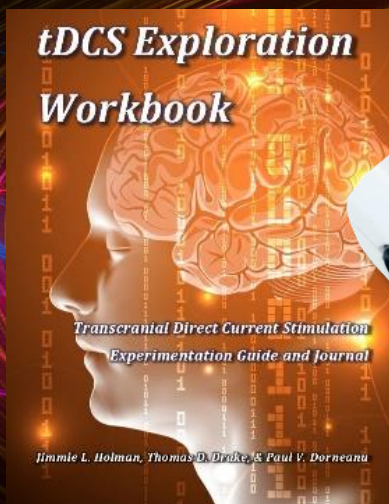


Building YOUR SuperBrain

Using tDCS to be our very best.



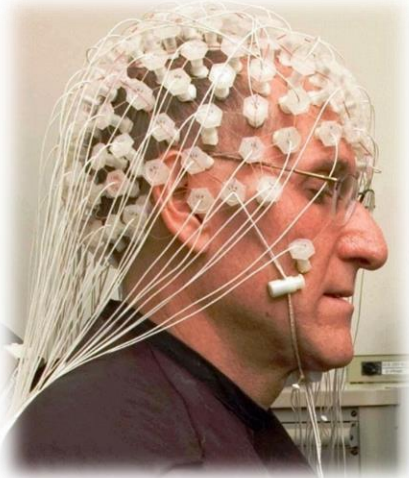
Jimmie Holman, Thomas Drake, & Paul Dorneanu

Transcranial Direct Current Stimulation (tDCS) is a popular brain stimulation method that is used to modulate cortical excitability, producing facilitatory or inhibitory effects upon a variety of behaviors.

Who among us wouldn't want to change something about our own brain, or at the very least, wish it would work just a little bit, (maybe even a LOT) better at times? The science associated with this modest form of brain stimulation is safely available, affordable, and usable by almost anyone wishing to be the best they can be. This includes boosting memory or cognition, increase athletic performance, enhancing online gaming performance, accelerate learning or addressing personal issues such as depression, anxiety, schizophrenia, chronic pain, etc.

tDCS is for EVERYONE!

Transcranial Direct Current Stimulation (tDCS) is something VERY different from what many envision as massive wires and electrodes attached to one's head (EEG) or Electroconvulsive Therapy (ECT) which uses much higher current to intentionally trigger full brain seizure. Today's tDCS is far simpler and safe!



Pulsed Technologies' practical tDCS instrument provides a simple direct current electrical signal at VERY LOW VOLTAGE and EXTREMELY LOW CURRENT to SAFELY stimulate particular targeted neural pathways. Although this may sound complicated, it definitely is not.

Over the past decade, there has been hundreds of studies performed and published to examine and document the many beneficial effects of mild neurostimulation on the brain, both in humans and animals.

Background of the Technology

Dating back as far as the first century, mankind has used application of electricity for therapeutic effects. Over the centuries, various electric rays, eels, and catfish have been utilized in the treatment of various disease processes ranging from epilepsy to hemorrhoids.

At the beginning of the 20th century, electrotherapy moved largely into the realm of quackery due to America's transition to allopathic medicine. Our goal at Pulsed Technologies for tDCS is to provide an alternative solution for brain enhancement outside of Big Pharma. We want to provide the end-user with the knowledge of tDCS, electrotherapy, and all necessary tools needed to make the best personal choice for one's personal wellbeing. Please reference the following articles for information and research on America's forced transition to the far more profitable pharmaceutical based allopathy we know today.

Each of these articles helps describe this forced move toward today's allopathic medicine.

*"The Hypocrisy of Allopathy – When the Healing Art Became the Business of Medicine"*¹,

*"Fall of the House of Pharma – A Modern Day 'House of Cards' (Part 1)"*²,

*"Fall of the House of Pharma – Toppling the 'House of Cards' (Part 2)"*³,

*"Fall of the House of Pharma – Supplemental Information" (Part 3)*⁴



¹ <http://www.pulsedtechresearch.com/wp-content/uploads/2014/11/Hypocrisy-of-Allopathy-When-the-Healing-Art-Became-the-Business-of-Medicine-Holman-Allen.pdf>

² <http://www.pulsedtechresearch.com/wp-content/uploads/2015/06/Fall-of-the-House-of-Pharma-Part-1-Holman-Allen.pdf>

³ <http://www.pulsedtechresearch.com/wp-content/uploads/2015/06/Fall-of-the-House-of-Pharma-Part-2-Holman-Allen.pdf>

⁴ <http://www.pulsedtechresearch.com/wp-content/uploads/2015/06/Fall-of-the-House-of-Pharma-Part-3-Supplemental-Information.pdf>

While electrical stimulation and study of the brain has been with us for some time, this technology did not come to the public forefront until after a presentation given by Dr. Amy Kruse of DARPA's Defense Sciences Office. DARPA, or the Defense Advanced Research Projects Agency, is the research division of the U.S. Department of Defense. Dr. Kruse's presentation at the DARPA Intelligence Community Forum on Operational Science shared significant information on the application and implications of the military's use of this technology in training select service personnel. Dr. Kruse, furthermore, delved into the positive outcomes when tDCS is applied to specialized military personnel; this includes accelerated learning, enhanced visual perception, enhanced intelligence analysis, improved imagery recognition, and strengthened overall performance.

"So, what DOES that mean for ME?"

Although numerous studies have been published on tDCS technology including both the military and private sector, tDCS technology can be used by most people. Ideally, this means, the common person can use tDCS technology to stimulate their brain to help create their own "SuperBrain".

Within her presentation, Dr. Kruse referenced studies done to accelerate the learning, training, and abilities of military personnel. In pilot/flight training, the use of tDCS enabled pilots to learn twice as fast as individuals in the control group. In intelligence imagery analysis, tDCS was used to enhance the visual cortex of personnel to improve the detection rate of threats by three times the normal rate. At the bare minimum, these studies indicate:

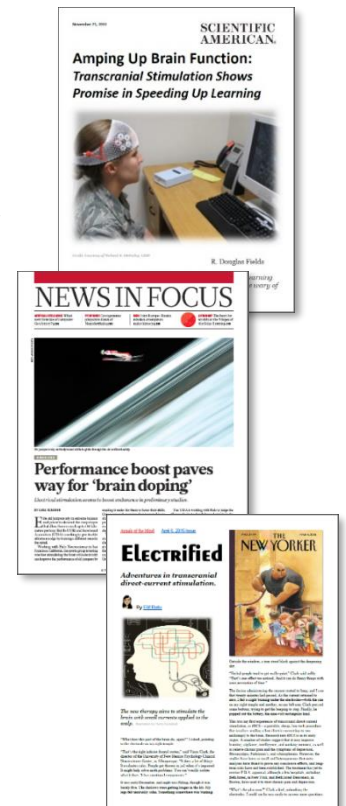
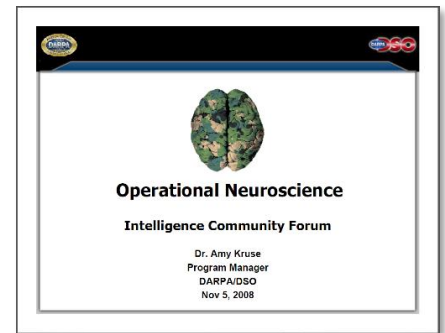
- Accelerated Learning
- Cognitive Enhancement
- Persistent Situational Awareness

While this group of studies did not solely lead the way for other studies to follow, it certainly piqued the interest of other research groups to investigate more. Popular and reputable journals including *Scientific American*⁵, *Nature*⁶, and *The New Yorker*⁷ provided additional insights and possibilities of the use of tDCS technology.

tDCS provides a broad range of benefits and improvements in overall cognition processes. This includes:

- Reducing depression and anxiety
- Reducing risk-taking behaviors
- Improving speech and social interactions
- Facilitating creativity
- Improving meditation and mindfulness

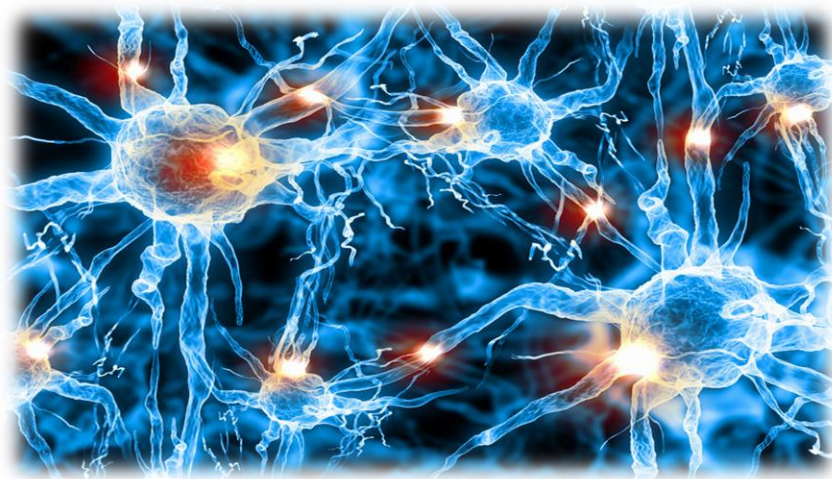
This technology is only as safe and effective as the individual using it.



⁵ <https://www.scientificamerican.com/article/amping-up-brain-function/>

⁶ https://www.nature.com/polopoly_fs/1.19534!/menu/main/topColumns/topLeftColumn/pdf/nature.2016.19534.pdf?origin=ppub

⁷ <https://www.newyorker.com/magazine/2015/04/06/electrified>

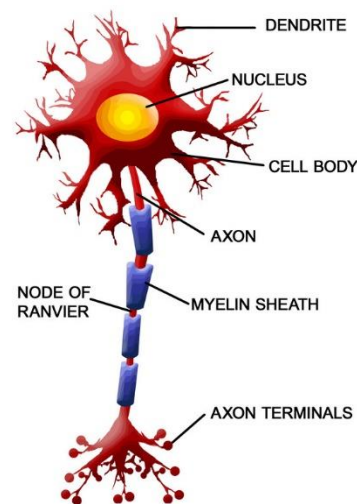


“Amping Up” or “Toning Down”

In order to most effectively use this technology, it is essential the user understand something of how tDCS works and the physical changes that happen to the brain. To put it simply, tDCS works by amplifying or inhibiting intrinsic neural pathways in the brain by directly applying electricity to the head. Because Direct Current (DC) electricity uses a specific positive (+) and negative (-) terminal, the direction of electrical current flow can be used to excite an area by providing electron (positive (+) current flow) or inhibit an area by

drawing electrons away (negative (-) current flow). What seems to make this mechanism possible is that the applied voltage and current levels are high enough to enhance the neural components in the brain to be more readily conductive to more easily pass electrical signals faster, but low enough so that the applied electricity does not actually trigger the synapse itself. While this mechanism is going on, at the same time the neural pathway is being strengthened by the build up of myelin (the material that protects and insulates the nerve axon) on the outside of the nerve axon. After repeated use of tDCS on a specific pathway, these pathways tend to become permanently strengthened and enhanced.

When using this technology, it is imperative for the user to also carry out the action that is meant to be altered or enhanced. In order to gain lasting effects and quality outcomes, repetition is key. For instance, if an individual is attempting to accomplish “Accelerated Learning”, he or she needs to be actively studying or learning. Furthermore, if an individual is attempting to enhance “Motor Skills” or “Motor Control”, he or she should be performing the physical act or exercise while under the influence of tDCS.

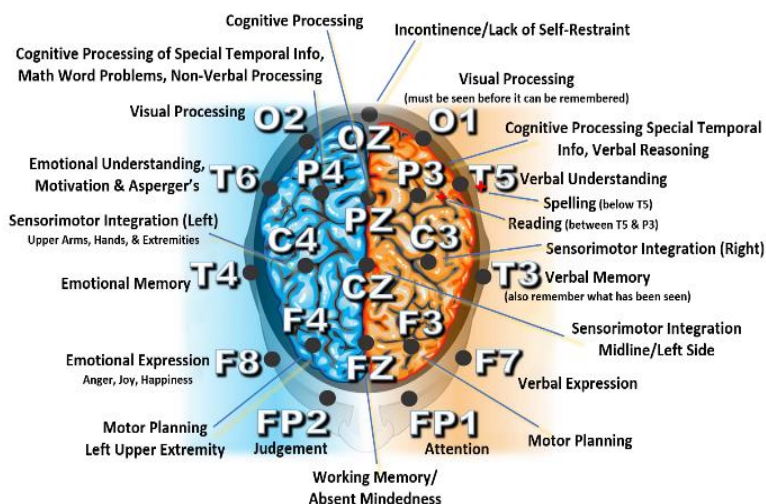


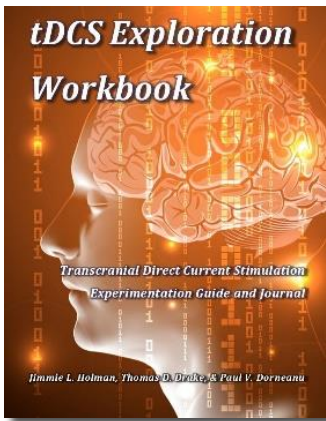
When implementing these strategies lasting physical changes have been recorded via fMRI in as little as 5 uses.



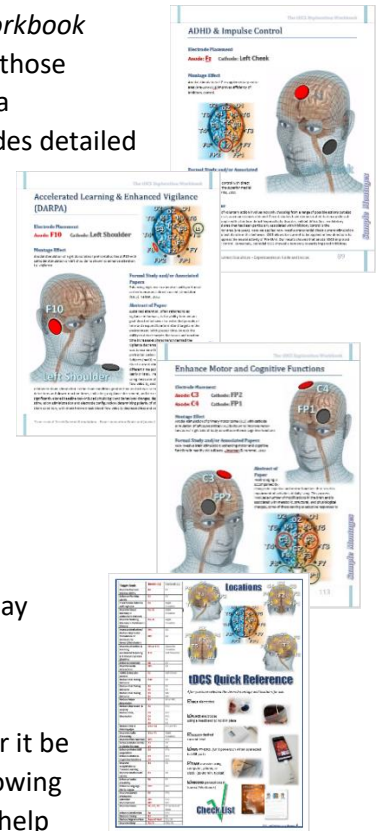
Selective Targeting & Practical Use

Scientists have already mapped out the brain and shown what general areas control human functions and cognition. Pulsed Tech researchers have assembled and categorized the relevant data needed so one may successfully use tDCS technology as well as explore further one's personal areas of interest.





Pulsed Technologies has put together a *tDCS Exploration Workbook* (incorporated within the PulsedTech tDCS kit) as a guide for those interested in serious self-improvement and enhancement via transcranial direct current stimulation. This workbook provides detailed information about tDCS technology, how to use it, including journal pages to help measure self-progress. This heavily illustrated guide can equip anyone interested in tDCS with the essential knowledge and foundation to run successful tDCS sessions. The tDCS Exploration Kit will provide most any user with the knowledge and skill to benefit from this technology.



Practical Applications

tDCS technology has a wide range of practical applications. These areas of improvement may have a broad spectrum including personal life, social life, and professional life.



Enhancement of **COGNITIVE FUNCTION** is beneficial to people of most ages. Whether it be studying for a test, performing work, or slowing the effects of aging, tDCS technology may help improve many cognitive aspects of life.

While use of this technology can allow us to remain our very best, tDCS research suggests it can be even more valuable as a tool for **REHABILITATION** and **REPAIR**. This applies to neurological disease processes (for example **ALZHEIMER'S** and **PARKINSON'S DISEASE**) and the damage caused by head trauma.

Another area tDCS can be applied for is **PHYSICAL REHABILITATION**. There are montages that can stimulate and enhance **MOTOR CONTROL** and **FINE MOTOR CONTROL** in limbs.

While most issues mentioned thus far focus on the "Amping Up" of specific areas, there are certainly times when one would desire to "Tone Down" areas such as in cases of **MIGRAINE HEADACHE**, **FIBROMYALGIA**, or other **CRONIC PAIN**.



ANXIETY, DEPRESSION, PTSD

are also areas where one likely would expect to suppress certain areas. These are especially interesting areas of consideration. Numerous mood-altering montage options are available so that the end-user can determine what seems to work best for him or herself and the unique situation.

ADDICTIONS and **CRAVINGS** are other areas where "Toning-Down" may offer optimal relief. Toning down while simultaneously stimulating other areas may offer the most ideal outcomes.



AUTISM/ADHD may be another good example of this. “Toning-Down” certain areas while also stimulating specific **COGNITIVE/AWARENESS** functions could prove to be incredibly important. This can be done by strategic placement of the electrodes.

For any of these problem issues there may be times such a pregnancy or allergic reactions to conventional pharmaceuticals when conventional drug-based therapies simple aren’t viable or effective options. In some reported cases it has been found the subject receives far better and more long-lasting results from tDCS than from conventional drug therapy. When one considers cost comparisons and ease of use, tDCS likely should be something worth trying.



COMPETITIVE EDGE can come in many forms be it mental, physical, or **ENDURANCE** levels. A competitive cyclist, weightlifter, etc. has been known to endure more weight or extend their distance as signals to the muscles have been shown to not reduce as much when exhausted.

Olympic ski jumpers have shown more precision control when training/practicing with tDCS.

When speaking of **COMPETITIVE EDGE**, what might that mean for the workplace or scholastic environment. **ACCELERATED LEARNING** could have enormous implications in a work or school environment putting the user ahead of his peers. What might this mean for the student “cramming for a test” or for the employee needing to “cinch the following day’s presentation to that all important client? It might be just as important to an actor simply trying to memorize his lines!



The combination of **ENHANCED AWARENESS** with **COGNITIVE FUNCTION** and improved **MOTOR CONTROL** may give online “gamers” that exceptional **COMPETITIVE EDGE** rarely seen in the unenhanced brain.

When and if one considers the Mind-Body-Spirit aspects of the issues we face, many find **MEDITATION** an important aspect which should be considered as well. Probably of no surprise, montages are also available to help stimulate these deeper states to assist with a more holistic approach to our daily issues.



The science of Transcranial Direct Current Stimulation and the tDCS Exploration Kit makes this amazing technology safely and affordably available to all interested in building their “Superbrain”

INCLUDED MONTAGES

- Improved Decision Making
- Enhance Planning Ability
- Treat Stroke Patient with Aphasia
- Improve Visual Memory in Alzheimer's Patients
- Improved Working /Memory in Parkinson's Disease
- Increased Motivation / Reduced Depression
- Stimulation of Midbrain for Reward/Motivation
- Improve Attention & Learning
- Enhance Attention & Vigilance (DARPA)
- Enhance Creativity
- Improve Social Interactions
- ADHD & Impulse Control
- Reduce Risk-Taking Behavior
- Reduce Major Depression
- Reduce Depression & Anxiety
- Reduce Pain, Depression
- Reduce Pain in Fibromyalgia
- Improve Audio Processing
- Improve Pitch Memory
- Increase Motor Ability in Stroke Patients
- Enhance Motor Skill Acquisition
- Enhance Motor & Cognitive Functions
- Improve Insightfulness / "Savant Learning"
- Improve Mathematic Ability
- Enhance Verbal Creativity
- Enhance Language Performance/Processing
- Improve Speech Production
- Improve Attention
- Improve Vision & Motor Reaction Time
- Enhance Meditation
- Reduce Cravings
- Reduce Migraine Pain
- Improve Sleep



The Authors of **tDCS Exploration Workbook – Transcranial Direct Current Stimulation Experimentation Guide and Journal**



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