The Current

Helping people regain life thru neurotechnology

Winter 2013

Stories to tell on Pinterest

We are going social to tell the stories of neurotechnology. Pinterest is a social media network designed to build a community using rich visuals. Neurotech Network has created a board featuring Neurotechnology Users to highlight the people who use neurotechnology in their daily lives. Help us build the community by:

- *Following our Neurotechnology Users Board*
- *Help us find pins for our board*
- *Let others know about our Neurotech Users Board.*

Follow this link to our Pinterest Board and help us tell how neurotechnology impacts people's lives.

Outreach Activities

Educational outreach is a key component of our mission. Look for us and our partners at these events and hosting educational sessions,

- United Spinal Association Webinar, February 27, Cutting Edge Fitness for Wheelchair Users.
- American Spinal Injury Association Annual Meeting, May 5-8
- United Spinal Association Webinar, June 19, Zapping Away the Pain
- Cleveland New Neural Engineering Workshop, June 24-26
- Neurotechnix, International Congress on Neurotechnology, Electronics and Informatics, September 18-20

Learn more about our outreach activities and upcoming events on our Upcoming Conferences Page.

Raising Money for Access

A paradox for experimental implanted devices is that they can provide meaningful function and life changing impact, but what happens when the research ends and the funding stops?

This is the case for Erik Ramsey who was 16 years old when he became locked inside his body following an automobile accident. He is now 30 and still mute and paralyzed. In

2008, he received an implanted prosthesis to resort speech. The experiment was partially successful in which he was able to produce basic vowel sounds simply by thought. Now, the research project has ended and the funding has ceased; leaving Erik with an implanted device absent of any support functions.

Erik, his father, Eddie, and lead researcher, Dr. Phil Kennedy, are on a mission to get a working device back for Erik. They are raising money to make that possible. Learn more about his effort by visiting NeuralSignalsDonate.com

Building Awareness In the Media

Increasing awareness about neurotechnology and how it can impact people with neurological conditions and disorders can be done in many ways. One way is through exposure in the media. See where neurotechnology has been mentioned recently in major media outlets:

- CBS 60 minutes 'Breakthrough: Robotic rm moved by mind
- FoxNews.com, Neurostimulation system allows paralyzed athlete to walk down the aisle at her wedding
- Washington Post, Brain Health, My Journey out of the Wheelchair

Finding neurotechnology in other major media outlets? Let us know.

Real Stories: Device Helps Deliver Good Night Sleep

More than 30 years after returning from Vietnam, Mike Davis still could not get a good night's sleep. This decorated Veteran spent two tours in Vietnam, serving as an Attack helicopter pilot in the Army, where a gunshot wound in the ankle ended his military career. After his return, life simply was not the same. For years, Mike insisted that he did not have any problems. "I was in passive denial," he explains. He continued to fly in a civil capacity, fighting forest fires and logging in the Pacific Northwest.

In February 1982, an accident had a profound impact on his life. One of the blades on his helicopter broke and Mike went tumbling in the air. After crashing to the ground, he was unconsciousness for 45 minutes and has only a few flashes of memory from the accident. Three days later and fully conscious, Mike was faced with his physical injuries; severe TBI, four compression fractures in his low spine, three in his neck and all but two ribs broken.

From that point, his sleep patterns became worse, coupled with chronic pain in his back. He turned to pharmaceutical solutions to help ease the effects of insomnia. "They were my pass-out pills," described by Davis as the only way he could get to sleep. Many years and therapy sessions later, an Army Major introduced Mike to a new device, saying the Cranial Electrotherapy Stimulation (CES) device was "Like a TENS unit for the brain." At first, he was skeptical. He did his own research about the device and the scientific studies supporting the therapy.

Once convinced, he tried the Fisher Wallace Stimulator. After the first several treatments, Mike started slowly cutting back on the sleep medications. Using the device two times per day; once each morning and evening, he began to see

improvements. Within a few months, Mike found himself completely off his sleep-assisting medications.

Mike continues his treatments and, unlike before using the CES device, now awakes feeling better than when he went to sleep. The bad dreams that haunted him since Vietnam have ceased and he has dramatically decreased his use of pain medications, as well. What advice does he have for others? He encourages people in similar situations to try the device as a potentially viable alternative to medications. Mike suggests that the device worked well for him but may not work for everyone.

Mike Davis is now sleeping well. He spends his awaking hours as National Director of Vietnam Combat Veterans, Ltd.; VET-NET, a communications and service network for Veterans and their Family Members. Learn more about VET-NET at http://VET-NET.org/. To learn more about the Fisher Wallace Device

Neurotech Network provides a resource page for Sleep Monitoring and Diagnostics including community resources and access to information about treatments. Click here to access our Sleep Educate Page.

News of Interest

- Building a Bionic Ankle with iWalk and Cogmedix introduces a new prosthetic ankle and lower foot device. This new technology integrates sensing system into a prosthetic, the BiOM. Read more here.
- SANTE (Stimulation of the Anterior Nucleus of the Thalamus for Epilepsy) trial further results were reported at the annual meeting of the American Epilepsy Society. Five years after the first patients with intractable epilepsy signed on to a multicenter study of deep brain stimulation (DBS) to control their seizures, they continue to get better. Read more here.
- The Smartpatch Peripheral Nerve Stimulation system received CE Mark approval for treatment of chronic shoulder pain. The device has electrodes that are close to the peripheral nerves. The company is currently looking to receive approval from the FDA for the Smartpatch to treat post-stroke and post-amputation pain. Read more here.
- New study results for sub-acute stroke survivors in the Journal of NeuroEngineering and Rehabilitation. This is an observational study of functional outcomes with a focus of providing a benchmark for expected change in gait function in early stroke patients, from an intensive inpatient rehabilitation program including both robotic and manual gait training. Access the article here.
- An implanted chip that extracts electrical signals from the inner ear to power itself. A new cochlea chip developed out of MIT uses a biological battery to self-charge. Read more here.
- Sensory-Motor Active Rehabilitation Training Arm (SMART Arm) is a device developed by researchers from The University of Queensland and James Cook University in Australia. The device uses an interactive computer program allowing stroke survivors with upper limb weakness to drive their own rehabilitation. More about this story is here.
- A team of engineers at Vanderbilt University's Center for Intelligent Mechatronics

has developed a powered , light weight exoskeleton that enables people with paralysis to stand, walk, sit and climb stairs. There are prospects for commercial development with Parker Hanifin Corp. Read more here.

- For people living with Multiple Sclerosis, balance problems are among the most common symptoms. Learn about an anti-gravity treadmill device designed to help with balance as well as fatigue. An article from *Momentum* magazine is here.
- Using non-invasive stimulation, researchers at the University of Pittsburgh help people with high level spinal cord injuries improve the use of their hands. Read more about this research here.
- Craig Hospital in Colorado has earned the American Nursing Association's U.S. Top Nursing Quality Award in Rehabilitation. Read more here.
- NeuroMetrix received FDA clearance for the use of its disposable electrodes for the SENSUS device. This device uses transcutaneous electromagnetic nerve stimulation to ease leg pain associated with diabetic peripheral neuropathy. To read more click here.
- Robotic legs of the HAL Exoskeleton are featured on IEEE.tv with the first person in the United States to use the device outside a clinical setting. Watch the IEEE.tv feature here.
- Deep Brain Stimulation is now being investigated for those with the early stages of Alzheimer's disease. The possible outcomes may be a means of boosting memory and reversing cognitive decline.The first patient was implanted with the device at Johns Hopkins University. More on this development is available here.
- Mind-Controlled robotic hand allows a woman who is paralyzed from the neck down to pour water. Investigators at the University of Pittsburgh are working with brain-computer interface technology and robotics to give movement options for people who are paralyzed. Read the full story here.
- Case Report recently concluded that patient-cooperative robotic gait training for improving locomotor function of a chronic stroke survivor has better outcomes than robotic training alone. Read the journal summary here.
- Bioness has obtained 510(k) clearance from the FDA for its L300 Foot Drop System to be used in treating foot drop in pediatric patients with cerebral palsy and other neurological diseases. Read more here.

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