDA has yet to clear a device with the specific indication: “an aid in the diagnosis of concussion or mTBI.” The study’s goal is to investigate the utility of several novel technologies designed to provide objective data that have the potential to assist with concussion assessment and management. The Keller team has collected roughly 300 OVRT baseline measurements using I-PAS™ from cadets who volunteered to participate in the study. Following a suspected concussion, I-PAS testing will be repeated at multiple time points post-injury. Data collection using I-PAS began in May 2018.

Kenneth Cameron, PhD, MPH, ATC is the Director of Orthopaedic and Sports Medicine Research at Keller Army Community Hospital, West Point, NY and serves as the study’s principal investigator. When asked about the need for the study Dr. Cameron stated, “There is a significant need to develop more objective concussion assessment tools that are sensitive to cognitive and neuro-motor functional deficits that can be effectively used for initial injury assessment and monitoring recovery following injury. We believe that the technologies that we are evaluating in this study have the potential to fill this gap and be informative in clinical decision making.”

Baseline testing for participants was performed during time set aside for annual baseline assessments conducted at the United States Military Academy at West Point. Prior to testing, the research team at Keller trained with experts from NKI to learn how to collect clinically viable data. The protocol defined for the study takes about 10 minutes to administer, and is similar to



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the I-PAS™ test battery in use in the Indy Racing League, LLC concussion evaluation protocol [announced in May](#).

NKI is a known leader in the field of non-invasive, neuro-functional diagnostic testing. The company's technology platform reveals objective biomarkers invisible to the naked eye. The latest of NKI's inventions, I-PAS, is the accumulation of more than 30 years of OVRT testing in scores of clinical settings around the world. NKI's expertise and two-dozen active patents are unmatched in the industry. NKI's innovative I-PAS resembles a virtual reality headset that easily slips on and off the user's head.

Subjects tested with an I-PAS device are asked to follow or react to targets presented before their eyes by the LED screen integrated into the I-PAS, while built-in infrared cameras track the movement and changes of their pupils with unmatched sensitivity. The pupil reactions to each test are recorded in NKI's VEST™ software.

I-PAS was cleared by the U.S. Food and Drug Administration (FDA) in November 2017, predicated on NKI's cleared I-Portal Neurologic Testing Center and Video Nystagmograph systems. Vestibular and eye-movement deficits are frequently symptoms associated with concussion, which is only one of more than 200 illnesses and injuries correlated with irregular eye movements. Other published research suggests that NKI's I-Portal technology is vital in helping to diagnose concussions and mTBI. Examples include these peer-reviewed studies: [“Oculomotor, Vestibular, and Reaction Time Tests in Mild Traumatic Brain Injury”](#), Balaban, C. et al. *PlosONE*, 2016 and [“The use of Oculomotor, Vestibular and Reaction Time Test to assess mild Traumatic Brain Injury \(mTBI\) over time”](#), Hoffer, M. et al. *Laryngoscope Investigative Otolaryngology*, 2017.

NKI's President and CEO, Howison Schroeder, says, “Neuro Kinetics chose to invest in science and technology before marketing. We are honored that the superior performance resulting from this strategy has made I-PAS the choice for this important study, paving the way for helping some of our country's finest young men and women.”

To learn more about NKI, please visit www.neuro-kinetics.com.

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ABOUT NKI

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Neuro Kinetics, Inc. (NKI) is the leader in clinical eye tracking and non-invasive neuro-otologic



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diagnostic testing. Research shows that abnormal eye responses can help to diagnose more than 200 diseases and medical conditions. With 22 issued patents and over 150 installations, NKI's FDA cleared I-Portal® devices are sold to physical therapists, audiologists, ENT's, neurotologists, neuro-ophthalmologists and neurologists around the globe. The company's cleared diagnostic platforms include the I-PAS® (I-Portal® Portable Assessment System), I-Portal® NOTC (Neuro-Otologic Test Center), I-Portal® VNG, (Video Nystagmography) and I-Portal® VOG (Video Oculography), along with related accessories, software, training and support services.

I-Portal systems have been in use for many years by prominent university and federal laboratories for concussion research studies. Concussions, as mTBI's are widely known, are an increasing public health concern. The absence of an objective diagnostic device has made health care practitioners eager for a device that can measure concussion symptoms acutely and over time with speed, precision and reliability. Recent third party research initially indicates a battery of OVRT (oculomotor, vestibular, and reaction time) tests, in combination with NKI's I-Portal devices, can support a more accurate diagnosis of mTBI (concussion) symptom measurement both acutely and during convalescence. NKI is actively working toward gaining clearance for its I-Portal® systems as an aid in the diagnosis of concussion based on this and other research.