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http://ijmshnem4u.com/
Welcome to our first journal of 2015. The company Biofeedback srl has been accepted by a new ethics committee as indicated by the next letter. The studies published in this journal have all been under the scrutiny and supervision of this ethics committee. All of the studies in this journal have had ethics supervision of institutional review boards or the like. And we welcome this new ethics review board to our team of research associates.

This journal will have articles about GSRtDCs electro stimulation to help insight, hormone, erection, chess ability, memory, focus, learning among others. Stories and details of Alzheimer’s are also contained. Please see, read, review and consider the call for papers in the back of this journal. We wish to broaden our knowledge of natural and energetic medicine.

Brad Victor Johnson
CERTIFICATE

Study Title:

A double-blind placebo-controlled study of the application of the SCIO and EDUCTOR Universal Electrophysiological Biofeedback System for statistical evaluation of the SCIO and EDUCTOR’s ability to increase Body Wellness after one 45-minute session

Study Code: CT-103-01

Sponsor: Sterling S.R.L.

The objective of the study with the SCIO/Eductor is to evaluate subjects with a variety of conditions to determine the improvement in their wellness state after the SCIO/Eductor protocol. The base theory is that the SCIO/Eductor systems improves Wellness and body electric parameters in measurable ways after one session.

Among the parameters measured before and after are lifestyle questionnaire, force tests, memory, flexibility, coordination, oxygenation, pH and VARIOPF scores (measurements within the device).

We have performed a careful review of the study protocol, the informed consent, and other submitted documentation, in particular from ethical and legal points of view and with impartial expertise.

With regard to the proposed clinical study, we therefore:

(x) grant approval to start the proposed study

Signature

Manager
Horia LAZĂRESCU

Page 1 of 1
GSRtDCs Biofeedback Stimulation Increases Math, Insight, Confidence, Focus and Language Memory in Students - Eductor 2015

Supervising Researchers and Medical Review: Dr Klara Hilf, Dr. Marco, Antonio, Rodriguez Infante, Dr. Hobian Veronica and Dr. Maria Baicu

Therapist: Andreea Fanatan, IMUNE Qualified GSRtDCs Research Technician

Permission of the Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania

Institution: International Medical University

Sponsor: Mandalay kft

Dates: January, 7, 2015  Place: Saut Marie Romania

Page 7 of 132
Abstract:
75 subjects male and female ages 17 to 61 and 15 extra subjects were measured for basic Math skills, Insight and Language Memory. They were asked to report any changes in focus and confidence after the therapy.

The Eductor was compared to a placebo group. The Eductor 2014 with single signal generator and double signal generator setting were compared to placebo control testing. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the effect.

There was a measurable performance increase in the treatment group. There was a dramatic 77% increase in confidence and focus. Confidence and focus is key for children in school.

We analyzed speed, accuracy and stress during math problem solving and learning new words in a new language. Once a base-line was established, the trans-cranial GSR Biofeedback cybernetic operation was turned on. After stimulation there was a significant noticeable increase in accuracy and speed of the math and word skills. The second wave form generator performed better in the test.

Many new studies have shown the safety and efficacy of GSR trans-cranial stimulation inducing improved performance in mental acuity. These devices showed superior effect largely due to the autofocused cybernetic loop technology first developed in the 1980’s by Desire’ and first clinically proven in 2002 and proven again in several studies over the last two decades.

The technology has used a single wave form generator for CES since first registered with the US FDA in 1989. After over 35,000 such devices with not one reported significant risk, safety is obvious. Hundreds of studies have shown this technology to be effective, and now a second wave form generator will be tested.

Introduction:
IT IS OUR BASIC HYPOTHESIS THAT A SMALL DC PULSED MICRO-CURRENT APPLIED TO THE CRANIUM CAN STIMULATE OSMOSIS AND THUS IMPROVE SYNAPTIC ACTION, MEMORY AND LEARNING. THIS EFFECT CAN BE MAXIMIZED WITH AN AUTOFOCUSED CYBERNETIC PULSE. THIS HAS BEEN PROVEN WITH THE EPFX, QXCI, SCIO AND A HOST OF OTHER RESEARCHERS HAVE MADE SUCH TECHNOLOGY. NOW WE ARE TESTING THE NEWEST ADVANCE THE EDUCTOR WHICH HAS AN EXTRA TWO SIGNAL GENERATORS.

WE FIRST USE THE EDUCTOR DEVICE TO MEASURE THE BODY ELECTRIC FOR VOLTAGE, AMPERAGE, RESISTANCE, HYDRATION, OXIDATION AND ACID ALKALINE BALANCE PLUS OUTPUT OF DISSIMILAR CONDUCTION MATERIALS. AND ONCE WE KNOW THE BODY ELECTRIC FACTORS WE CAN APPLY AN APPROPRIATE TAILORED ELECTRO-POTENTIAL SIMILAR SIGNAL TO THE BODY. THEN WE MEASURE THE ELECTRO RESPONSE AND USE IT TO MAKE THE NEXT STIMULATION. THIS MAKES AN AUTO FOCUSED CYBERNETIC LOOP WHERE THE BODY ELECTRIC CAN GUIDE THE DEVELOPMENT OF THE STIMULATION OF THE SYNAPTIC FUNCTION. THIS HAS BEEN SHOWN TO BE ABLE TO INCREASE MENTAL ACUITY.
Brief History:

Micro-current Cranial Electro Stimulation MCES is a new advance in Cranial Electro Stimulation CES and energetic medicine. "Electrotherapy" has been in use for over 2000 years, as shown by the clinical literature of the early Roman physician, Scribonius Largus, who wrote in the Compositiones Medicae of 46 AD that his patients should stand on a live black torpedo fish for the relief of a variety of medical conditions, including gout and headaches. Claudius Galen (131 - 201 AD) also suggested using the shocks from the electrical fish for medical therapies. There is evidence of electro-therapy in ancient Babylon and Egypt. The body works on electro signals and electro stimulation of low current helps homeostasis.

Low intensity electrical stimulation is believed to have originated in the studies of galvanic currents in humans and animals as conducted by Giovanni Aldini, Alessandro Volta and others in the 18th century, Aldini had experimented with galvanic head current as early as 1794 (upon himself) and reported the successful treatment of patients suffering from melancholia depression using direct low-intensity currents in 1804.

Modern research into low intensity electrical stimulation of the brain was begun by Leduc and Rouxeau in France (1902). In 1949, the Soviet Union expanded research of CES to include the treatment of anxiety as well as sleeping disorders.

In the 1960s and 1970s, it was common for physicians and researchers to place electrodes on the eyes, thinking that any other electrode site would not be able to penetrate the cranium. It was later found that placing electrodes on the forehead was far more convenient, and quite effective.

CES was initially studied for insomnia and called electro-sleep therapy; it is also known as Cranial-Electro Stimulation and Transcranial Electrotherapy.

One of the mechanism of action for CES is that the pulses of electric current increase the ability of neural cells to produce serotonin, dopamine DHEA endorphins and other neurotransmitters stabilizing the neurohormonal system. Since a slight stimulation of a pulsed milliamp current increases osmosis it is shown that neurhormones work better from the increased osmosis.

It has been demonstrated that through CES, an electric current is engrossed upon the hypothalamic region; during this process, CES electrodes are placed near to the face with the ground at the lower body.

Current research shows an increase of the brain's levels of serotonin, norepinephrine, and dopamine, and a decrease in its level of cortisol. After a MCES treatment, users are in an "alert, yet relaxed" state, characterized by increased alpha and decreased delta brain waves as seen on EEG.

In 1972, a specific form of addiction release CES was developed by Dr. Margaret Patterson, providing small pulses of electric current across the head to ameliorate the effects of acute and chronic withdrawal from addictive substances. She named her treatment "NeuroElectric Therapy (NET)".

I worked with Margaret and treated rock star Pete Townsend for drug addiction. This is why the SCIO system has had the MCES capacity built in.

The SCIO is a descendent of the EPFX system US FDA registered in 1989 still in registered for sale in America. Since 1989 we have sold over 31,000 such systems under the registered name of EPFX, QXCI, and SCIO. There have been well over 500,000,000 patient visits with all getting some MCES, and not one reported case of any significant risk. Over 200 studies and articles have been written and published on
these systems and no report of any risk. It has passed all safety tests since 1989 and all risk analysis has proved it to be insignificant risk.

The systems outlined have a potential of 0-4 volts which is beneath the human threshold of perception, and 0-7 milliamps which makes it safe and for most subtle and undetectable.

For over 26 years reports of stress reduction, relaxation, anxiety reduction, emotional balance, addiction release, insomnia reduction and sleep induction have been reported from the users and doctors.

The Eductor has a second wave form generator that can further intensify the CES effect. All this was done with a cybernetic loop technology guided by the patient body electric reactions to the stimuli. Thus we can further intensify the CES effect over older antiquated non-cybernetic technology.

**Method:**

All subjects are volunteers who gave informed consent in writing. We used ages from 17 To 61 Male and female. Subjects with extreme disease were excluded.

We first established a control reference group of ten subject reactions by asking them to solve the math problems or remember the words with no device. We observed practice effect and just how much time and effort normal subjects used to solve the problems and we also asked them to report if there were changes in their confidence and focus.

Then the same researcher asked the questions to the subjects. The subjects were read an example, then asked to solve with no stimulation, then with a single generator and then with two signal generators.

**Pre Questions:**

Do you like Mathematics???

Do you have confidence while doing Math???

Can you Focus while doing Math???

**There are samples of the questions used:**

Two numbers added together make A and Multiplied by each other make B

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>2-2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3-1</td>
</tr>
</tbody>
</table>

**Examples - give answers**

**Start control Pre Test - Now do not give answers**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>12</td>
<td>3-3</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>2-6</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
<td>6-6</td>
</tr>
</tbody>
</table>
16   48   4-12
15   56   7-8

Start stimulation tell them to relax with eyes closed wait one minute while getting one channel of CES

9    20   4-5
11   30   6-5
10   21   3-7
18   81   9-9
12   35   5-7
11   10   10-1
22   121  11-11
9    18   3-6

Post Questions after single wave generator:

Do you now have more confidence while doing Math???
Can you now Focus better while doing Math???
Does your ability to think seem clearer????
Anything else you feel.

________________________________________

Next we tell them to relax with eyes closed wait one minute while getting two channels of CES

7    10   2-5
20   99   11-9
10   16   2-8
9    8    8-1
13   42   6-7
12   27   3-9
8    15   3-5
10   25   5-5
14   45   9-5

Post Questions after single wave generator:

Do you now have any more confidence while doing Math???
Can you now Focus any better while doing Math???

Does your ability to think seem any clearer????

Anything else you feel.

Results:

In the placebo group 4 of the 15 increased performance which was 27%. 5 out of the 15 reported noticeable increases in focus and confidence. There was also significant TVEP reaction correlates.

In the Eductor treatment group first wave form generator there was a noticeable increase in performance in %, confidence %, and focus %.

In the Eductor treatment group 2nd wave form generator there was a noticeable increase in performance in %, confidence %, and focus %.

<table>
<thead>
<tr>
<th></th>
<th>Performance</th>
<th>Confidence</th>
<th>Focus</th>
<th>all as increase over baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>27%</td>
<td>33%</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>1st WFG</td>
<td>67%</td>
<td>65%</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>2nd WFG</td>
<td>76%</td>
<td>77%</td>
<td>76%</td>
<td></td>
</tr>
</tbody>
</table>

With a significance of 0.005 % our hypothesis has been confirmed in this research. This has resulted in a p-value of 0.05 also proving significance in our study. The GSRtDCs is safe + effective. This shows a dramatic increase in performance, confidence and focus over placebo control. The GSRtDCs part of the program works to stimulate the brain for math performance and confidence as well.
A Vast History of Peer Review
Medical Journal Validation and Verification for The Eductor

Research Shows How it Stimulates Learning Memory and Insight
GSRtDCs Biofeedback Cortical Excitation Stimulation Increases Spontaneous Neuronal Firing to Enhance Chess Skill – with Eductor 2015

Supervising Researchers and Medical Review Staff: Dr Klara Hilf, Dr. Marco, Antonio, Rodriguez Infante, Dr. Hobian Veronica and Dr. Maria Baicu

Therapist: Rita Nemenyi, IMUNE Qualified GSRtDCs Research Technician

Permission of the Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania

Institution: International Medical University
Sponsor: Biofeedback Srl

Dates: Feb, 27, 2015  Place: Budapest, Hungary
Abstract:
22 subjects male and female ages 17 to 61 were asked to compete in 15 different chess games with another subject. Each player was hooked to a harness, one harness was active to the Eductor, and the other was a placebo control. No one knew which was which, so we have a perfect double blind study. They were asked to report any changes in focus and confidence after the therapy.

6 of the subjects were asked to play in 2 games and 2 subjects played in 3 games. In our games the player receiving the Eductor stimulus won each time. Even after losing the first time the player receiving the stimulus in the second game won when they got the stimulus. 2 subjects played 3 games. They lost when they got the placebo treatment and won when they got the treatment. The stimulation group reported increasing insight, play expertise, board vision, ability to see moves ahead and chess skills.

The Eductor 2015 with single signal generator and double signal generator setting were compared to placebo control testing. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the effect.

There was a measurable chess performance increase in the treatment group. We asked the subjects to report focus, perception, creativity and confidence after the treatment. There was a dramatic 80% increase in confidence and focus.

Many new studies have shown the safety and efficacy of GSR trans-cranial stimulation inducing improved performance in mental acuity. These devices showed superior effect largely due to the autofocused cybernetic loop technology first developed in the 1980’s by IMUNE and first clinically proven in 2002 and proven again in several studies over the last two decades.

The technology has used a single wave form generator for CES since first registered with the US FDA in 1989. After over 35,000 such devices with not one reported significant risk, safety is obvious. Hundreds of studies have shown this technology to be effective, and now a second wave form generator will be tested.

Introduction:
IT HAS BEEN PROVEN IN THE RESEARCH THAT AN ELECTRO-STIMULATION TO THE BRAIN CAN STIMULATE INSIGHT AND CREATIVITY. TRANS-CRANIAL STIMULATION HAS BEEN DONE TO PUT A POSITIVE CHARGE INTO PART OF THE BRAIN FOR DC STIMULATION, AND A NEGATIVE CHARGE TO SEDATE PART A DIFFERENT OF THE BRAIN. THIS tDCs STIMULATION HAS BEEN PROVEN TO STIMULATE INSIGHT. WE NEED TO PROVE THAT IT CAN WORK WITH THE EDUCTOR 2nd WAVE FORM GENERATOR TO STIMULATE A PERSON TO PLAY CHESS BETTER.

WE HOWEVER APPLY OUR POSITIVE CHARGE TO THE WHOLE CRANIUM AND THE NEGATIVE TO THE ANKLE THUS STIMULATING THE WHOLE BRAIN. WE USE A VARIANT VOLTAMMETRIC PULSE THAT IS DESIGNED FOR EACH OF A VARIETY OF USES.
IT IS ALSO OUR BASIC HYPOTHESIS THAT A SMALL DC PULSED MICRO-CURRENT APPLIED TO THE CRANIUM CAN STIMULATE OSMOSIS AND THUS IMPROVE SYNAPTIC ACTION AND INSIGHT. THIS EFFECT CAN BE MAXIMIZED WITH AN AUTOFOCUSED CYBERNETIC PULSE. THIS HAS BEEN PROVEN WITH THE EPFX, QXCI, SCIO AND A HOST OF OTHER RESEARCHERS HAVE MADE SUCH TECHNOLOGY. NOW WE ARE TESTING THE NEWEST ADVANCE THE EDUCTOR WHICH HAS AN EXTRA TWO SIGNAL GENERATORS.

WE FIRST USE THE EDUCTOR DEVICE TO MEASURE THE BODY ELECTRIC FOR VOLTAGE, AMPERAGE, RESISTANCE, HYDRATION, OXIDATION AND ACID ALKALINE BALANCE PLUS OUTPUT OF DISSIMILAR CONDUCTION MATERIALS. AND ONCE WE KNOW THE BODY ELECTRIC FACTORS WE CAN APPLY AN APPROPRIATE TAILORED ELECTRO-POTENTIAL SIMILAR SIGNAL TO THE BODY. THEN WE MEASURE THE ELECTRO RESPONSE AND USE IT TO MAKE THE NEXT STIMULATION. THIS MAKES AN AUTO FOCUSED CYBERNETIC LOOP WHERE THE BODY ELECTRIC CAN GUIDE THE DEVELOPMENT OF THE STIMULATION OF THE SYNAPTIC FUNCTION. THIS HAS BEEN SHOWN TO BE ABLE TO INCREASE MENTAL ACUITY.

Introduction cont-
The likelihood of non-invasively moderating the activity of the brain using GRS transcranial current brain stimulation (tCS) has been fascinating the researchers in a assortment of fields as it permits to improve cognition in various domains (Fregni et al., 2005; Santiesteban et al., 2012; Schaal et al., 2013; Snowball et al., 2013) or treat many human psychiatric situations (Boggio et al., 2007, 2008; Rigonatti et al., 2008; Nitsche et al., 2009; Terhune and Cohen Kadosh, 2013). There are a quantity of tCS techniques available, including, but not limited to, transcranial direct current stimulation (tDCS), transcranial alternating current stimulation (tACS), and transcranial random noise stimulation (tRNS) (for a review on the tCS methods, see: Nitsche et al., 2008; Ruffini et al., 2013). In tDCS, a slight direct current (DC) is passed from anodal (positive) to cathodal (negative) electrodes located in the head surface in order to target specific brain areas underneath the electrodes (Nitsche and Paulus, 2000; Faria et al., 2011). Initial studies with animals established an intensification in excitation through membrane depolarization in the neurons underneath anodal electrode but an inhibition under the cathodal one (Bindman et al., 1962, 1964; Purpura and McMurtry, 1965). In humans, there is evidence for an increase in excitability in areas underneath the anodal electrode and a reduction underneath the cathodal following tDCS on the motor (Nitsche and Paulus, 2000) and visual cortex (Antal et al., 2004). Although this rationale of higher excitability under anodal and inhibition under cathodal has been used for defining the stimulation protocol in many studies, it remains uncertain if this is so in all cases, as other variables such as the position of the cathodal in relation to anodal (Nitsche and Paulus, 2000; Antal et al., 2004; Moliadze et al., 2010) and the strength of the stimulation (Batsikadze et al., 2013) seem to inhibit with the excitability effects observed under anodal and cathodal stimulation sites.

**Brief History:**

Micro-current Cranial Electro Stimulation MCES is a new advance in Cranial Electro Stimulation CES and energetic medicine. *Electrotherapy* has been in use for over 2000 years, as shown by the clinical
literature of the early Roman physician, Scribonius Largus, who wrote in the *Compositiones Medicae* of 46 AD that his patients should stand on a live black *torpedo fish* for the relief of a variety of medical conditions, including gout and headaches. Claudius Galen (131 - 201 AD) also suggested using the shocks from the electrical fish for medical therapies. There is evidence of electro-therapy in ancient Babylon and Egypt. The body works on electro signals and electro stimulation of low current helps homeostasis.

Low intensity electrical stimulation is believed to have originated in the studies of galvanic currents in humans and animals as conducted by Giovanni Aldini, Alessandro Volta and others in the 18th century, Aldini had experimented with galvanic head current as early as 1794 (upon himself) and reported the successful treatment of patients suffering from melancholia (depression) using direct low-intensity currents in 1804.

Modern research into low intensity electrical stimulation of the brain was begun by Leduc and Rouxeau in France (1902). In 1949, the Soviet Union expanded research of CES to include the treatment of anxiety as well as sleeping disorders.

In the 1960s and 1970s, it was common for physicians and researchers to place electrodes on the eyes, thinking that any other electrode site would not be able to penetrate the cranium. It was later found that placing electrodes on the forehead was far more convenient, and quite effective.

CES was initially studied for insomnia and called electro-sleep therapy; it is also known as Cranial-Electro Stimulation and Transcranial Electrotherapy.

One of the mechanisms of action for CES is that the pulses of electric current increase the ability of neural cells to produce serotonin, dopamine DHEA endorphins and other neurotransmitters stabilizing the neurohormonal system. Since a slight stimulation of a pulsed milliamp current increases osmosis it is shown that neurohormones work better from the increased osmosis.

It has been demonstrated that through CES, an electric current is engrossed upon the hypothalamic region; during this process, CES electrodes are placed near to the face with the ground at the lower body.

Current research shows an increase of the brain's levels of serotonin, norepinephrine, and dopamine, and a decrease in its level of cortisol. After a MCES treatment, users are in an "alert, yet relaxed" state, characterized by increased alpha and decreased delta brain waves as seen on EEG.

In 1972, a specific form of addiction release CES was developed by Dr. Margaret Patterson, providing small pulses of electric current across the head to ameliorate the effects of acute and chronic withdrawal from addictive substances. She named her treatment "NeuroElectric Therapy (NET)".

Working with Margaret the SCIO system has had the MCES capacity built in.

The SCIO is a descendent of the EPFX system US FDA registered in 1989 still in registered for sale in America. Since 1989 we have sold over 31,000 such systems under the registered name of EPFX, QXCI, and SCIO. There have been well over 500,000,000 patient visits with all getting some MCES, and not one reported case of any significant risk. Over 200 studies and articles have been written and published on these systems and no report of any risk. It has passed all safety tests since 1989 and all risk analysis has proved it to be insignificant risk.

The systems outlined have a potential of 0-4 volts which is beneath the human threshold of perception, and 0-7 milliams which makes it safe and for most subtle and undetectable.
For over 26 years reports of stress reduction, relaxation, anxiety reduction, emotional balance, addiction release, insomnia reduction and sleep induction have been reported from the users and doctors.

The Eductor has a second wave form generator that can further intensify the CES effect. All this was done with a cybernetic loop technology guided by the patient body electric reactions to the stimuli. Thus we can further intensify the CES effect over older antiquated non-cybernetic technology.

**Method:**
22 subjects male and female ages 17 to 61 were asked to compete in 15 different chess games with another subject. Each player was hooked to a harness for 10 min. One harness was active to the Eductor, and the other was a placebo control. No one knew which was which, so we have a perfect double blind study for comparison of the insight stimulation effect.

**Double Blind Study – No one knows who is getting the stimulation**

All subjects were asked to report any felt changes in cognition, pain, focus and confidence during and or after the therapy or during the game. Subject, stimulation therapist, and game supervisor did not know who got the stimulus. The subject with the GSRtDCs stimulation was only revealed after the game was over. So player anticipation and research therapist expectation was removed from the study effect.

Of the 22 participants, 6 of the subjects were asked to play in 2 games and 2 subjects played in 3 games. So there were 15 chess games. In each game the subjects were asked to rate their increases in insight, confidence, focus and game vision.
No pain or negative effects were reported. There is no basis for any substantial risk in any of the literature. Safety has been established and efficacy was demonstrated in this study.

**Results:**

In our games the player receiving the Eductor stimulus won each time. Even after losing the first time the player receiving the stimulus in the second game won when they got the stimulus. 2 subjects played 3 games. They lost when they got the placebo treatment and won when they got the treatment. The stimulation group reported increasing insight, play board vision and chess skills.

The Eductor 2015 with single signal generator and double signal generator setting were compared to placebo control testing. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the effect.

There was a measurable chess performance increase in the treatment group. We asked the subjects to report focus, perception, creativity and confidence after the treatment. There was a dramatic 50% increase in confidence, game vision and focus. There was also significant TVEP reaction correlates.

<table>
<thead>
<tr>
<th>Reports</th>
<th>Insight</th>
<th>Confidence</th>
<th>Focus</th>
<th>Game vision</th>
<th>all as avg increase reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>20%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>GSRtDCs</td>
<td>55%</td>
<td>75%</td>
<td>75%</td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>

In each game there was a reported increase in insight, confidence, and game vision in each of the Eductor treated subjects.

This shows a dramatic increase in performance, confidence and focus over the placebo control group.

The GSRtDCs part of the program works to stimulate the brain for math performance and confidence as well.

This is verification that the GSRtDCs stimulation is helpful for Chess players. This can be extrapolated to imply that any business-person, executive, sales-person can up their game with the GSRtDCs stimulation. Here are some videos to help you see the study better.

http://indavideo.hu/video/GSRtDCs_stimulates_Insight_and_Chess_ability
http://youtu.be/DVwVnxTdeRA
Get Better Math By Disrupting your Brain

Can electrical jolts to the brain produce Eureka moments?

Electrical brain stimulation improves math skills

A Vast History of Peer Review Medical Journal Validation and Verification for The Eductor

Research Shows How it Stimulates Learning Memory and Insight
Discussion:
There were no reported risks during the study. With a significance of 00.1 % our hypothesis has been confirmed in this research. This has resulted in a p-value of 0.001 also proving significance in our study. The GSRTDCs is safe + effective. The study showed clearly that the GSRTDCs - CES can stimulate math ability, focus, confidence and memory retention. The history of micro-current GSRTDCs CES positive effects on learning dates back decades. There have been no safety issues in the literature. There has been subtle but positive effects demonstrated on thousands of research documentation. This research shows the extra boost of positive effects of the second wave form generator.

References:

1. a b 21CFR882.5800, Part 882 ("Neurological Devices")
2. a b Smith RB, Cranial Electrotherapy Stimulation: Its First Fifty Years
13. DOI: 10.1007/s11940-008-0040-y


27. FDA medical device classifications


GSRtDCs Biofeedback Cortical Excitation Stimulation Increases Insight in Students – with Eductor 2015

Supervising Researchers and Medical Review Staff: Dr Klara Hilf, Dr. Marco, Antonio, Rodriguez Infante, Dr. Hobian Veronica and Dr. Maria Baicu

Therapist: Rita Nemenyi, IMUNE Qualified GSRtDCs Research Technician

Permission of the Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania

Institution: International Medical University
Sponsor: Biofeedback Srl

Dates: Feb, 27, 2015   Place: Budapest, Hungary
Abstract:
28 subjects, male and female ages 16 to 63, were asked to use Insight to solve a mental puzzle. They were also asked to report any changes in focus, perception, creativity and confidence after the therapy.

The subjects were asked to solve the nine dot problem to cover each of the nine points with four connected lines. The points of the problem are shown here on the left and the solution on the right. To solve this problem one must develop the insight to go outside the box of the lines.

The 28 subjects were shown the problem and give 5 minutes to solve it. 3 solved it with no stimulation and they were thus removed from the study. 25 could not and were thus entered into the study. The subjects were then given 5 minutes of single channel and the 10 minutes of the 2\textsuperscript{nd} wave form generator (WFG) making a total of 15 minutes of stimulation with the Eductor. 5 solved it in the first 5 min. and 13 did it with the 2\textsuperscript{nd} WFG. 18 total of the subjects could solve the puzzle in the 15 minutes all subjects were asked to rate their focus, perception, creativity and confidence.

The Eductor 2015 with single signal generator and double signal generator setting were compared. The lack of signal stimulation at the start of the test was used as a control. Cybernetic autofocusing of microcurrent stimulation and biofeedback correction is used to maximize the insight effect.

There was a measurable performance increase in the treatment group. There was a dramatic 77% increase in confidence and focus. Confidence and focus is key for children in school.

We analyzed speed, accuracy and stress during insight problem solving. Once a base-line was established, the trans-cranial GSR Biofeedback cybernetic operation was turned on. After stimulation there was a significant noticeable increase in accuracy and speed of the insight problem solving. The second wave form generator performed better in the test.

Many new studies have shown the safety and efficacy of GSR trans-cranial stimulation inducing improved performance in mental acuity. These devices showed superior effect largely due to the autofocused cybernetic loop technology first developed in the 1980’s and first clinically proven in 2002 and proven again in several studies over the last two decades.
The technology has used a single waveform generator for CES since first registered with the US FDA in 1989. After over 35,000 such devices with not one reported significant risk, safety is obvious. Hundreds of studies have shown this technology to be effective, and now a second waveform generator will be tested.

**Introduction:**

IT HAS BEEN PROVEN IN THE RESEARCH THAT AN ELECTRO-STIMULATION TO THE BRAIN CAN STIMULATE INSIGHT AND CREATIVITY. TRANS-CRANIAL STIMULATION HAS BEEN DONE TO PUT A POSITIVE CHARGE INTO PART OF THE BRAIN FOR DC STIMULATION, AND A NEGATIVE CHARGE TO SEDATE PART A DIFFERENT OF THE BRAIN. THIS tDCs STIMULATION HAS BEEN PROVEN TO STIMULATE INSIGHT. WE NEED TO PROVE THAT IT CAN WORK WITH THE EDUCTOR AS WELL.

WE HOWEVER APPLY OUR POSITIVE CHARGE TO THE WHOLE CRANIUM AND THE NEGATIVE TO THE ANKLE THUS STIMULATING THE WHOLE BRAIN. WE USE A VARIANT VOLTAMMETRIC PULSE THAT IS DESIGNED FOR EACH OF A VARIETY OF USES.

IT IS ALSO OUR BASIC HYPOTHESIS THAT A SMALL DC PULSED MICRO-CURRENT APPLIED TO THE CRANIUM CAN STIMULATE OSMOSIS AND thus IMPROVE SYNAPTIC ACTION AND INSIGHT. THIS EFFECT CAN BE MAXIMIZED WITH AN AUTOFOCUSED CYBERNETIC PULSE. THIS HAS BEEN PROVEN WITH THE EPFX, QXCI, SCIO AND A HOST OF OTHER RESEARCHERS HAVE MADE SUCH TECHNOLOGY. NOW WE ARE TESTING THE NEWEST ADVANCE THE EDUCTOR WHICH HAS AN EXTRA TWO SIGNAL GENERATORS.

WE FIRST USE THE EDUCTOR DEVICE TO MEASURE THE BODY ELECTRIC FOR VOLTAGE, AMPERAGE, RESISTANCE, HYDRATION, OXIDATION AND ACID ALKALINE BALANCE PLUS OUTPUT OF DISSIMILAR CONDUCTION MATERIALS. AND ONCE WE KNOW THE BODY ELECTRIC FACTORS WE CAN APPLY AN APPROPRIATE TAILORED ELECTRO-POTENTIAL SIMILAR SIGNAL TO THE BODY. THEN WE MEASURE THE ELECTRO RESPONSE AND USE IT TO MAKE THE NEXT STIMULATION. THIS MAKES AN AUTO FOCUSED CYBERNETIC LOOP WHERE THE BODY ELECTRIC CAN GUIDE THE DEVELOPMENT OF THE STIMULATION OF THE SYNAPTIC FUNCTION. THIS HAS BEEN SHOWN TO BE ABLE TO INCREASE MENTAL ACUITY.

**Brief History:**

Micro-current Cranial Electro Stimulation MCES is a new advance in Cranial Electro Stimulation CES and energetic medicine. "Electrotherapy" has been in use for over 2000 years, as shown by the clinical literature of the early Roman physician, Scribonius Largus, who wrote in the *Compositiones Medicae* of 46 AD that his patients should stand on a live black torpedo fish for the relief of a variety of medical conditions, including gout and headaches. Claudius Galen (131 - 201 AD) also suggested using the shocks from the electrical fish for medical therapies. There is evidence of electro-therapy in ancient Babylon and Egypt. The body works on electro signals and electro stimulation of low current helps homeostasis.

Low intensity electrical stimulation is believed to have originated in the studies of galvanic currents in humans and animals as conducted by Giovanni Aldini, Alessandro Volta and others in the 18th century. Aldini had experimented with galvanic head current as early as 1794 (upon himself) and
reported the successful treatment of patients suffering from melancholia depression using direct low-intensity currents in 1804.

Modern research into low intensity electrical stimulation of the brain was begun by Leduc and Rouxeau in France (1902). In 1949, the Soviet Union expanded research of CES to include the treatment of anxiety as well as sleeping disorders.

In the 1960s and 1970s, it was common for physicians and researchers to place electrodes on the eyes, thinking that any other electrode site would not be able to penetrate the cranium. It was later found that placing electrodes on the forehead was far more convenient, and quite effective.

CES was initially studied for insomnia and called electro-sleep therapy; it is also known as Cranial-Electro Stimulation and Transcranial Electrotherapy.

One of the mechanism of action for CES is that the pulses of electric current increase the ability of neural cells to produce serotonin, dopamine DHEA endorphins and other neurotransmitters stabilizing the neurohormonal system. Since a slight stimulation of a pulsed milliamp current increases osmosis it is shown that neurhormones work better from the increased osmosis.

Once we have learned to resolve problems by one technique, we often have complications in generating answers involving a different kind of insight. Yet there is confirmation that people with brain lesions are sometimes more resilient to this so-called mental set effect. This inspired investigation whether the mental set effect can be reduced by non-invasive brain stimulation.

It has been demonstrated that through CES, an electric current is engrossed upon the hypothalamic region; during this process, CES electrodes are placed near to the face with the ground at the lower body.

Current research shows an increase of the brain's levels of serotonin, norepinephrine, and dopamine, and a decrease in its level of cortisol. After a MCES treatment, users are in an "alert, yet relaxed" state, characterized by increased alpha and decreased delta brain waves as seen on EEG.

In 1972, a specific form of addiction release CES was developed by Dr. Margaret Patterson, providing small pulses of electric current across the head to ameliorate the effects of acute and chronic withdrawal from addictive substances. She named her treatment "NeuroElectric Therapy (NET)".

Working with Margaret the SCIO system has had the MCES capacity built in.

The SCIO is a descendent of the EPFX system US FDA registered in 1989 still in registered for sale in America. Since 1989 we have sold over 31,000 such systems under the registered name of EPFX, QXCI, and SCIO. There have been over 300,000 patient visits with all getting some MCES, and not one reported case of any significant risk. Over 200 studies and articles have been written and published on these systems and no report of any risk. It has passed all safety tests since 1989 and all risk analysis has proved it to be insignificant risk.

The systems outlined have a potential of 0-4 volts which is beneath the human threshold of perception, and 0-7 milliamps which makes it safe and for most subtle and undetectable.

For over 26 years reports of stress reduction, relaxation, anxiety reduction, emotional balance, addiction release, insomnia reduction and sleep induction have been reported from the users and doctors.
The Eductor has a second wave form generator that can further intensify the CES effect. All this was done with a cybernetic loop technology guided by the patient body electric reactions to the stimuli. Thus we can further intensify the CES effect over older antiquated non-cybernetic technology.

Flash of fresh insight by electrical brain stimulation
February 3, 2011

Richard Chi and Allan Snyder from the Centre for the Mind at the University of Sydney have found that participants who received electrical stimulation of the anterior temporal lobes were three times as likely to reach the fresh insight necessary to solve a difficult, unfamiliar problem than those in the control group.

According to the researchers, our propensity to rigidly apply strategies and insights that have had previous success is a major bottleneck to making creative leaps in solving new problems. There is normally a cognitive tradeoff between the necessity of being fast at the familiar on one hand and being receptive to novelty on the other.

Chi and Snyder argue that we can modulate this tradeoff to our advantage by applying transcranial direct current stimulation (tDCS), a safe, non-invasive technique that temporarily increases or decreases excitability of populations of neurons. In particular, tDCS can be used to manipulate the competition between the left and right hemisphere by inhibiting and/or disinhibiting certain networks. Their findings are consistent with evidence that the right anterior temporal lobe is associated with insight or novel meaning and that inhibition of the left anterior temporal lobe can induce a cognitive style that is less top-down, less influenced by preconceptions.

While further studies involving brain stimulation in combination with neuroimaging are needed to elucidate the exact mechanisms leading to insight, Chi and Snyder can imagine a future when non-invasive brain stimulation is briefly employed for solving problems that have evaded traditional cognitive approaches.

Ref.: “Facilitate Insight by Non-Invasive Brain Stimulation,” PLoS ONE 6(2): e16655 (open access)

Adapted from materials provided by the University of Sydney

Topics: Biotech | Cognitive Science/Neuroscience
Electric thinking cap? Flash of fresh insight by electrical brain stimulation

Date: February 1, 2011
Source: Public Library of Science
Summary: Are we on the verge of being able to stimulate the brain to see the world anew – an electric thinking cap? Researchers suggest that this could be the case.

In a new study, participants who received electrical stimulation of the anterior temporal lobes were three times as likely to reach the flash insight necessary to solve a difficult, unfamiliar problem than those in the control group.

Credit: (StockPhoto/Anderl Vodicka)

A re we on the verge of being able to stimulate the brain to see the world anew – an electric thinking cap? Research by Richard Chi and Alan Snyder from the Centre for the Mind at the University of Sydney suggests that this could be the case.

They found that participants who received electrical stimulation of the anterior temporal lobes were three times as likely to reach the flash insight necessary to solve a difficult, unfamiliar problem than those in the control group. The study published on February 2 in the open-access journal PLoS ONE.

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Story Source:
The above story is based on materials provided by Public Library of Science. Note: Materials may be edited for content and length.

Journal Reference:
Method:
All subjects are volunteers who gave informed consent in writing. We used ages from 16 To 63 Male and female. Subjects with extreme disease were excluded.

28 subjects were shown the problem and give 5 minutes to answer it. 3 cracked it with no stimulation and they were thus detached from the study.

25 could not and were thus put into the study. The subjects were then given 5 minutes of single channel and the 10 minutes of the 2nd wave form generator (WFG) making a total of 15 minutes of stimulation with the Eductor.
The Eductor 2015 with single signal generator and double signal generator setting were compared. The lack of signal stimulation at the start of the test was used as a control. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the insight effect.

There was a measurable performance increase in the treatment group. There was a dramatic 77% increase in confidence and focus. Confidence and focus is key for children in school.

We analyzed speed, accuracy and stress during insight problem solving. Once a base-line was established, the trans-cranial GSR Biofeedback cybernetic operation was turned on. After stimulation there was a significant noticeable increase in accuracy and speed of the insight problem solving. The second wave form generator performed better in the test.

Then the same researcher asked the questions to the subjects. The subjects were read an example, then asked to solve with no stimulation, then with a single generator and then with two signal generators.

**Pre Questions:**

Do you usually have good insight???

Do you have confidence while doing word problems???

Can you Focus while doing word problems???

**Here is the problem used:** cover each of the nine points with four connected lines. Solution on the right

Start stimulation tell them to try to solve the puzzle for 5 minutes while getting one channel of CES

Next we tell them to try to solve the puzzle while getting one channel of CES for 5 min.

**Post Questions after 5 min of single wave form generator:**

Do you now have more confidence while doing the Puzzle???
Can you now Focus better while doing Puzzle???

Can you now Creativity better while doing Puzzle???

Does your ability to think seem clearer????

Anything else you feel.

Next we tell them to try to solve the puzzle while getting 10 min of two channels of CES. After 15 minutes total the study was over.

Post Questions after double wave form generator:

Do you now have more confidence while doing the Puzzle???

Can you now Focus better while doing Puzzle???

Can you now Creativity better while doing Puzzle???

Does your ability to think seem clearer????

Anything else you feel.

Results:

5 solved it in the first 5 min. and 13 did it with the 2\textsuperscript{nd} WFG. 18 total of the subjects could solve the puzzle in the 15 minutes all subjects were asked to rate their perceived difference in pre- -post focus, perception, creativity and confidence. 8 subjects could not solve the puzzle after the allotted 15 min. but all 25 felt improvements in insight, focus, confidence, and creativity.

In the Eductor treatment group first wave form generator there was a reported increase in performance in insight %, confidence %, and focus %.

In the Eductor treatment group 2nd wave form generator there was a reported increase in performance in insight %, confidence %, focus %, creativity%.

<table>
<thead>
<tr>
<th></th>
<th>Insight</th>
<th>Confidence</th>
<th>Focus</th>
<th>Creativity</th>
<th>all as avg increase reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1\textsuperscript{st} WFG</td>
<td>60%</td>
<td>65%</td>
<td>65%</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>2\textsuperscript{nd} WFG</td>
<td>73%</td>
<td>77%</td>
<td>77%</td>
<td>77%</td>
<td></td>
</tr>
</tbody>
</table>

This shows a dramatic increase in performance, insight, creativity, confidence and focus over placebo control. There was also significant TVEP reaction correlates to items related to increased cognition.

The GSRtDCs part of the Eductor program works to stimulate the brain for insight, focus, creativity and confidence as well.
Get Better Math By Disrupting your Brain

Stimulating the Brain with Electricity aids Learning Speed

Can electrical jolts to the brain produce Eureka moments?

Brain Stimulation Makes the 'Impossible Problem' Solvable - Boosts Insight

Brain Stimulation Produces Long Lasting Math Boost

Electrical brain stimulation improves math skills

Boosting Kid's Brain Power

A Vast History of Peer Review Medical Journal Validation and Verification for The Eductor

Research Shows How it Stimulates Learning Memory and Insight

MEDICAL
RESEARCH
Validation of
the HCT

Effects of GSRtDCs Math Stimulation can Last 6 Months

The Royal Society of Medicine Presents the IFFN World Congress of 1992
Discussion:
There were no reported risks during the study.

The study showed clearly that the GSRtDCs - CES can stimulate insight, focus, confidence and creativity. The history of micro-current GSRtDCs CES positive effects on learning dates back decades. There have been no safety issues in the literature. There has been subtle but positive effects demonstrated on thousands of research documentation. This research shows the extra boost of positive effects of the second wave form generator.

References:

1. a b 21CFR882.5800, Part 882 ("Neurological Devices")
2. a b Smith RB, Cranial Electrotherapy Stimulation: Its First Fifty Years
3. a b c Sidney Klawansky (July 1995), "Meta-Analysis of Randomized Controlled Trials of Cranial Electrostimulation: Efficacy in Treating Selected Psychological and Physiological Conditions". Journal of Nervous & Mental Disease 183 (7): 478–484.
13. DOI: 10.1007/s11940-008-0040-y


27. FDA medical device classifications


**Simple Math**
SCIO + Indigo Research Results
5 GSRtDCs x 40 min therapy makes
18% improvement in Math
15% improvement in Memory
15% improvement of Insight

Take a Chance, Your Children
Deserve a Chance at a Better Life

**3 wave form Generators of the**
Eductor Research Results
5 GSRtDCs x 40 min therapy makes
20% improvement in Math
20% improvement in Memory
22% improvement of Insight

Take a Chance, Your Children
Deserve a Chance at a Better Life

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**Anterior Cingulate (Cognitive Division)**
Fails to Activate in ADHD

**Normal Controls**

**ADHD**

After 5 sessions
on the Eductor

MGH-NMR Center & Harvard-MIT CICTP
Bush et al., Biol. Psychiatry, 1999
SCHIZOPHRENIA: Wave of Gray Matter Loss

EARLY DEFICIT

5 YEARS LATER (SAME SUBJECTS)

ALZHEIMER'S DISEASE: Wave of Gray Matter Loss

EARLY DEFICIT

1.5 YEARS LATER (SAME SUBJECTS)

STG DLPFC

AVERAGE DEFICIT

REGIONS WITH SIGNIFICANCE < 0.05
Alzheimer’s Disease is a progressive disease in which healthy brain tissue degenerates, resulting in problems with memory, behavior, and other mental abilities. It is the most common cause of dementia (the loss of memory and other intellectual abilities serious enough to interfere with daily life) and the seventh-leading cause of death in the United States. Alzheimer’s disease currently affects an estimated four million older Americans, a number that is expected to triple by the year 2050.
Title:
ALZHEIMER'S DISEASE

Part of the Following:
Large Scale Study of the Safety and Efficacy
of the SCIO Device
Chief Editor:
Andreea Tafian DBF IMUNE

Edited and Validated By Medical Staff:
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Sarca Ovidiu MD, Romania
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Gage Tarrant LBT, C.H.T. USA,
Somlea Livia Romania
Richard Atkinson MCSP, Physical Therapist, West Yorkshire England

Developed By:
The Centro Ricerche of Prof. William Nelson University of Venice + Padova, Italy

This study was performed in the field by practicing Biofeedback technicians. Data was collected and the study supervised by the Ethics International Institutional Review Board of Romania. The Data analysis and study presentation is done by the The Centro Ricerche, University of Venice + Padova, Italy

ALZHEIMER'S DISEASE

This group's significant SOC cut off was 90.
This disease group total number of patients was 219

Subspace Treatment 58 patients, 161 SCIO Harness Patients

OVERALL ASSESSMENT

A. Subspace Treatment 78 patient visits

There were 2 cases of patients who reported a negative improvement.
None of these cases reported any major difficulty.

There were
2 cases reporting no improvement of Symptoms, .025% of Subgroup
3 cases reporting no improvement in feeling better, .032% of Subgroup
5 cases reporting no improvement in stress reduction .047% of Subgroup
10%----Percentage of Improvement in Symptoms
4 %----Percentage of Improvement in Feeling Better
12%----Percentage of Improvement Measured
21%--Percentage of Improvement in Stress Reduction
0 %-----Percentage of Improvement in SOC Behavior

B. SCIO Harness Treatment 310 patient visits

There were 1 cases of patients who reported a negative improvement.
None of these cases reported any major difficulty.

There were
3 cases reporting no improvement of Symptoms, .014 % of Subgroup
1 cases reporting no improvement in feeling better, .006% of Subgroup
3 cases reporting no improvement in stress reduction .013 % of Subgroup
44%---Percentage of Improvement in Symptoms
65%----Percentage of Improvement in Feeling Better
71%----Percentage of Improvement Measured
58%--Percentage of Improvement in Stress Reduction
34%----Percentage of Improvement in SOC Behavior
Solanaceae, commonly known as nightshade,

Popular edible genera and species:
Solanum: potato (S. tuberosum), tomato (S. lycopersicum), eggplant (S. melongena)
Capsicum: bell pepper and chili pepper (C. annuum)
Physalis: tomatillo (P. philadelphica)

Lesser edible species:
ground cherry/cape gooseberry (Physalis peruviana), goji berry (Lycium barbarum),
tomarillo (Solanum betaceum), pepino melon (Solanum muricatum),
naranjilla (Solanum quitensis), wonderberry/sunberry (Solanum retroflexum), Morelle de Balbis (Solanum sisymbriifolium).

Be careful with the Nightshades as that they can be poisonous, but they have anti-inflammation effects good for many diseases like Alzheimers
HOW TO Detect + Treat Alzheimer’s disease

The scientists note that this test could be utilized by therapists who don't have the staff or equipment to conduct more advanced tests.

Written by Desire’ Dubounet 10-24-2013

According to a news release from the University of Florida, scientists have revealed that THE SMELL of peanut butter may help spot Alzheimer’s disease.
Cauliflower & Eggplant Curry

Add some Red Pepper

Best Dish For Alzheimer's

Alzheimer's disease

Alzheimer's disease (AD), also called Alzheimer disease, senile dementia of the Alzheimer type, primary degenerative dementia of the Alzheimer's type, or simply Alzheimer's, is the most common form of dementia. This incurable condition affects an estimated 5 million Americans and is projected to rise to 13.8 million by 2050.

CURRY POWDER
Stimulates the mind and prevents Alzheimer's while cleaning the kidney.
GSRtDCs Biofeedback Stimulation Increases Math, Insight and Language Memory Eductor 2015

Supervising Researchers and Medical Review: Dr Klara Hilf, Dr. Marco, Antonio, Rodriguez Infante and Dr. Hobian Veronica

GSRtDCs Biofeedback Research Technician: Neményi Rita, IMUNE Qualified

Permission of the Hungarian Ethics Committee and the Ethic Committee of the University of Bucharest Faculty of Psychology

Institution: International Medical University

Sponsor: Mandalay kft

Dates: January 2015   Place: Budapest, Hungary
Abstract:
96 subjects male and female were measured for basic Math skills, Insight and Language Memory.

Three GSR Cybernetic systems were compared to a placebo group. The Indigo, SCIO, Eductor 2014 with single signal generator and double signal generator setting were compared to placebo control testing. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the effect.

We analyzed speed, accuracy and stress during math problem solving and learning new words in a new language. Once a base-line was established, the trans-cranial GSR Biofeedback cybernetic operation was turned on. After stimulation there was a significant noticeable increase in accuracy and speed of the math and word skills. The second wave form generator performed better in the test.

Many new studies have shown the safety and efficacy of GSR trans-cranial stimulation inducing improved performance in mental acuity. These devices showed superior effect largely due to the autofocused cybernetic loop technology first developed in the 1980’s by Desire’ and first clinically proven in 2002. And proven again in several studies over the last two decades.

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I worked with Margaret and treated rock star Pete Townsend for drug addiction. This is why the SCIO system has had the MCES capacity built in.

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**Method:**
All subjects are volunteers who gave informed consent in writing. We used ages from 17 To 72 Male and female. Subjects with extreme disease were excluded.

We first established a control reference group of ten subject reactions by asking them to solve the math problems or remember the words with no device. We observed practice effect and just how much time and effort normal subjects used to solve the problems.

Then the same researcher asked the questions to the subjects. The subjects were read an example, then asked to solve with no stimulation, then with a single generator and then with two signal generators.

**There are samples of the questions used:**
Two numbers added together make A and Multiplied by each other make B

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>2-2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3-1</td>
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</tbody>
</table>

Start control Pre Test

<table>
<thead>
<tr>
<th>7</th>
<th>12</th>
<th>3-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>12</td>
<td>2-6</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
<td>6-6</td>
</tr>
<tr>
<td>16</td>
<td>48</td>
<td>4-12</td>
</tr>
<tr>
<td>15</td>
<td>56</td>
<td>7-8</td>
</tr>
</tbody>
</table>

Start stimulation tell them to relax with eyes closed wait one minute while getting one channel of CES

<table>
<thead>
<tr>
<th>9</th>
<th>20</th>
<th>4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>30</td>
<td>6-5</td>
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</tbody>
</table>
Next we tell them to relax with eyes closed wait one minute while getting two channels of CES

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>7</td>
<td>10</td>
<td>2-5</td>
</tr>
<tr>
<td>20</td>
<td>99</td>
<td>11-9</td>
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<td>12</td>
<td>27</td>
<td>3-9</td>
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<td>8</td>
<td>15</td>
<td>3-5</td>
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<td>10</td>
<td>25</td>
<td>5-5</td>
</tr>
<tr>
<td>14</td>
<td>45</td>
<td>9-5</td>
</tr>
</tbody>
</table>

**Part two word memory retention**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>ichi</td>
<td>どうして？ (doushite?) = Why?</td>
</tr>
<tr>
<td>two</td>
<td>ni</td>
<td>なに？ (nani) = What?</td>
</tr>
<tr>
<td>three</td>
<td>san</td>
<td>時間 (jikan) = Time</td>
</tr>
<tr>
<td>four</td>
<td>yon</td>
<td>だれ (daro) = Who.</td>
</tr>
<tr>
<td>five</td>
<td>go</td>
<td>いつ (itsu) = When.</td>
</tr>
<tr>
<td>six</td>
<td>roku</td>
<td>人 (hito) = Person.</td>
</tr>
<tr>
<td>seven</td>
<td>nana</td>
<td>(doko) = Where.</td>
</tr>
<tr>
<td>eight</td>
<td>hachi</td>
<td>(nihon) = Japan.</td>
</tr>
<tr>
<td>nine</td>
<td>kyuuu</td>
<td></td>
</tr>
<tr>
<td>ten</td>
<td>juu</td>
<td></td>
</tr>
</tbody>
</table>
Results of the math studies:

![Graph showing math study results with categories and bars indicating Pre-Test and With Machine performance for different individuals with various demographic details.](image-url)
Results of the "words" studies:

- Much better result with machine:
- Better result:
- Same result:
- Worse result:

---

Pre - Test  With Machine
Much better result with machine:
Better result:
Same result:
Worse result:
Math Test Results After Second Wave

![Graph showing test results after second wave](image)

Legend:
- Pre-Test
- With Machine
- Second Wave
Word Test results After Second Wave

- Much better result with machine: 6%
- Worse result: 0%
- Same result: 38%
- Better result: 56%
In the test there were no reported significant risks. Two small headaches were reported on treatment that passed after several minutes. Of the 96 test subjects 90% had improvement in the word memory performance and the same in mathematical performance. The comparison to our placebo control group shows the effect of stimulation of the mental cognition similar effect to recently quoted research in the
literature. With a significance of 00.4% our hypothesis has been confirmed in this research. This has resulted in a p-value of 0.038 also proving significance in our study. The GSRtDCs is safe + effective. There was also significant TVEP reaction correlates to expected items related to memory skills.

In comparison to normal practice effect control group, the single wave form generator had a 15% increase in performance

The second Wave Form Generator (WFG) had an additional effect of 23% over the control. 8% over the single Wave Form Generator

Discussion:
There were no reported risks during the study. The study showed clearly that the CES can stimulate math ability and memory retention. The history of micro-current CES positive effects on learning dates
back decades. There have been no safety issues in the literature. There has been subtle but positive effects demonstrated on thousands of research documentation. This research shows the extra boost of positive effects of the second wave form generator only in the Eductor.
References:

1. ^a b 21CFR882.5800, Part 882 ("Neurological Devices")
2. ^a b Smith RB, Cranial Electrotherapy Stimulation: Its First Fifty Years
13. ^ doi:10.1300/J184v09n02_02
15. ^ DOI: 10.1007/s11940-008-0040-y
19. ^doi:10.1300/J184v09n02_02
417. doi:10.4088/JCP.v69n0311. PMID 18348596.
29. ^Smith R et al. The use of transcranial electrical stimulation in the treatment of cocaine and/or polysubstance abuse, 2002
30. ^FDA medical device classifications
GSRtDCs INCREASES SPORT PERFORMANCE

Studies show increases of:

- SCIO/Indigo - Eductor
  - Strength 3 to 5% - 5 to 7%
  - Stamina 3 to 7% - 8 to 10%
  - Eye Hand Coordination 5% - 10 to 12%

Many Clinical Studies Published in Recognized ISSN Peer Reviewed Medical Journals Have shown how the Body Electric VARHOPE Improvements of the GSRtDCs can Increase Sport Performance

Validated, Verified Safe and Effective -- Are Your Children Not Worth It???
Quantum Strength and Muscle Enhancement with the Eductor
Written by Professor Desire’ Dubounet

STUDY INFORMATION:
SUPERVISING RESEARCHERS + MEDICAL REVIEW STAFF:
Dr. Marco Antonio Rodriguez Infante, MD, Dr. Hobian Veronica, and Dr. Hilf Klara MD
Licensed Hungarian, Mexican and Romanian Medical Doctors
Therapists: Rob Wright, Rita Nemenyi
Permission of the Hungarian Ethics Committee, and the Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania
Institutional Monitor: International Medical University
Sponsor: Biofeedback Srl
DATES: March 2015

Abstract:

Nobel Laureate Hungarian born Albert Szent-Györgyi was one of the first researchers to look into the Quantum Electro Physiological nature of Biology. Albert Szent-Györgyi’s 1957 book on ‘Bio-Energetics” was one of the first to look into the electrical nature, and quantum nature of the electro-chemical process of life. I worked with Albert Szent-Györgyi in America before his death. Albert was truly one of the great minds with vision in all of humanity. I have followed up on his work ever since being with him.

In a series of studies we wanted to test the hypothesis that a CE mark registered Bio-Energetic device could measure the body electric of patients and through energetic intervention we could affect the biology in a positive way. We have tested such things as Chess playing, Insight, Math
skills, Memory, Blood, Telepathy, Strength, Stamina, eye-hand-foot coordination among others were tested and found positive.

In this study we have tested body builders before and after Bio-Energetic therapy to see effects on power, stamina, and blood hormone level. In a series of different test we found complete safety and a surprising efficacy from the Bio-Energetic therapy.

**Introduction:**

We made an application in 2012 to the Hungarian Ethics Committee to do this study and when they did not say no after 60 days, by law this was an acceptance of our application to do the research. Then we got an ethics committee in Romania, Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania.

Albert Szent-Györgyi de Nagyrápol (Hungarian: Nagyrápolti Szent-Györgyi Albert born 'sent ˈgyørɟi ˈalbert]; September 16, 1893 – died Woods Hole, Massachusetts, USA, October 22, 1986) was a Hungarian physiologist who won the Nobel Prize in Physiology or Medicine in 1937.

In the fall of 1932 it occurred to Szent-Györgyi to test paprika peppers for vitamin C content. Paprika proved to be a very rich source of vitamin C, and supply was no problem--Szeged was the paprika capital of Hungary. Szent-Györgyi immediately mobilized his staff for the large-scale extraction of vitamin C from peppers. Within a week, they had produced over three pounds of the pure crystalline Vitamin C substance.

Szent-Györgyi’s energetic electrical research into muscle tissue respiration led him to the question of how muscle moves which led him into looking into Quantum theory for explanations. His book “BIOENERGETICS” was a pioneering work into the subject of Bio-Quantum Research. Researchers had reported in 1939 that the muscle protein myosin could interact with and split ATP. Though discovered in 1929, ATP had not yet been identified as the principal source of energy in cells (it releases tremendous energy when its phosphate bonds are split). Szent-Györgyi reasoned that the myosin-ATP interaction might well explain the movement of muscle.

Albert Szent-Györgyi the Hungarian Nobel Prize laureate is quoted to have said

“TREATING PEOPLE WITHOUT THE CONCEPT OF ENERGY IS JUST LIKE TREATING DEAD MATTER”.

He pioneered the ideas of Energetic Medicine and helped the world start to think about the electrical force in the human being. He saw the force of the chemical companies and how they do not want doctors to open their minds to Energetic Medicine but he told me that only when
medicine can transcend the hold of the Chemical Companies and get to respect the Energy in
the system can medicine move forward.

Szent-Györgyi summarized his work with muscle in a series of short, elegantly written
bookssuch as "Bio-Energetics". Andrew Szent-Györgyi, Albert's younger cousin, and his wife
Eva discovered the subunits of myosin ("meromyosins"), and began analyzing muscle proteins
at a more electronic level. Szent-Gyorgyi and other colleagues did pioneering work analyzing
muscle tissue with the electrical means of the day. The invention of the Electron Microscope
allowed Szent-Györgyi to better understand the electrical energetic process of biology. Truly he
opened the door to the study of the “Body Electric”.

"A living cell
requires energy not
only for all its
functions, but also
for the maintenance
of its structure."

Albert Szent-Gyorgyi

1. Voltammetry Electro-stim (with standard TENS equipment)
2. TENS equipment alone
3. Control group

Before and after measures of blood hormones of testosterone, human growth hormone,
cortisol, along with time of holding breath, eye hand coordination, pain tolerance, emotional
states focusing on irritability, reactive states, and weight loss, strength, and muscle size.

1. http://www.downloads.imune.net/medicalbooks/978-615-5169-19-
9%20TVEP%20and%20Medication%20Testing%20(the%20research).pdf
2. http://www.downloads.imune.net/medicalbooks/TVEP%20The%20Clinical%20Experi-
ence%20complete.pdf
What is Voltammetry Streaming?

The atoms of all things are made of mostly electrons and protons and other miscellaneous subatomic particles. Everything has an electric field around it because of the electrons and protons that make it up. The workings of these atoms are covered in chemistry. In chemistry we learn that most atoms have imbalances in their outer electron shell. So they seek atoms that can help to fill these shells. These shells are only explained in quantum physics. All things are only describable with quantum physics. The electrons are placed around the nucleus of the atom. If the nucleus is the size of a golf ball the electron is less than the head of a pin and about a half mile away from the nucleus. The truth is that we are mostly empty space. Space is full of fields; fields that interact and make biology possible. To study biology we must study these fields. But these fields are only explainable thru electronics or quantum physics.

What we call modern medicine is not modern at all. In fact it is based in antiquated science of thermodynamic Newtonian physics and old style chemistry. Today a truly modern science is based in nonlinear fractal quantum electrodynamics. We need a more modern medicine. Everything has an electric field around it because of the electrons and protons that make it up. We all know about these fields today especially if you have travelled and had to go thru a metal detector. The metal detector senses the magnetic field of metal. Metals have a strong magnetic field. Other substances have a weaker or paramagnetic field such as water. It has weak field. Some things have an almost nil field and some substances such as bismuth have a negative field. But everything has an electric field around it because of the electrons and protons that make it up.

To study the body, we need to study the body electric and use QED as our scientific guide. Electro-Chemistry has been a respected and developed science for many decades. Thousands of articles and books have been written on the subject. It is also known as polography. A three-dimensional (TRIVECTOR) topological electro field can be measured which shows the relationships among various time-dependent volt-ammetric techniques using micro electrodes. Intersections of the surface with appropriately oriented planes represent conventional polarography, chronopotentiometry, polarography at a stationary electrode, and constant-potential voltammetry.

Homeopathy is dependent on a shape transfer process. The activation of neuro-emotional shape receptors can offer an explanation of homeopathy. Our TRIVECTOR three-dimensional topological field time-dependent voltammetric technique offers a good compatibility with the
TRIVECTOR resonance system. This has been shown to provide an accurate system of homeopathic analysis. This article will only deal with the three-dimensional topological field time-dependent voltammetric techniques as part of a whole system for homeopathic shape analysis.

**TRIVECTOR VOLT-AMMETRIC SIGNATURE**

The basic existence of all atoms and molecules as all of science knows has a distinct field around it. This subtle field can be measured. The first form of electrical chemical analysis was done over a hundred years ago in the science of volt-ammetry also referred to as polography. Thousands of research articles and a fully accepted science of the electro dynamic analysis have lurked in the back waters of chemistry. But since so few chemical engineers have electrical knowledge, it does not gain popularity.

There was even a journal on volt-ammetry published years ago. In the journal there were some interesting articles. In animals they found that the voltage of the body was connected to the catecholamines. These are our adrenal hormones, necessary for flight fight and stress management. The amperage was connected to the indolamines or brain hormones like serotonin and melatonin. When they gave catecholamines there was an increase in voltage. When there was a measured drop in catecholamines there was a drop in voltage. When they gave indolamines there was an increase in amperage. When there was a measured drop in indolamines there was a drop in amperage. We have scientifically and clinically proved the same observation true in humans.

In 1983 Nelson developed a trivector system of analyzing the volt-ammetric signature of a compound. Nelson developed a three dimensional system Nelson referred to as the trivector. The basic theory was to make a volt-ammetric- electro-chemistry analysis system that would be as similar to the actual process in the body. So the volt-ammetric test should use volts and amps similar to the actual body potentials. Thus the measured volt-ammetric signature would be very similar to the actual body natural processes.

Nelson started purchasing compounds. Bacteria, fungus, viruses, enzymes, hormones, minerals, etc and to date Nelson has spent over one and a half million dollars on collecting and testing these items. All items in the SCIO test kit have been tested in their reality. Other companies use much less scientific systems. This is the reasons for the success of the SCIO system.

There have been over twenty five years of testing, perfecting, substantiate, corroborating, authenticating, and validating the current system we call the QQC. There have been over five articles published on the science. And over 35,000 systems using the trivector patterns have shown profound safety, and efficacy.
This research and history has been reviewed intimately and correctly assayed by medical experts in Europe. There has been now an acceptance of both the QQC device and the accuracy of the trivector volt-ammetric signatures. To review this research and the legal registrations please inquire. There is a full peer reviewed medical ISSN journal devoted to the review of the technology. Simply put we can test the electrical field that binds and permeates a compound and reproduce a signal to see how a patient reacts to it.

These items such as vitamins, homeopathics, enzymes, hormones, sarcodes, allersode, nosodes, Isodes and herbs have static trivector signatures. The living being has a reactive or ever changing field. The patient has a reactive field that is drawn towards nutrition and repelled from toxins. We measure the reactions (reactance EPR) of the patient to ten thousand some homeopathic compounds. This is the basis of the EPFX system as it was sold from 1989. Two decades of development to get to today.

Scientific Principles of Voltammetric TRIVECTOR Analysis

1. The liquid crystal nature of the polar substance water is a well-known scientific principle.
2. The memory of water to retain and return to its crystal polymorphic shape structure is also well known. (This memory is destroyed by a. Heat above 55 degrees Celsius b. Strong odor such as camphor, c. Ionizing radiation (X-rays). Magnetic fields can distort the shape but the water memory will return after the magnetic field is discontinued. This is the principle of magnetic resonance imaging. Water will remember its crystal structure and always seek to find its shape or polymorphic state)
3. Electrochemistry (polarography, Polography, chronopotentiometry, volt-ammetry) is standard accepted scientific principle of modern chemistry for chemical analysis.
4. The dynamics of the chemical information transfer of hormones through shape receptors in the cell is the basis of all pharmacology. All hormones work by stimulating these shape receptors. The plasticity of these receptors has allowed synthetic chemistry to appear to work. Shape receptor stimulus is our fourth scientific principle.
VARHOPE as the Body Electric Vital Statistics

We are made up of atoms that are mostly electrons and protons. The outer electrons of any atom or molecule never touch. The outer electrons of any atom or molecule never touch another set of electrons. The entire interaction is through electro-magnetic-static, quantic, or other interactive fields.

There is Electrical energy in the human body. The simplest factors of anything electrical are the volts amps and resistance. This makes up Ohms law of electronics, where Volts = Amps times Resistance. This is a correlation not an exact law. Oscillations of the volts and amps give us the frequency of a current. Fluctuations of these calculations can be used in virtual or mathematical ways to calculate other biological factors. There are norms of the body electric variables relative to age and lifestyle. We first started measuring these VARHOPE variables in our 1989 FDA 510k registration. See next pic.
The EPFX measures the Electrophysiologic Reactivity intensity of the patient to many QCC trigger voltmeter patterns. These are patterns of reactions to hormone, trace, mood, neural, nutritional, herbal, imponderable and classic homeopathics. The patterns elicited can be detected electronically and electronic therapies can then be arranged to develop homeostatic reactions, desensitizations, biological resonance or rectification processes. All of these are applied and managed through biofeedback application. Biofeedback is the operation that allows for the cybernetic loop of systemic feedback. The only indicated use of this device and all claims related to this device are under biofeedback. The loop of measured reaction and bio-varied resonance response allow for a true feedback for self corrective Electrophysiologic therapy. Hence it is called the Electro Physiological Feedback Xrroid.

Excerpt from the 510k registration of 1989

DEPARTMENT OF HEALTH & HUMAN SERVICES
Food and Drug Administration
1305 Massachusetts Ave.
Rockville, MD 20857

Re: K392114A
Electro-Physio Feedback Xrroid

System
Dated: Undated
Received: July 18, 1989

Regulatory Class: II

From the 1989 510k's documenting the registration of the EPX Electro-Physiological Reactivity of mesod,osse, allergen, arbovirus, etc.

Energetic Medicine History !!!!!

When we all were subject to doses of the teratogens of vaccines, chemicals, hormones, agricultural sprays, and microorganisms, the top 100, and electrical. As research started to occur on EPFX BIOFEEDBACK all of these became part of what we now call the detection and the immune system. We now bring in all of the suspected immune system that models relate to immunity.

These you can be managed in, when, what and when to give the
Thus the key Bio-electric factors of Volts Amps Resistance Hydration Oxidation and Proton versus Electron charge stability are measurable with the SCIO. Then device then using a cybernetic biofeedback loop can help to stabilize the VARHOPE of a client.

In thus study we assay the VARHOPE scores of several body building clients. In all cases there is a significant improvement in the bio-electric after a simple SCIO therapist lead session.

Volts: the body voltage has a correlate in the basic average amplitude of the ECG, EEG signal reception.

Amps: the body amperage is a correlate of the basic average volume under the measurement of the voltage.

Resistance: is the measure of how much a system resists the flow of electricity. This requires an applied voltammetry signal. If there is added voltage or amperage from capacitance or inductance in this system then the measured resistance is called impedance.

Hydration: is a correlate of an average of the capacitance flux in a measured system.

Oxidation: is a correlate an average of the inductance flux in a measured system.

\[ \text{TVEP} = \text{EPR} \]
Proton -- Electron Pressure: Since the acid alkaline nature of a system is a measure of the amount to negative charges (mostly free electrons) versus positive charges (often free protons). When there is a balance there is neutrality equaling ph 7. More electrons or negative charges make the system Base, more protons or positive charges makes the system Acidic. So the measure of pH can be made from an electrical correlate.

Power is measured in Watts. This is Voltage times Amperage in an electrical system. This correlates very well with the overall wellbeing and the strength of the person measured.

This is covered in much more detail in the following. http://scienceofscio.com/

VARHOPE and Stress

The above diagram shows a key little known fact of biology. The factors of the wave formations of people differ from person to person. The values shown are not perfect. The height of the curve is the Voltage. Voltage is easily calculated from the electro-potential readings coming from the harness skin contacts. The area under the curve is the Amperage. An incremental measure of variant amplifications gives us an Amperage correlate. Resistance is easily calculated by determining the resistance to flow of a known voltmetric signal. With Voltage and Resistance known with the Amperage correlate and an application of Ohms law (Volts equals Amps times Resistance) we can virtually calculate Amperage better.

Amperage is the amount of charged particles flowing and Voltage is the pressure behind the flow. Without Volts and Amps there is no life.

Proton and Electron pressure or the charge stability of the system affects the polarity and the resting potential. The slight changes in these electrical profiles can be measured.

As we measure the changing Volts and Amps we get inductance and capacitance virtual scores and this allows us to find a Hydration and Oxygenation index. As Amperage changes slightly with each breath, we get an Oxidation index from comparing max and min values. Electrical measures of Oxidation are well known in the literature. We need to observe several normal breaths to establish a Oxidation index during the Calibration procedure. Voltage changes observed during
**Method #1:**

In this study 6 male body builders starting a work out campaign were measured for their VARHOPE and we did a blood analysis of their basic blood and hormone pre and post therapy. A 45 minutes session of SCIO therapy was performed and blood and VARHOPE re-measured.

**Results #1:**

<table>
<thead>
<tr>
<th>Testosterone change as %</th>
<th>Growth H increase as % - Performance+Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. -10%</td>
<td>+100%</td>
</tr>
<tr>
<td>2. -15%</td>
<td>+53%</td>
</tr>
<tr>
<td>3. -13%</td>
<td>+10%</td>
</tr>
<tr>
<td>4. -10%</td>
<td>+280%</td>
</tr>
<tr>
<td>5. -8%</td>
<td>+62%</td>
</tr>
<tr>
<td>6. 0%</td>
<td>+20%</td>
</tr>
</tbody>
</table>

**Method #2:**

In this study 7 male and 4 female body builders were asked to do a maximum exercise of a maximum weight and maximum reps to see what their max potential is.

After the Eductor therapy they were asked to redo their previous maximum to see if the therapy can increase their strength during a one therapy session.

And we measured for their VARHOPE pre and post therapy.

**Results #2:**

All of the 10 subjects had increases in both VARHOPE scores and in Maximum performances.

<table>
<thead>
<tr>
<th>Subject#</th>
<th>VARHOPE increase as %</th>
<th>Performance increase as %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>2.</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>3.</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>4.</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>5.</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>6.</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>7.</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>8.</td>
<td>5%</td>
<td>5%</td>
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</tr>
<tr>
<td>9.</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>10.</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>11.</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>12.</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>13.</td>
<td>13%</td>
<td>20%</td>
</tr>
<tr>
<td>14.</td>
<td>9%</td>
<td>5%</td>
</tr>
</tbody>
</table>

There was an average of 9.6% increase in performance with an average 8.9% increase in the VARHOP profile. There was also significant TVEP reaction correlates to testosterone, growth hormone and other related items. Comparison with placebo group results have shown significance.

**Discussion:**

Our past studies and this current one have shown that we can increase and stabilize the human body electric with the Eductor SCIO technology. The VARHOPE electro vital signs show that we can measure the body electric potentials and thru BIO ENERGETIC effects first designed by the Hungarian Nobel prize winner Albert Szent-Györgyi. The muscle action results from Bio-electric phenomena and we can stabilize and charge up a weak battery to produce muscle / sport enhancement.

**References**
An Introduction to Quantum Biofeedback and its use for Sport Performance Enhancement

Author: Jeffrey Sutton, Medabolic Inc., Calgary, Canada

ABSTRACT

Quantum Biofeedback offers a state-of-the-art methodology for identifying and reducing the impact of stressors and stress responses exhibited by the body electromagnetically and informatically, which has applications in medicine and sport performance enhancement. Specific low-dose micro-currents are fed into the body via extremity and head electrodes, and responses are measured via a process of non-invasive automated biofeedback referred to as Electro-Physiological Feedback Xrroid® (EPFX). A review of conventional biofeedback literature shows strong scientific support for the general benefits of biofeedback training and technologies for a broad range of symptoms, disorders and performance enhancement. Advancements in computer technology and bioelectromagnetics (BEM) research have provided the foundation for Quantum Biofeedback, an evolved form of biofeedback training, which offers similar mind-body benefits combined with additional medical possibilities not seen before; such as, digital-human cybernetic interface, double-blind electro-physiological response measurement, instantaneous feedback, sub-clinical wellness forecasting, and auto-focusing corrections. The EPFX device—a culmination of over 30 years of research, development, and application—is introduced, along with case evidence demonstrating EPFX use and efficacy with athlete performance and recovery.

Stimulation of Sports Performance and relief of Sports Pains with a Natural Herbal Yeast Formula with Special consideration of the SCIO

Towards a Natural Oxygenation and Sports Stimulation Formula

Chief Editor: William Nelson, Prof Medicine IMUNE
Edited and Validated By:
Christian Sirbu Dr of Homeopathy, Budapest, Hungary
Istvan Bandics, M.D.; Budapest, Hungary
Gyilla Panziok, M.D.; Budapest, Hungary

Developed By:
The staff of IMUNE 1997

Abstract

This study tests the effects of a natural oxygenation formula on sport fatigue pain, and sport performance. The SCIO treatment provides a basic repair stimulation signal for cellular rejuvenation. Diseased tissue has a different type of electrical signature than healthy tissue. When the SCIO detects an injured tissue signal it responds with a curative stimulation electrical pattern to promote and speed healing. There are also many additional effects from the device to enhance sport performance in general.

Key Words: Stimulation, Flower Pollen, Pangamic Acid, Oxygenation, Xrroid, SCIO
SCIO Sport Study review

The 7th Congress of the Hungarian Sport Science Review, Budapest, Hungary

Presentation at the Semmelweis Egyetem, Testnevelesi és Sporttudomanyi Kar (TF) Budapest Date: 28th of May 2009
VII. Orszagos Sporttudomanyi Kongresszus
By: Prof. Desire Dubourel

Some of the best cyclists in the world have used the SCIO to win championships.

Basic 5th grade science tells us. We are made of atoms and atoms are made almost exclusively of electrons, protons and neutrons. None of us can in any way perceive this simple truth presented to us in 5th grade. We live in the false belief that there is solid flesh in our bodies, when we know that it is not true. The outer area of any atom or molecule is made of the electrons. The electrons have a very strong electric charge. So strong that two electrons can almost never touch, the energetic charge will repel them. No atom ever touches another atom. No molecule ever touches another molecule. Everything is held together with energetic, quantum, electromagetic, or other subatomic forces. All of life is mostly electrons and protons that never touch but only interact through electro-magnetic fields. These are the basic forces of electricity. All of the interactions of life are energetic and electrical at some level, 5th grade fact.

Chemistry has been taught with the analogy of rods and balls. Every chemistry student has been shown molecules with balls for atoms and rods for the bonds. This implies there is a solid nature. There is not. The atoms are energy fields, the bonds are also fields not much different than two magnets that repel on the table. There is no rod or ball, but this analogy is used by the pharmaceutical companies to sell their wares. It is a false belief.

The field of voltammetry tells us this simple fact. We appear solid because these forces are strong. But we cannot touch anything but just interact with energy fields. This is basic 5th grade science but our society has decided that since this interferes with the sale of pharmaceuticals, we will ignore this simple truth in medicine. People such as me, who try to reposition medicine to this truth are attacked and persecuted.

AAQBT

The American Academy of Quantum Biofeedback Technology

Located in Rio Rancho, New Mexico since 1988

Electro-Physiological-Reactivity (EPR)

By William Nelson

ABSTRACT: Situated on a golf course in New Mexico the Land of Enchantment, in the City of Vision Rio Rancho the AAQBT made history. We tested 935 subjects in Denver and New Mexico to understand the basic body electric measures to better understand the nature of the energetic medicine. This review report scrutinizes a comparison between skin conductance, inductance, and capacitance (collectively known as the Trivector), and SCIO Electro-Physiological-Feedback-Xrold EPR reactivity. We measured the 935 subject’s reactivity patterns to nodules, all nodules, isodes, sarcoles, and classic homeopathy using the EPPX biofeedback system. Significant profiles revealed an accuracy of about 71% to known medical conditions. The reactivity was a collective measure of change in resistance, change in capacitance, and change in inductance (the 2 vectors of the trivector) together referred to as the reactivity or in this case the EPR.

Published AAQBT Press 1988
Trauma Sport Pain Electro Healing With SCIO

Written by Jozef Mezey MD from Sighisoara, Romania

STUDY INFORMATION:
SUPERVISING RESEARCHERS: Dr. Dávid György, MD, Dr. Ilif Klara MD
Licensed Hungarian Medical Doctors
DATES: July 2011
SPONSOR:
Maitreyea Kft.
MONITOR:
IMUNE (International Medical University of Natural Education)

Abstract:

When we apply a micro charge electro-pulse through a process, Osmosis increases. The SCIO measures the body level of Voltage, Amperage, Resistance, Hydration, Oxidation and pH (VAMP). By stimulating an autofocusing cybemetic harmonic frequency to the body the SCIO can maximize the osmosis effect.

In this study 17 athletes were hit with a sport injury of the same strength on each leg one at a time. The one leg would get real SCIO therapy the other leg would get Placebo. After the SCIO or control treatment the athletes rated the pain in 10 min intervals till recovery was stable. The SCIO showed ability to lower pain after a slight sport injury quicker than placebo treatment. It is proposed that the increase in osmosis and the autofocused injury treatment pulse increases the body's natural ability to deal with pain and heal.

Trauma Sport Pain Electro Healing SCIO

Written by Prof Desire Duboune of IMUNE

STUDY INFORMATION:
SUPERVISING RESEARCHER: Dr. Dávid György, MD, Licensed Hungarian Medical Doctor
DATES: July 2011
SPONSOR:
Maitreyea Kft.
MONITOR:
IMUNE (International Medical University of Natural Education)

Abstract:

When we apply a micro charge electro-pulse through a process, Osmosis increases. The SCIO measures the body level of Voltage, Amperage, Resistance, Hydration, Oxidation and pH (VAMP). By stimulating an autofocusing cybemetic harmonic frequency to the body the SCIO can maximize the osmosis effect.

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Trauma Sport Pain Electro Healing With SCIO - 2012 Update

Written by Jozsef Mezei MD

STUDY INFORMATION:
SUPERVISING RESEARCHERS: Dr. Danis György, MD, Dr. Hilf Klara MD
MEDICAL CONSULTANT: Dr. Gebhard Gehring MD Bavaria, Germany
DATES: October 2012
SPONSORS:
SCIO International / Mandalay Kft.
INSTITUTIONAL MONITOR:
IMUNE / University of Timisoara (Victor Babes University of Medicine) Dr. Bacean Aurel MD

Abstract:

When we apply a micro charge electro-pulse through a process, Osmosis increases. The SCIO measures the body level of Voltage, Amperage, Resistance, Hydration, Oxidation and Ph (VARMOP). By stimulating an autofocusing cybernetic harmonic frequency to the body the SCIO can maximize the osmosis effect. Since it is through Osmosis that the cells bring nutrition and remove toxins, all of life’s processes are improved. Injury improves from the Electrical field stimulation of the SCIO. The SCIO send signals thru each extremity and the SCIO knows the difference between healthy signal return and injured signal return. The SCIO can use an autofocused changing set of pulses to treat the injured tissue and stimulate and speed up natural recovery.

In this study 27 fit healthy subjects in Romania and Munich, Germany were hit with a sport injury of the same strength on each leg one at a time. The one leg would get real SCIO therapy, the other leg would get Placebo. After the SCIO or control treatment the athletes rated the pain in 10 min intervals till pain recovery was stable. The SCIO showed ability to lower pain after a slight sport injury and promote flexibility recovery quicker than placebo treatment. It is proposed that the increase in osmosis and the autofocused injury treatment pulse increases the body’s natural ability to deal with pain and heal.

Transcutaneous Electro-Nerve Stimulation for pain and Electro Wound Healing for injury have been well documented in the literature. This study has shown conclusively that the SCIO technology is significantly safe and effective in treating sport pain and minor injuries.
TITLLE: Double Blind Study of Sport Performance with the SCIO device versus Placebo control 2013 USA

Written by Darwin Davidson Doctor of Quantum Biofeedback

STUDY INFORMATION:
SUPERVISING RESEARCHERS: Dr. Danis György, MD, Dr. Hilf Klara MD, Jozsef Mezei MD
MEDICAL CONSULTANT: Dr. Pauline Willis, USA, Dr. Gebhard Gehring MD Bavaria, Germany
DATE and PLACE: 2008 – 2013 Arizona, USA

SPONSORS:
SCIO International / Maitreya Kft.

INSTITUTIONAL MONITOR:
IMUNE / University of Timisoara (Victor Babes University of Medicine) Dr. Bacean Aurel MD

USA IRB

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Abstract: This study took 46 healthy athletic subjects over a period from 2007 to 2012 and measured their strength power performance before and after a SCIO therapy and compared to Placebo control group. This study showed an increase in strength performance in the treatment SCIO group versus the control group in most patients.

Introduction: There is much double blind evidence at the SCIO device can increase the VARHOPE electrical parameters of the body over a short 45 min session. (VARHOPE is an acronym for Voltage-Amperage-Resistance-Hydration-Oxidation-Ph- Eh). For more complete description of the studies and science see the VARHOPE medical textbook.

There is also much evidence of increased sport performance from SCIO treatment over twenty years of clinical sport use. This study theorizes that the VARHOPE increase results in increased muscle performance. In preliminary studies a grip strength measure was inaccurate and not of much use for this study. This study will seek a better more refined measure of strength using free weight repetition.
Double Blind Study of Sport Performance with the SCIO device versus Placebo control

STUDY INFORMATION
SUPERVISORS: Dr. Daniel Gyorgy, MD, Licensed Hungarian Medical Doctor
DATES: March 2011
SPONSOR
Matteyta Kft.,
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Kalvania ter 2.,
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Phone: 36-1-303-6043
Fax: 36-1-210-9340
MONITOR
IMUNE (International Medical University of Natural Education)

Abstract
This study took 10 healthy athletic subjects and measured their performance before and after a SCIO therapy and compared to Placebo control group. This study showed an increase in performance in the treatment SCIO group versus the control group in most patients.

Introduction
There is much double blind evidence at the SCIO device can increase the VARHOPE electrical parameters of the body over a short 45 min session. (VARHOPE is an acronym for Voltage-Amperage-Resistance-Hydration-Oxidation-Ph-Eh). For more complete description of the studies and science see the VARHOPE medical textbook.

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Voltammetric Sarcode Hormone Streaming of Testosterone for Erection Therapy 2015
Written by Staff of IMUNE

STUDY INFORMATION:
SUPERVISING RESEARCHERS + MEDICAL REVIEW STAFF:
Dr. Marco Antonio Rodriguez Infante MD, Dr. Hobian Veronica MD and, Dr. Hilf Klara MD
Licensed Hungarian, Romanian and Mexican Medical Doctors
Therapist: Rita Nemenyi, IMUNE Qualified GSrTDCs Research Technician

Permission of the Ethic Committee of the National Institute of Recovery Physical Medicine and Balneo-Climatology, Bucharest, Romania

Institution Monitor: International Medical University
Sponsor: Biofeedback Srl

DATES: March 2015

Abstract:

The QQC device measures a Voltammetric trivector signature of an item. Sarcodes are healthy tissue homeopathics, and a healthy hormone like testosterone can be used to make a Sarcode. Once we have a three dimensional Voltammetric pattern we can stimulate that pattern into the body of a person and measure a reaction. The SCIO is designed to make such a Voltammetric pattern pulse. This pattern mimics the hormone when it comes into the body. A short bursts is used for reactivity measure like the Transcutaneous Voltammetric Evoked Potential (TVEP), and a long burst is used for hormone streaming. A long burst (one minute or more) can stimulate the body’s natural manufacture of a hormone such as testosterone. Many body builders use this technique with great success and some reported erections during the hormone streaming.

In our study in 2012- 11 men and in 2015 10 men (ages 33 to 63) were told to lie down and use their mind to turn themselves on and get an erect penis. In 2015 we repeated the study with 10 new men. 21 men in total are in the study. They are not allowed to touch or move to do this but only in the mind. The men were connected to the SCIO device and told it would help. The SCIO device was set on placebo for the first round and the SCIO was then operative on visit 2. The time it takes to get an erect penis is an indication of available testosterone. Testosterone is richer in young men and in the morning hours when you get an early morning erection. All tests were done after 12AM to minimize circadian effects. Thus there was a single blind test of testosterone streaming.
In the control measure there was an average of 12.5 minutes and several could not do it within the 15 minute allowed time. The second time with the SCIO on testosterone streaming the time was nearly half with an average of 6.5 minutes and all achieved erections within the 15 allowed period.

Thus it appears that hormone streaming works and the body builders success is real from hormone streaming.

Introduction:

Testosterone is a steroid hormone from the androgen group and is found in mammals, reptiles,[1] birds,[2] and other vertebrates. In mammals, testosterone is primarily secreted in the testes of males and the ovaries of females, although small amounts are also secreted by the adrenal glands. It is the principal male sex hormone and an anabolic steroid.

Testosterone is responsible for increasing libido and frequency and speed of penile erection or clitoral engorgement. So in our study if we stream in testosterone we should see an increase in the speed of developing an erection versus control placebo therapy.

The administration of testosterone makes men selfish and more likely to punish others for being selfish towards them. Recent studies suggest that testosterone levels play a major role in risk-taking during financial decisions. The typical Warrior heart is an influence of high testosterone levels, and there is a fine line between the testosterone hero and the testosterone villain. Fatherhood has been demonstrated to lower men's testosterone levels.

Falling in love decreases men's testosterone levels while increasing women's testosterone levels. It is speculated that these changes in testosterone result in the temporary reduction of differences in behavior between the sexes. It has been found that when the testosterone and endorphins in the ejaculated semen meet the cervical wall after sexual intercourse, females receive a spike in testosterone, endorphin, and oxytocin levels, and males after orgasm during copulation experience an increase in endorphins and a marked increase in oxytocin levels. This adds to the hospitable physiological environment in the female internal reproductive tract for conceiving, and later for nurturing the conceptus in the pre-embryonic stages, and stimulates feelings of love, desire, and paternal care in the male (this is the only time male oxytocin levels rival a female's)

Men whose testosterone levels are slightly above average are less likely to have high blood pressure, less likely to experience a heart attack, less likely to be obese, and less likely to rate their own health as fair or poor. However, high testosterone men are more likely to report one or more injuries, more likely to consume five or more alcoholic drinks in a day, more likely to have had a sexually transmitted infection, and more likely to smoke.
Synthetic pharmaceutical Replacement therapy can take the form of injectable depots, transdermal patches and gels, subcutaneous pellets, and oral therapy. Adverse effects of testosterone supplementation include minor side effects such as acne and oily skin, and more significant complications such as increased hematocrit which can require venipuncture in order to treat, exacerbation of sleep apnea and acceleration of pre-existing prostate cancer growth in individuals who have undergone androgen deprivation. Another adverse effect may be significant hair loss and/or thinning of the hair. This may be prevented with Propecia (Finasteride), which blocks DHT (a byproduct of testosterone in the body), during treatment. Exogenous testosterone also causes suppression of spermatogenesis and can lead to infertility. It is recommended that physicians screen for prostate cancer with a digital rectal exam and PSA (prostate specific antigen) level before starting therapy, and monitor hematocrit and PSA levels closely during therapy. These SINthetic pharmaceutical interventions are risky at best what if a safe way of hormone streaming could help increase production with fewer side effects. The positive effects of the hormone streaming from Dr Polen’s work in Ohio are shown.

### Side Effects of SINthetic Testosterone

- Gynecomastia
- Acne
- Increased BP
- Polycythemia
- Impotence, Depression, Irritability
- Mood Disorder becomes Testy
- Male Pattern Baldness
- Benign Prostatic Hypertrophy
Testosterone therapy improved sexual function in men with low starting testosterone levels.

- Increase in erectile function score: 6.18* (Testosterone Streaming), 2.33 (Placobo)
- Increase in rate of successful intercourse (%): 33.1* (Testosterone Streaming), 13.4 (Placobo)

Diagram: Metabolism of steroids, including cholesterol side-chain cleavage enzyme, progestagens (21 carbons), androgens (19 carbons), and glucocorticoids (21 carbons). Cellular location of enzymes: Mitochondria, Smooth endoplasmic reticulum.
Regulation of Testosterone

Hypothalamic-pituitary-testicular axis

In males, testosterone is primarily synthesized in Leydig cells. The number of Leydig cells in turn is regulated by luteinizing hormone (LH) and follicle stimulating hormone (FSH). In addition, the
amount of testosterone produced by existing Leydig cells is under the control of LH which regulates the expression of 17-β hydroxysteroid dehydrogenase.

The amount of testosterone synthesized is regulated by the hypothalamic-pituitary-testicular axis (see figure to the right). When testosterone levels are low, gonadotropin-releasing hormone (GnRH) is released by the hypothalamus which in turn stimulates the pituitary gland to release FSH and LH. These later two hormones stimulate the testis to synthesize testosterone. Finally increasing levels of testosterone through a negative feedback loop act on the hypothalamus and pituitary to inhibit the release of GnRH and FSH/LH respectively.

Environmental factors affecting testosterone levels include:

- Weight loss makes fat men more masculine. Fat cells synthesise the enzyme aromatase which converts testosterone, the male sex hormone, into estradiol, the female sex hormone.
- The hormone vitamin D in levels of 400-1000 IU (10-25 mcg) raise testosterone level.
- Zinc deficiency lowers testosterone levels[77] but over supplementation has no effect on serum testosterone.
- Magnesium raise free testosterone according to studies.
- Implicit power motivation predicts an increased testosterone release in men.
- Aging reduces testosterone release.
- Hypogonadism
- Sleep (REM dream) increases nocturnal testosterone levels.
- Resistance training increases testosterone levels, however, in older men, that increase can be avoided by protein ingestion.1
- Licorice. The active ingredient in licorice root, glycyrrhizinic acid has been linked to small, clinically non-significant decreases in testosterone levels. In contrast, a more recent study found that licorice administration produced a substantial testosterone decrease in a small, female-only sample.
- Natural or man-made anti-androgens including spearmint tea reduce testosterone levels.

Physiological Role of Testosterone - Effects on Sexual Organs

Testosterone plays a crucial role in the health and wellbeing of our bodies

Testosterone is involved in:
- Erectile function
- Development of the genitals at puberty
- Growth of pubic hair
- The production of sperm
What is Voltammetry Streaming?:

The atoms of all things are made of mostly electrons and protons and other miscellaneous subatomic particles. Everything has an electric field around it because of the electrons and protons that make it up. The workings of these atoms are covered in chemistry. In chemistry we learn that most atoms have imbalances in their outer electron shell. So they seek atoms that can help to fill these shells. These shells are only explained in quantum physics. All things are only describable with quantum physics. The electrons are placed around the nucleus of the atom. If the nucleus is the size of a golf ball the electron is less than the head of a pin and about a half mile away from the nucleus. The truth is that we are mostly empty space. Space is full of fields; fields that interact and make biology possible. To study biology we must study these fields. But these fields are only explainable thru electronics or quantum physics.

What we call modern medicine is not modern at all. In fact it is based in antiquated science of thermodynamic Newtonian physics and old style chemistry. Today a truly modern science is based in nonlinear fractal quantum electrodynamics. We need a more modern medicine. Everything has an electric field around it because of the electrons and protons that make it up. We all know about these fields today especially if you have travelled and had to go thru a metal detector. The metal detector senses the magnetic field of metal. Metals have a strong magnetic field. Other substances have a weaker or paramagnetic field such as water. It has weak field.
Some things have an almost nil field and some substances such as bismuth have a negative field. But everything has an electric field around it because of the electrons and protons that make it up.

To study the body, we need to study the body electric and use QED as our scientific guide. Electro-Chemistry has been a respected and developed science for many decades. Thousands of articles and books have been written on the subject. It is also known as polography.

A three-dimensional (TRIVECTOR) topological electro field can be measured which shows the relationships among various time-dependent volt-ammetric techniques using micro electrodes. Intersections of the surface with appropriately oriented planes represent conventional polarography, chronopotentiometry, polarography at a stationary electrode, and constant-potential voltammetry.

Homeopathy is dependent on a shape transfer process. The activation of neuro-emotional shape receptors can offer an explanation of homeopathy. Our TRIVECTOR three-dimensional topological field time-dependent voltammetric technique offers a good compatibility with the TRIVECTOR resonance system. This has been shown to provide an accurate system of homeopathic analysis. This article will only deal with the three-dimensional topological field time-dependent voltammetric techniques as part of a whole system for homeopathic shape analysis.
TRIVECTOR VOLT-AMMETRIC SIGNATURE

The basic existence of all atoms and molecules as all of science knows has a distinct field around it. This subtle field can be measured. The first form of electrical chemical analysis was done over a hundred years ago in the science of volt-ammetry also referred to as polography. Thousands of research articles and a fully accepted science of the electro dynamic analysis have lurked in the back waters of chemistry. But since so few chemical engineers have electrical knowledge, it does not gain popularity.

There was even a journal on volt-ammetry published years ago. In the journal there were some interesting articles. In animals they found that the voltage of the body was connected to the catecholamines. These are our adrenal hormones, necessary for flight fight and stress management.

The amperage was connected to the indolamines or brain hormones like serotonin and melatonin. When they gave catecholamines there was an increase in voltage. When there was a measured drop in catecholamines there was a drop in voltage. When they gave indolamines there was an increase in amperage. When there was a measured drop in indolamines there was a drop in amperage. We have scientifically and clinically proved the same observation true in humans.

In 1983 Nelson developed a trivector system of analyzing the volt-ammetric signature of a compound. Nelson developed a three dimensional system Nelson referred to as the trivector. The basic theory was to make a volt-ammetric- electro-chemistry analysis system that would be as similar to the actual process in the body. So the volt-ammetric test should use volts and amps similar to the actual body potentials. Thus the measured volt-ammetric signature would be very similar to the actual body natural processes.

Nelson started purchasing compounds. Bacteria, fungus, viruses, enzymes, hormones, minerals, etc and to date Nelson has spent over one and a half million dollars on collecting and testing these items. All items in the SCIO test kit have been tested in their reality. Other companies use much less scientific systems. This is the reasons for the success of the SCIO system.

There have been over twenty five years of testing, perfecting, substantiate, corroborating, authenticating, and validating the current system we call the QQC. There have been over five articles published on the science. And over 35,000 systems using the trivector patterns have shown profound safety, and efficacy.

This research and history has been reviewed intimately and correctly assayed by medical experts in Europe. There has been now an acceptance of both the QQC device and the accuracy of the trivector volt-ammetric signatures. To review this research and the legal registrations please inquire. There is a full peer reviewed medical ISSN journal devoted to the review of the technology. Simply put we can test the electrical field that binds and permeates a compound and reproduce a signal to see how a patient reacts to it.
These items such as vitamins, homeopathics, enzymes, hormones, sarcodes, allersode, nosodes, Isodes and herbs have static trivector signatures. The living being has a reactive or ever changing field. The patient has a reactive field that is drawn towards nutrition and repelled from toxins. We measure the reactions (reactance EPR) of the patient to ten thousand some homeopathic compounds. This is the basis of the EPFX system as it was sold from 1989. Two decades of development to get to today.

**Scientific Principles of Voltammetric TRIVECTOR Analysis**

1. The liquid crystal nature of the polar substance water is a well-known scientific principle.
2. The memory of water to retain and return to its crystal polymorphic shape structure is also well known. *This memory is destroyed by a. Heat above 55 degrees Celsius b. Strong odor such as camphor, c. Ionizing radiation (X-rays). Magnetic fields can distort the shape but the water memory will return after the magnetic field is discontinued. This is the principle of magnetic resonance imaging. Water will remember its crystal structure and always seek to find its shape or polymorphic state*
3. Electrochemistry (polarography, Polography, chronopotentiometry, volt-ammetry) is standard accepted scientific principle of modern chemistry for chemical analysis.
4. The dynamics of the chemical information transfer of hormones through shape receptors in the cell is the basis of all pharmacology. All hormones work by stimulating these shape receptors. The plasticity of these receptors has allowed synthetic chemistry to appear to work. Shape receptor stimulus is our fourth scientific principle.
Method:

In our study 21 hetero men (ages 33 to 63) were told to lie down and use their mind to turn themselves on and get an erect penis. Homosexuals have excess testosterone and can get an erection to easy so they were not allowed in the study. They are not allowed to touch the penis or move to do this but only in the mind. The men were connected to the SCIO device and told it would help. The SCIO device was set on placebo for the first round and the SCIO HS (hormone Streaming) was then operative on visit 2, back to placebo on visit 3 and SCIO HS on visit 4. The time it takes to get an erect penis is an indication of available testosterone. Testosterone is richer in young men and in the morning hours when you get an early morning erection. All tests were done after 12AM to minimize circadian effects. Thus there was a single blind test of testosterone hormone streaming (HS).

**SCIO 1 wave form generator Results:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>1st visit Base Line</th>
<th>2nd HS</th>
<th>3rd Placebo</th>
<th>4th HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13min 20sec</td>
<td>7min 5sec</td>
<td>11min 35sec</td>
<td>6min 40sec</td>
</tr>
<tr>
<td>2</td>
<td>11min 10sec</td>
<td>9min 55sec</td>
<td>10min 30sec</td>
<td>7min 20sec</td>
</tr>
<tr>
<td>3</td>
<td>-----------</td>
<td>10min 45sec</td>
<td>9min 55sec</td>
<td>7min 10sec</td>
</tr>
<tr>
<td>4</td>
<td>14min 30sec</td>
<td>10min 35sec</td>
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**AVERAGE:** 12min 35sec + 10min 05 sec 11min 45sec 8min 35sec

In the control measure there was an average of 12.5 minutes and several could not do it within the 15 minute allowed time. The second operative HS trial had almost 2 plus minutes reduction in time showing the effectiveness of the HS treatment. A second placebo trial was run on trial #3 with some practice effect showing improvement over the first placebo run. The fourth trial with the SCIO HS on testosterone streaming the time was nearly half with an average of 8.5 minutes and all achieved erections within the 15 minute allowed period.

This showed the positive effect the HS treatment had on the subject’s arousal. This indicates the effect of testosterone Voltammetric streaming. No negative side effects were noted.

There were also significant TVEP reaction correlates to testosterone and other related hormones. Full discussion of the TVEP factors of this study will be published in the future.
Discussion:

There were no reported risks during the study. With a significance of 00.4 % our hypothesis has been confirmed in this research. This has resulted in a p-value of 0.045 also proving significance in our study. The GSRtDCs is safe + effective. There are apparent severe dangers with using SINthetic testosterone. The hormone streaming is safer and works thru a safe Voltammetric stimulation. The technique of hormone streaming has been used in the 2008 Chinese Olympics, by Novak Djokovic, several international prize winning Body Builders including Matt Mendenhal and others, and by many world class athletes. This technique has been used with success and now experimentally validated.

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dynamics of blood serum albumin in the patients with breast cancer. 
Bioelectrochemistry,
Facilitate Insight by Non-Invasive Brain Stimulation

Richard P. Chi, Allan W. Snyder

Abstract

Our experiences can blind us. Once we have learned to solve problems by one method, we often have difficulties in generating solutions involving a different kind of insight. Yet there is evidence that people with brain lesions are sometimes more resistant to this so-called mental set effect. This inspired us to investigate whether the mental set effect can be reduced by non-invasive brain stimulation. 60 healthy right-handed participants were asked to take an insight problem solving task while receiving transcranial direct current stimulation (tDCS) to the anterior temporal lobes (ATL). Only 20% of participants solved an insight problem with sham stimulation (control), whereas 3 times as many participants did so (p = 0.011) with cathodal stimulation (decreased excitability) of the left ATL together with anodal stimulation (increased excitability) of the right ATL. We found hemispheric differences in that a stimulation montage involving the opposite polarities did not facilitate performance. Our findings are consistent with the theory that inhibition to the left ATL can lead to a cognitive style that is less influenced by mental templates and that the right ATL may be associated with insight or novel meaning. Further studies including neurophysiological imaging are needed to elucidate the specific mechanisms leading to the enhancement.

Figures
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<td>Time required in completing the mental set phase (seconds)</td>
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Values are presented as mean ± standard error of the mean. Neither age (p = 0.315, 2-tailed independent t test), gender (p = 1, 2-tailed Fisher’s exact test), time required in completing the mental set phase (p = 0.36, 2 tailed independent t test), or experience in a quantitative field (p = 0.36, 2-tailed Fisher’s exact test) is a predictor of success in solving the Type 2 problem. In other words, there is no evidence that those in the L− R+ group had superior performance because of confounding baseline attributes.

doi:10.1371/journal.pone.016655.002

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Values are presented as mean ± standard error of the mean. Participants across the three stimulation groups did not differ in terms of age (p = 0.19, ANOVA), time required in completing the mental set phase (p = 0.76, ANOVA) or experience in a quantitative field (p = 0.85, 2 tailed Fisher’s exact test). It turned out that gender is not evenly distributed across the stimulation groups, with a few more females in the sham stimulation group. Nevertheless, it is clear from the data that gender is not a predictor of success in problem solving for either the Type 2 (p = 1, 2-tailed Fisher’s exact test) or Type 3 (p = 0.58, 2-tailed Fisher’s exact test) insight problem (see Table 2).

doi:10.1371/journal.pone.016655.001

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Comparison of problem solving performance across stimulation groups.

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doi:10.1371/journal.pone.0016653.t002
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doi:10.1371/journal.pone.0016655.t001

Comparison of problem solving performance across stimulation groups.

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**Editor:** Dorothy Bishop, University of Oxford, United Kingdom

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**Competing interests:** The authors have declared that no competing interests exist.

**Introduction**
Thinking outside the box is difficult. And counter-intuitively, those with the most in-depth knowledge do not have an advantage in this pursuit [1]. In fact, as Kuhn [2] noted, “almost always the men who achieve these fundamental inventions have been either very young or very new to the field whose paradigm they change.” One possible explanation for this paradox is that our mind is hypothesis driven [3], [4]. In other words, our observations of the world are strongly shaped by our preconceptions. For example, information consistent with our expectations or mental templates is often accepted at face value, whereas inconsistent evidence is discounted or hidden from conscious awareness [5]. While this hypothesis driven mechanism helps us in efficiently dealing with the familiar, it can prevent us from seeing better solutions in a different and/or unfamiliar context [6].

Presumably, it would be beneficial in certain situations if we could temporarily induce a state of mind that is less top-down, in other words, less influenced by mental templates or preconceptions. Interestingly, a clue for achieving this comes from people with brain dysfunctions [7], [8]. For example, Miller et al. [9] found that artistic talent, due to a different way of perceiving the world, can sometimes emerge spontaneously in those with dominant (usually left) anterior temporal lobe dementia. They argued that damage to this area may interrupt certain inhibitory mechanisms in the left hemisphere and disinhibit contralateral areas in the right. As an oversimplified caricature, brain dysfunctions, induced or caused by inhibiting and disinhibiting certain neural networks, may make our cognitive style less hypothesis driven, thereby enabling access to a level of perception normally hidden from conscious awareness [7], [8].

This raises a provocative possibility: Can we facilitate insight problem solving in healthy people by temporarily inhibiting or disinhibiting certain areas of the brain? To explore this possibility, we used transcranial direct current stimulation (tDCS) (see Methods), a safe, non-invasive technique that can increase or decrease cortical excitability and spontaneous neuronal firing in the stimulated region depending on current polarity [10], [11].

We hypothesized that cathodal stimulation (decreasing excitability) of the left anterior temporal lobe (ATL) together with anodal stimulation (increasing excitability) of the right ATL would facilitate performance on an insight problem solving task. This prediction is based on evidence that the right ATL is an area associated with insight [12], [13] and novel meaning [14] and that inhibition of the left ATL is associated with emergence of certain cognitive skills and a less top-down or hypothesis driven cognitive style [9], [15], [16], [17]. More generally, it is consistent with evidence that the left hemisphere is involved in the maintenance of existing hypotheses and representations [18], [19], [20], [21], while the right hemisphere is associated with novelty and with updating hypotheses and representations [22], [23], [24], [25], [26]. We elaborate further on this in the Discussion.

Methods

Participants

67 healthy right handed subjects aged between 18 and 38 years from the University of Sydney participated in our study, with 60 participants included in the final analysis. Individuals with a score greater than 50 on the Edinburgh Handedness Inventory [27] were eligible for
participation. Participants were screened and excluded if they had any neuropsychiatric disorder, current or past history of drug use, were taking any medication acting on the central nervous system or were pregnant.

Of the 67 participants, 5 participants who had previous experience with the task (matchsticks arithmetic problems) were excluded. 2 other participants who had abnormal difficulties with Roman numerals and/or learning our testing protocols were also excluded. Therefore, after exclusion, data from sixty participants (29 females, mean age = 22, SD = 3.9) were used in this study (See Table 1 for demographic characteristics across the three stimulation groups). All of these participants were naïve to tDCS and had no prior experience with the matchstick insight problem solving task. The study was carried out to conform to the principles of the Declaration of Helsinki and was approved by the University of Sydney Human Research Ethics Committee. All participants gave written informed consent for the study prior to the experiment.

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doi:10.1371/journal.pone.0016655.t001

Table 1. Demographic characteristics across the three stimulation groups.
doi:10.1371/journal.pone.0016655.t001

**Transcranial direct current stimulation (tDCS)**

TDCS involves applying a weak direct current to the scalp via two saline-soaked sponge electrodes, thereby polarizing the underlying brain tissue with electrical fields. It has been shown that tDCS can modulate cortical excitability and spontaneous firing activities in the stimulated region by shifting the resting membrane potential [28]. Depending on the polarity of the current flow, cortical excitability can be increased (anodal stimulation) or decreased (cathodal stimulation) during and beyond the period of stimulation [10], [29]. It is an ideal
neuromodulation technique for our purpose because it is safe and has a particularly effective placebo that blinds subjects from stimulation conditions [30].

We used a custom made, battery-driven, constant current stimulator with a maximum output of 2mA and 2 sponge electrodes each with an area of 35cm2. Our device is particularly reliable for blinding subjects to stimulation conditions because it can be set to an ON display even when there is no stimulation (as in the sham, or control, condition).

For the active stimulation conditions, a constant current of 1.6mA intensity was applied, and was manually and slowly ramped up and down (over 30 seconds). The current density is 1.6mA/35cm2 which is equal to 0.0457mA/cm2. For the sham stimulation (control) condition, the sponge electrodes were placed in the same positions as in active stimulation, but after 30 seconds, the electrical current was covertly ramped down so that subjects did not receive further stimulation for the rest of the experiment. Gandiga et al. [30] suggested that the “sham stimulation” described above can blind subjects from stimulation conditions since this method produces similar initial tingling sensations in subjects as active stimulation does. In addition, to ensure that the blinding would be successful, we chose 1.6mA instead of 2mA as the intensity for the active conditions. This was based on previous experiences with tDCS, in which we noted that some participants felt particularly noticeable tingling sensations when the intensity was increased above 1.6mA.

We used a between-subjects design in accordance to Ollinger et al. [31], rather than a repeated measure design, to prevent practice effects from cofounding our results.

The 60 right handed participants were randomly assigned to one of three types of stimulation prior to the start of the experiment: 1) Cathodal stimulation of the left ATL together with anodal stimulation of the right ATL. This is referred in the text as the “L− R+ stimulation” condition. Specifically, the cathode electrode was placed over at the left ATL, approximately half way between T7 and FT7 on the International 10–20 System for electrode placement. The anodal electrode was placed over at the right ATL, approximately half way between T8 and FT8 on the same 10–20 System. The area is laterally 40% of the intra-auricular distance from the vertex and anteriorly 5% of the distance from inion to nasion. The areas were determined with the guidance of an EEG cap. 2) Anodal stimulation of the left ATL together with cathodal stimulation of the right ATL. This is referred to as the “L+ R− stimulation”. 3) “Sham stimulation” for control, involving transient, non-effective stimulation in the L− R+ configuration (i.e. the same placement as in condition 1). Participants were blind to their stimulation condition.

None of the participants experienced adverse effects as a result of tDCS or withdrew from the study.

**Cognitive task**

To assess whether we could facilitate insight, we used a well known experimental paradigm involving “matchstick arithmetic” [31]. Participants were asked to correct a false arithmetic statement, presented in Roman numerals constructed from matchsticks, by moving one stick from one position to another position without adding or discarding a stick (see figure 1). The only valid symbols were the Roman numerals ‘I’, ‘V’, ‘X’ and the arithmetic operators ‘+’, ‘−’ and ‘ = ’. We followed the procedure of Ollinger et al. [31] who demonstrated that repeatedly
solving problems requiring one kind of insight (e.g. changing an X to a V as shown in Type 1 of figure 1) impairs subsequent performance on problems requiring a different kind of insight (e.g. changing a + sign to an = sign as shown in Type 2 of figure 1). In fact, they found that only 10% of participants could solve the Type 2 problem shown in figure 1 after solving a series of 27 Type 1 problems [31].

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Figure 1. An illustration of the insight problems used.
Type 1 insight problems were used in the mental set phase. Type 2 and Type 3 problems were used in the testing phase.
doi:10.1371/journal.pone.0016655.g001

Procedure

The experiment was conducted in a quiet room with no distractions. Participants were told that we were investigating the effect of brain stimulation on a matchstick problem solving task. They were first given computerised instructions for the matchstick task and a practice task of 3 Type 1 Problems (e.g. see figure 1) composed of actual matchsticks on the table in front of them. The experimenter demonstrated the correct solution if the participant could not solve any practice item. Throughout the experiment, participants were given a Roman numeral table from 1 to 15 and actual matchsticks that they could use to help them reach the solution.

During the mental set phase, participants were asked to solve a series of 27 Type 1 problems presented one at a time via Microsoft PowerP. The solutions for all of these problems involve changing an ‘X’ to a ‘V’ by moving a stick. Participants had up to 2 minutes per problem and were asked to report the solution out loud when they found it. They were given the solution during this mental set phase if they could not solve the problem after 2 minutes.

After the mental set phase, participants were told that they would receive 5 minutes of tDCS before being asked to solve a few additional problems. They were also told that the stimulation would continue until the end of the second (testing) phase. tDCS was initiated after the mental set phase (solving the 27 Type 1 problems) and 5 minutes before initiating the testing phase because cortical excitability changes induced by tDCS are not usually observed until after a period of 3–5 minutes [10].

After the 5 minutes of tDCS, participants began the testing phase when they were asked to solve 2 additional problems (the Type 2 and Type 3 problems as shown in figure 1). During the testing phase, participants were given up to 6 minutes for each of the 2 test problems (the order of
presentation was counterbalanced) and were not given the correct solutions if they failed. Stimulation continued until the end of the testing phase (up to a maximum of 17 minutes).

Statistical analysis

The primary dependent variable was the number of subjects who could solve the most difficult insight problem (Type 2) during the testing phase by the end of 360 seconds. We specifically focused on results for the harder (Type 2) insight problem because brain lesions have been shown to produce an advantage only for these problems, not for the easier (Type 3) problems[32]. However, to replicate the experimental procedure of Ollinger et al. [31], we also undertook an exploratory analysis of the results for the Type 3 problem.

A two-tailed Fisher's exact test was used to test the prediction that those in the L− R+ stimulation group would have a higher success rate in solving the insight problems than those in the sham stimulation group. In addition, a survival (time to event) analysis was used to compare whether there was any difference in the time to event curves between the L− R+ group and the sham stimulation group. Specifically, “event” is defined as solving the insight problem (Type 2) during the testing phase. Time to event curves (censored at 360 seconds) were plotted using the Kaplan-Meier method and comparisons between the curves were analysed using the logrank test [33].

In summary, Fisher's exact test and the logrank test were used to assess the prediction that those in the L− R+ group would perform better than those in the sham stimulation group. In contrast, we did not have a hypothesis for those in the L+ R− group, for several reasons (see Discussion), so the data for the L+ R− group were subjected to exploratory analyses.

Results

Overall, condition of stimulation had a significant effect on the time to event curves for both the Type 2 insight problem (p = 0.010, logrank test) and the Type 3 problem (p = 0.037, logrank test). Condition of stimulation also had a significant effect on performance at the end of 6 minutes for both the Type 2 problem (p = 0.024, two-tailed Fisher's exact test) and the Type 3 problem (p = 0.034, two-tailed Fisher's exact test).

Our prediction, that those in the left cathodal/right anodal group (L− R+) would perform better than those in the sham group, is strongly supported by the findings (p = 0.008, logrank test) (see figure 2). Only 20% of participants in the sham stimulation (control) group solved the Type 2 (hardest) problem (shown in figure 1) by the end of 6 minutes whereas, in contrast, 60% of participants solved it in the L− R+ group (p = 0.022, two-tailed Fisher's exact test). Similarly, only 45% of participants in the sham stimulation (control) group solved the Type 3 (easier) problem (shown in figure 1) by the end of 6 minutes whereas 85% of participants who received L− R+ stimulation solved it (p = 0.019, two-tailed Fisher's exact test) (see figure 3).
Condition of stimulation has a significant effect on both the time to event (solving the Type 2 insight problem) curves ($p = 0.010$, logrank test) and the percentage of subjects who solved the insight problem by the end of 6 minutes ($p = 0.024$, 2 tail fisher's exact test). While participants in all stimulation groups had difficulties in the first minute, after 150 seconds, only those in the $L^- R^+$ group continued to solve the insight problem over time. By the end of 360 seconds, 60% of those in the $L^- R^+$ stimulation group could solve the problem whereas only 20% of those in the sham stimulation group could do so ($p = 0.022$, two tail fisher's exact test).

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We a priori did not intend to use the Type 3 insight problem to test our main hypothesis that those in the $L^- R^+$ group would perform better than those in the sham stimulation group. This is
because those with brain lesion paradoxically perform better only for Type 2 problems, but not for Type 3 problems (Reveberi et al., 2007). Nevertheless, the result for the Type 3 problem is consistent with our hypothesis and also consistent with results for the Type 2 problem. Note that while the comparisons between L+ R− and sham (p = 0.15, logrank test) and between L+ R− and L− R+ (p = 0.26, logrank test) are not significant (possibly due to the lack of power), it is clear that those in the L− R+ group had a significant advantage over those in the sham stimulation group (p = 0.010, logrank test).

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Importantly, participants who received stimulation of the opposite polarity (L+ R−) did not perform differently from those in the sham group for either problem Type 2 (p = 1, 2-tailed Fisher's exact test) or Type 3 (p = 0.20, 2-tailed Fisher's exact test) at the end of six minutes. Similarly, there was no significant difference in the time to event curves between the L+ R− group and the sham stimulation group for either the Type 2 (p = 0.68, logrank test) or the Type 3 (p = 0.15, logrank test) insight problem.

Of the 60 participants included in the analysis, 57 of them solved all 27 problems in the mental set phase successfully, suggesting that most had gained proficiency in Type 1 insight problems. The 3 participants who could not solve 1 or 2 problems out of 27 Type 1 problems in the mental set phase were given the solution to these problems after 2 minutes.

There is no evidence that the 3 groups of participants differ in their problem solving abilities before tDCS (see Table 1) and most of them, regardless of stimulation condition, had difficulties in the first minute of the testing phase (see Figure 2). Furthermore, it turned out that baseline characteristics were not predictors of successful problem solving. In other words, those who solved the Type 2 or Type 3 problem did not differ from those who could not in age, gender, or experience in a quantitative field (See Table 2).

It might seem reasonable to suppose that faster performance in the mental set phase might be associated with greater (or lesser) success in the testing phase. For example, those who are faster could either be better problem solvers in general or, conversely, more stuck in the mental set. However, it turned that there was no evidence (p = 0.36, 2-tailed independent samples t test) that those who successfully solved the insight problems during the testing phase took a shorter time to complete the mental set phase.
Table 2. Demographic characteristics of those who were successful in solving the Type 2 problem vs those who failed.
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Discussion

The prediction that those who received L− R+ stimulation of the anterior temporal lobes would be better able to solve insight problems was strongly supported by the findings. Nevertheless, we did not expect a three-fold increase in the likelihood of solving the problems. This is the strongest cognitive enhancement we are aware of for a brain stimulation study, but we suggest that the results should be interpreted with certain limitations in mind.

Importantly, the kind of insight problem solving paradigm we used (and, arguably, any insight problem solving) involves several neural networks. Therefore, the pronounced improvement is most likely due to a combination of several mechanisms. Candidate mechanisms include diminishing a top-down (hypothesis driven) cognitive style, interrupting the mental set, improving set-switching ability, and facilitating insight directly. Even if we assume that modulation of cortical excitability by tDCS was constrained in areas strictly under the sponge electrodes (a controversial issue [34]), it is likely that this modulation would have an indirect impact on distant networks [35]. Consequently, we cannot provide a definitive explanation, and can only offer some possibilities regarding the mechanism of action leading to the enhancement we observed.

Why tDCS improved insight?
Given our bilateral stimulation protocol, the improvement in performance could be due to decreased cortical excitability of the left hemisphere, increased excitability of the right hemisphere, or some combination of both. In any case, the model of interhemispheric rivalry[36], [37], [38], [39], which provides the rationale for many tDCS studies on stroke rehabilitation[40], predicts that both left cathodal stimulation and right anodal stimulation would have similar net effects on overall hemispheric balance. If this is true, then both the L− and R+ elements of our stimulation protocol might contribute to diminishing left hemisphere dominance, which is associated with stereotypy [20] and adherence to existing hypotheses [21], [23], [26].

This possibility is consistent with evidence that the left hemisphere is important for processing “well routinized representations and strategies” and the right hemisphere is “critical for processing novel cognitive situations” [25]. Indeed, there is evidence that those who are not strongly right handed (associated with weaker left hemisphere dominance) are more likely to update their existing mental representations [18], [21] and are less constrained by cognitive routine [24]. In other words, by diminishing left hemisphere dominance (either by L−, R+, or the combination of both), we might have increased our subjects' tendency to examine a problem anew instead of through the mental templates of well-routinized representations and strategies.

The role of the left ATL

Alternatively, it is also possible that the pronounced improvement in insight problem solving was due solely to inhibiting (decreasing excitability of) the left ATL. This area is associated with mental templates, or context [41], [42], [43], [44] and inhibiting the left ATL can lead to a less top down influenced (hypothesis driven) cognitive style [9]. As an oversimplified caricature, by making our participants' cognitive style less hypothesis driven, less influenced by existing mental templates or context, we might have increased the chance that alternative representations, often hidden from conscious awareness (for the sake of efficiency in dealing with the familiar) are considered. Consistent with this view, Rausch [22] found that patients with left temporal lobectomy (intact right hemisphere) tended to switch hypotheses even when initial hypotheses were explicitly shown to be correct. Based on the evidence discussed above, the pronounced improvement in problem solving was possibly a result of reducing the influence of existing hypotheses, for example, reducing the impact of mental set.

Paradoxical facilitation

Our findings are also consistent with evidence that paradoxical functional facilitation [45], such as the emergence of perceptual skills related to a less top-down cognitive style, can occur because of brain dysfunction [8], [9], [46], [47], or inhibition of the left ATL [15], [16], [17]. Consistent with this possibility, Reverberi et al. [32], using the same matchstick paradigm, demonstrated that while only 43% of healthy participants can solve the Type 2 insight problem shown in figure 1, paradoxically, 82% of patients with lesions in the lateral frontal area can do so. Such results are consistent with the view that tradeoffs or competition amongst different neural networks are common in human cognition [48], [49]. They are also consistent with the possibility that brain stimulation could modulate this tradeoff to our advantage (in certain situations) by temporarily inhibiting or disinhibiting certain brain regions. It would be interesting in further studies to explore whether inhibiting the lateral frontal lobe and the left ATL
simultaneously by non-invasive brain stimulation would lead to an even stronger effect in improved insight problem solving.

**Increased excitability of the right ATL**

Of course, it is possible that the pronounced improvement is simply due to increased excitability in the right ATL, an area associated with novel meaning [14] and insight [12], [13]. In other words, the improvement we found might be directly due to facilitating the area associated with insight rather than reducing any mental set effect. Alternatively, it is possible that tDCS can only reduce the mental set effect, but cannot facilitate insight in general. Further studies using a variety of control tasks are needed to disentangle the specific mechanisms of action and to determine whether the improvement in insight problem solving is task specific or can be widely generalized.

**Stimulation with the opposite polarity (L+ R−)**

One might have anticipated (from the logic of hemispheric rivalry, discussed above) that those who received stimulation of the opposite polarity (L+ R−) would have performed worse than those in the sham condition. However, this was not the case for either problem in the testing phase. A possible explanation is that there might be a ceiling effect in that brain stimulation cannot make someone more left hemisphere dominant, more constrained by mental set, than they already are. This possibility is consistent with evidence that brain stimulation can improve the motor skills of people's non-dominant hand by decreasing excitability to the dominant motor cortex, but cannot improve people's dominant hand by increasing excitability to the dominant motor cortex [50].

Furthermore, the effect of cortical stimulation on excitability is argued to be dependent on the resting state of neurons such that stimulation might preferentially modulate less active neural networks [51]. Therefore, although cathodal stimulation, on average, will lead to decreased excitability in the stimulated region (and vice versa for anodal stimulation), it is possible that for 10–20% of the subjects, the opposite effect on cortical excitability would occur during the testing phase [51], [52]. Nevertheless, our results suggest strong hemispheric differences in that only those who received L− R+ stimulation showed an improvement. It is not the case that simply stimulating any brain region can improve performance by disrupting the normal state of mind.

**Limitations**

As mentioned earlier, the focality of tDCS is still a controversial issue [53] and there might not be a one to one relationship between changes in cortical excitability under the electrodes and changes in brain functions [34]. On one hand, several studies modulating various brain regions have shown that the behavioural effects of tDCS are relatively focal and can lead to cognitive enhancement. For example, tDCS applied to frontal areas has been shown to improve memory[54], [55], planning [56] and complex associative thought [57], whereas tDCS applied to the parietal areas and posterior perisylvian region have led to improved visual spatial attention[36] and language acquisition [58], respectively. On the other hand, modeling studies demonstrate that there is most likely substantial current dispersion under the electrodes, especially at the cerebrospinal fluid level, where the conductance is particularly high [34], [53].
If this was the case, then the cognitive enhancement we found would be more likely a result of reducing left hemisphere dominance more globally rather than inhibiting the ATL specifically.

Furthermore, we are not able to disentangle the effect of left cathodal stimulation and right anodal stimulation in isolation to discover which has a stronger effect. We specifically used a bilateral stimulation montage with opposite polarities, which is the most efficient design for testing the primary question that tDCS can improve insight problem solving in healthy people. It also reduces the likelihood of current dispersion since unilateral stimulation (with a large monopolar electrode) by definition has a shorter distance between the electrodes and thus a higher likelihood of current shunting along the scalp [59]. Further studies might address this question with unilateral stimulation in combination with neurophysiological imaging before, during and after stimulation.

Conclusions

Our predisposition to use contextual cues from past experience confers a clear evolutionary advantage in rapidly dealing with the familiar, but this can lead to the mental set effect or overgeneralisation. As John Maynard Keynes [60] noted, “The difficulty lies, not in the new ideas, but in escaping from the old ones, which ramify…into every corner of our mind.” Our findings suggest the possibility that brain stimulation can be used to modulate this tradeoff to our advantage in a specific situation, possibly by temporarily making our cognitive style less top-down influenced (hypothesis driven). For example, brain stimulation might allow a person to examine a problem anew instead of through the mental templates of what is already known. Further brain stimulation studies in combination with neurophysiological imaging and a variety of control tasks are needed to determine the specific mechanisms of actions leading to the effect and whether the pronounced cognitive enhancement we found is generalizable to other tasks.

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Author Contributions

Conceived and designed the experiments: RPC. Performed the experiments: RPC. Analyzed the data: RPC AWS. Wrote the paper: RPC AWS.

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