

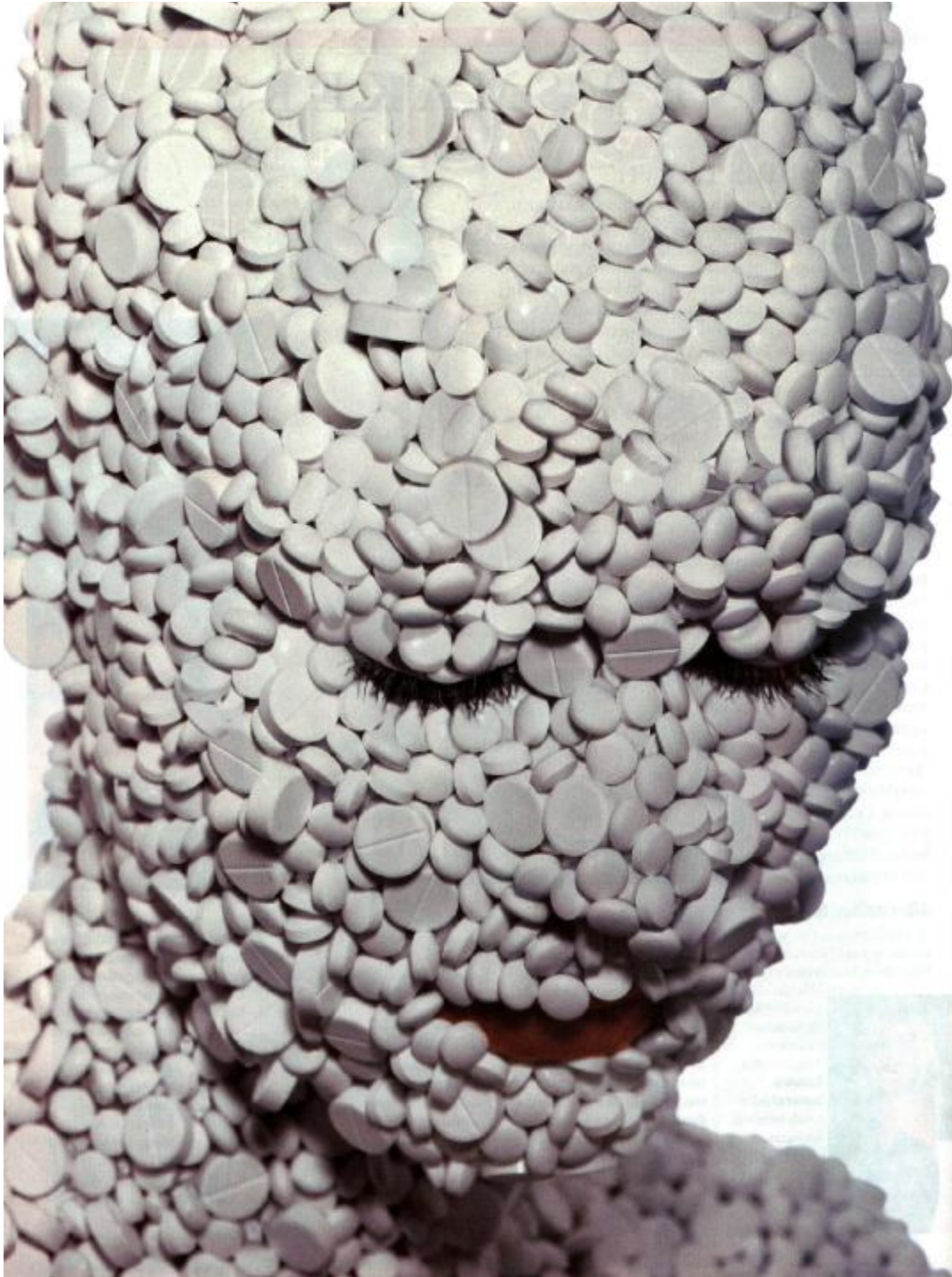
# **Cranial Electrotherapy Stimulation: For Anxiety, Insomnia, Depression, PTSD, COS, and Pain**

## **Daniel L. Kirsch, PhD, DAAPM, FAIS**

- Ø Former Clinical Director of the Center for Pain & Stress-Related Disorders of Columbia-Presbyterian Medical Center at the College of Physicians and Surgeons of Columbia University of the City of New York
  - Ø Diplomate, American Academy of Pain Management
  - Ø Fellow, American Institute of Stress
- Ø Editor, *Journal of Neurotherapy and Practical Pain Management*
  - Ø Member, Inter-Pain (Germany/Switzerland)
- Ø Pain, Stress and PTSD Consultant to US Army and VAMC

## **COL Kathy Platoni, PsyD**

- Ø Former Deputy Commander for Clinical Services; Officer in Charge of Team Ar Ramadi, Al Anbar Province, Operation Iraqi Freedom  
55th Medical Company (Combat Stress Control) Oct. 2004 – Dec. 2005
  - Ø Chief of Mental Health, 307th Medical Group US Army Reserves



## **Perspective:**

**The average pain reduction from the long-term use of analgesics is only 32% !**

**More needs to be done for our soldiers.**

**Most of the CES research shows effects above (in addition to) drug effects.**

# Cranial Electrotherapy Stimulation (CES)

## Easy 4-Step Procedure:

1. Wet Electrodes
2. Place on Ear Lobes
3. Turn on CES Device
4. Set to Comfortable Current for 20 Minutes to One Hour



The application of low level current, (usually  $<1$  mA) applied across the head for medical or psychological conditions, or just as an aid in relaxation

FDA authorized by Rx for anxiety, depression and insomnia  
Also (with or without meds) for fibromyalgia, ADD/ADHD, PTSD, CRPS (RSD), SCI, phantom limb pain, and other pain syndromes

# THE SCIENCE BEHIND CRANIAL ELECTROTHERAPY STIMULATION

Daniel L. Kirsch, Ph.D., D.A.A.P.M., F.A.I.S.  
with a prologue and epilogue by Pierre L. Leroy, M.D., F.A.C.S.  
and an introduction by Ray B. Smith, Ph.D., M.P.A.

*A complete annotated bibliography*  
**The most important**  
*of 126 human and 40 experimental*  
**breakthrough in stress**  
*animal studies, plus 31 reviews and*  
**management for the**  
*2 meta-analyses, a current density model*  
**21st century.**  
*of CES, side effects and follow-up tables,*  
**Discover all the facts inside.**  
*all indexed and cross-referenced.*



Second Edition

THE SCIENCE BEHIND CES  
Dr. Daniel L. Kirsch  
MEDICAL SCIENCE PAPERBACKS  
PUBLISHED BY

# Experiential Results From CES

Most people report:

**Happier,**

**Their Bodies are**

**More Relaxed,**

**Their Minds are**

**More Alert,**

**and They Feel Younger, More Energetic**



## Michael Hutchison Author of Megabrain describing his first CES experience:

“My body immediately felt **heavier**,  
as if I was sinking down into myself.

[Then] I realized I was becoming **extremely relaxed**.

...Things are very, **very clear**.

My body was no longer heavy, but **very light, full of energy**.

The feeling was one of **openness, clarity**,  
as though I had been wearing sunglasses for weeks  
and had suddenly taken them off.

**I couldn't help but feel that  
this is the way we're supposed to be all the time.”**

**Dr. Saul H. Rosenthal**

**Psychiatrist and CES Researcher Reported:**

**Calm, Relaxed Sensation**

**Activation of Alertness**

**Euphoric Tranquility**

**Not Worrying**

**Bright and Happy**

**Increased Energy**

**Improved Sleep**

**No Confusion, Memory Loss or Disorientation**

## **Dr. Saul H. Rosenthal**

### **Typical Comments from Patients:**

**“As if I have been given a happy pill.**

**Sort of a floaty, smiley feeling, very pleasant.**

**This is quite a change of moods.”**

**“Anxiety about capability seems reduced.”**

**“Smiling for no reason.”**

**“As though I have almost been conditioned not to worry.”**

**“Although I feel depressed, it is nothing like**

**I would expect from past experience,  
even though the problem is large.”**



**Safety First**

A light blue, brushstroke-style underline that tapers at both ends, positioned directly beneath the text "Safety First".

# CES Contraindications, Precautions, and Adverse Effects

- ✓ Interference with pre-1998 implanted devices (e.g., demand type pacemakers) – **No longer applicable?**
- ✓ Pregnancy – possible miscarriage and potential unsubstantiated legal arguments in case of developmental defects
- ✓ Skin reactions (redness to burns) **L**
- ✓ May cause myogenic, cervicogenic headaches, vertigo, or nausea **L**
- ✓ Patients should not drive or operate heavy machinery during or in rare cases after use
- ✓ May lower blood pressure in essential hypertension (may have to decrease meds) **J**

# Adverse Effects from CES

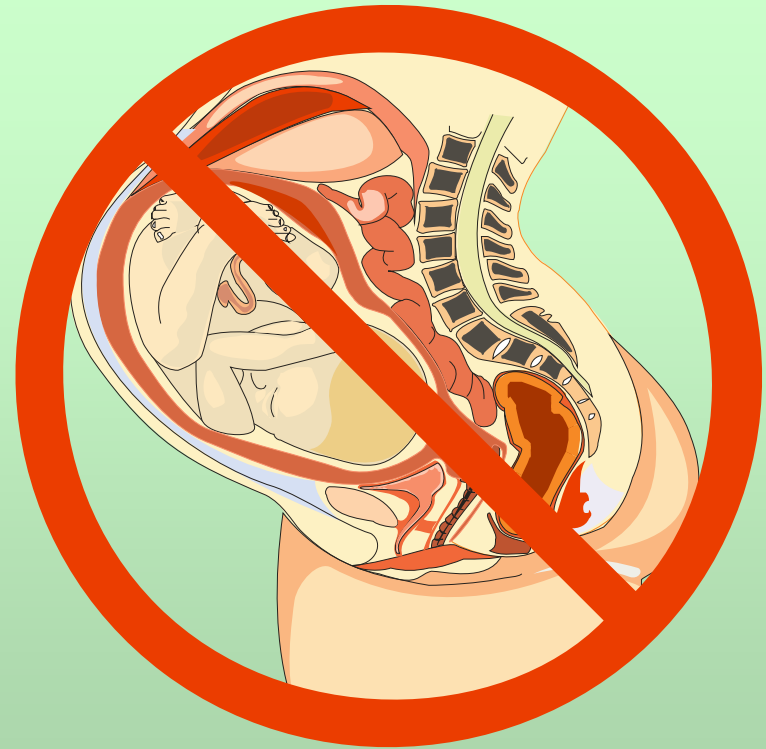
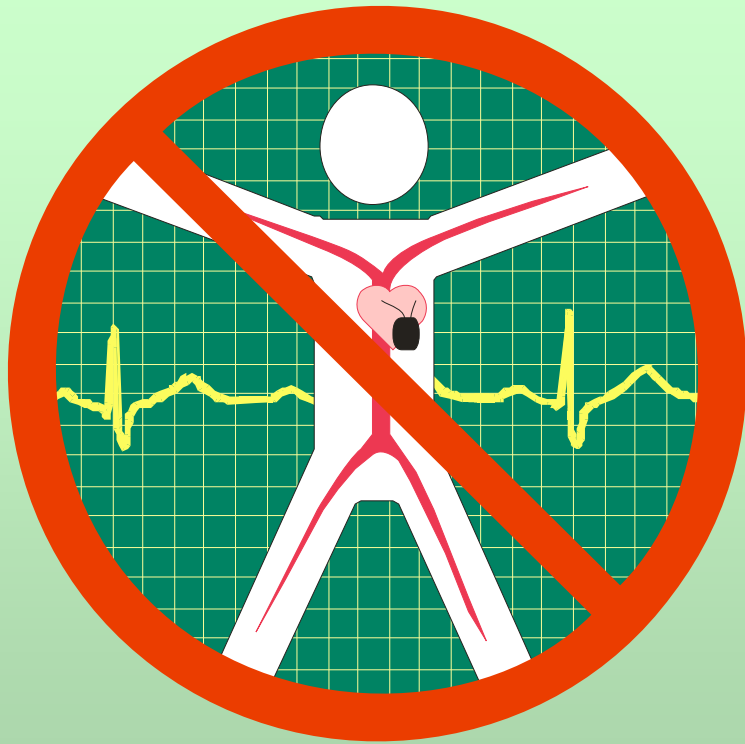
**From 126 human studies  
encompassing 6,007 people  
with 4,541 receiving active CES treatment:**

**9 myogenic headaches (0.20%, 1:506)**

**5 cases of skin irritation (0.11%, 1:910)**

**These are mild and self-limiting.**

# Primary Contraindications



# Embryofetal Effects on Rats

Little and Patterson, 1996

844 fetal rats had 1 hour/daily CES throughout their pregnancy at 10, 100, or 1,000 Hz, 1 volt, 125  $\mu$ A via ear tag electrodes.

**Autopsy revealed no congenital anomalies.**

- ü More pregnancy resorptions and fewer offspring in all groups, but only significant in the 1,000 Hz group.
- ü Average fetal weight and brain weight were inversely proportional to frequency.
- ü Behavior resembled CES in humans, even in this aggressive species; treated rats were not as active as the controls, so the decrease in fetal weights may be because their food intake was lowered.

**Conclusion: CES may be embryo-lethal in the very early stages of pregnancy and might cause some miscarriages, but there is no evidence of fetotoxic effects.**

Tracey Kirsch did CES throughout both pregnancies...

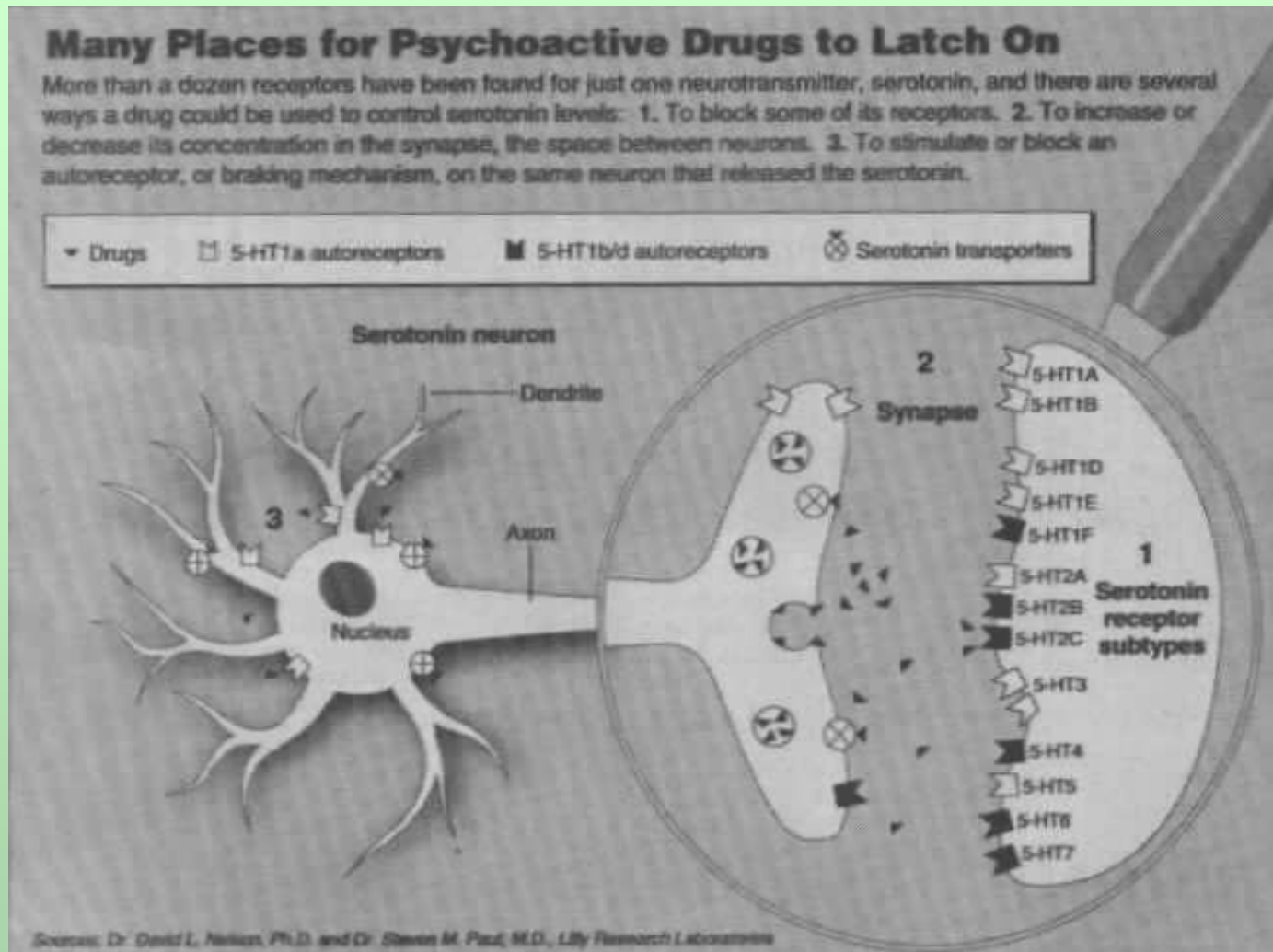
(Mrs. Kirsch at 29+)

Gabrielle Electra  
Kirsch at 3 ½ years

Sasha Kirsch  
at 4 months!

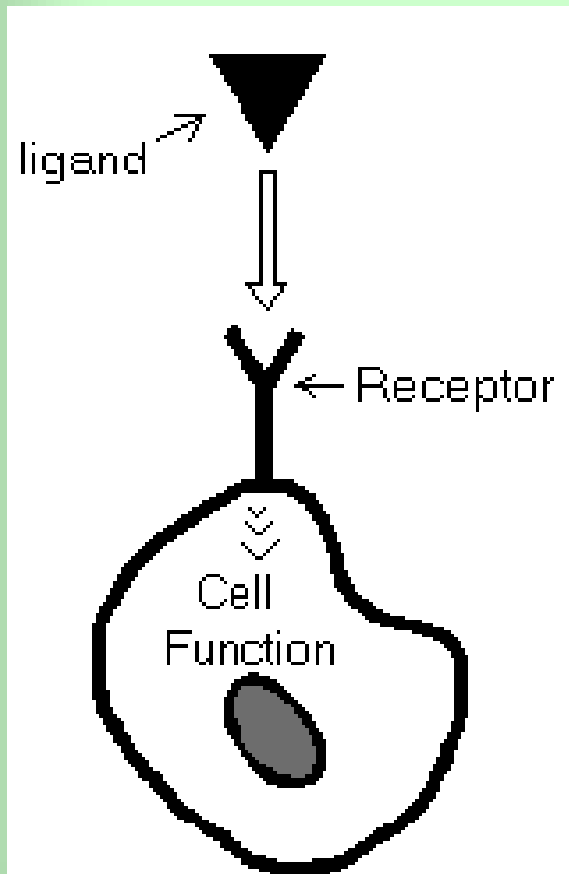


# Traditional Drug-Oriented View of Synapse



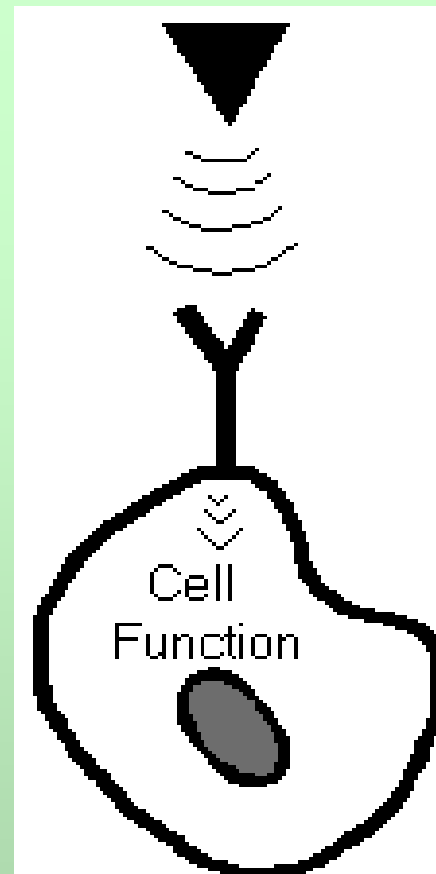
**But only 2% of neuronal communication occurs at the synapse**

# Models of Receptor Activation



**19<sup>th</sup> & 20<sup>th</sup>  
Century**

**Chemical/  
Molecular  
Physical  
Communication**



**21<sup>st</sup>  
Century**

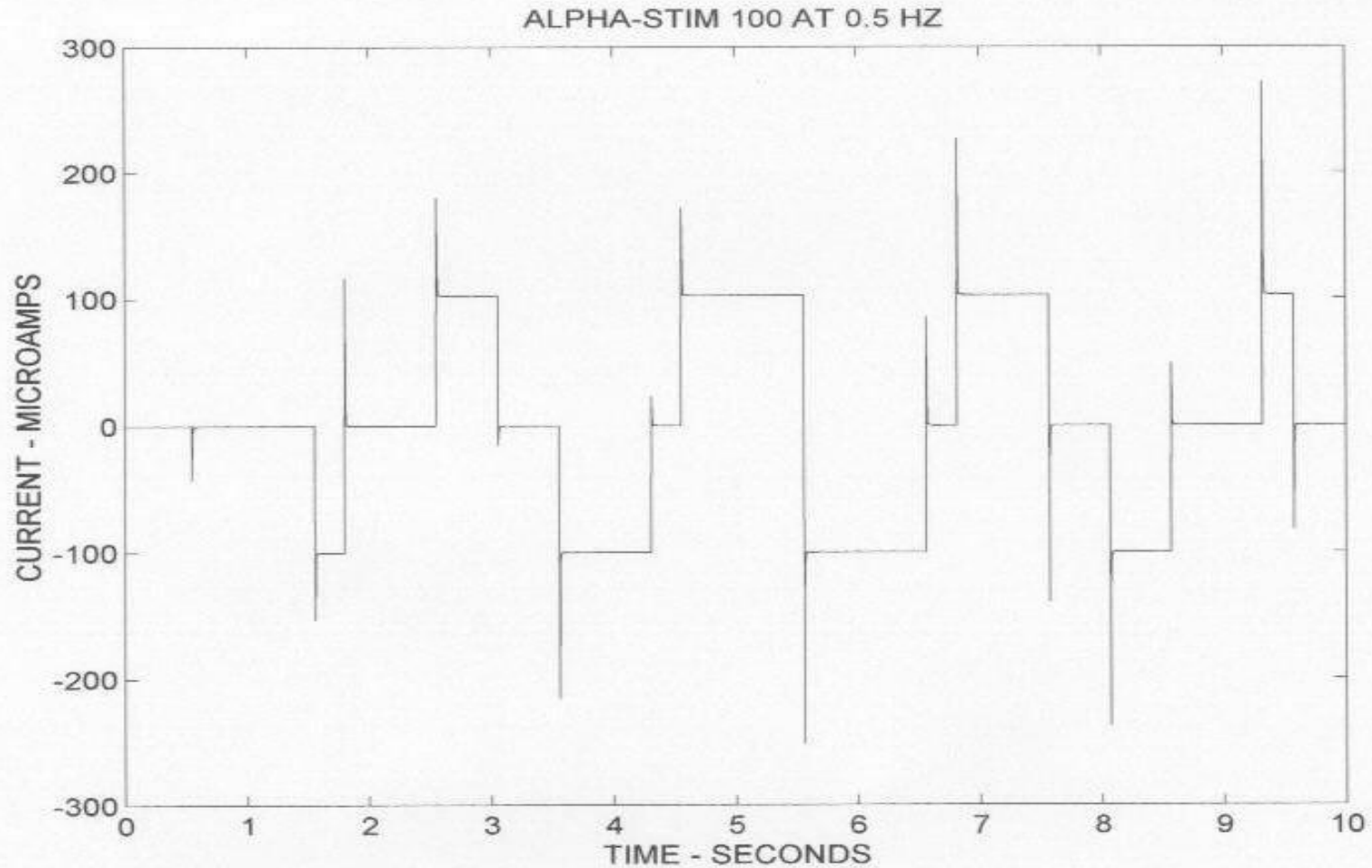
**Physical/  
Atomic  
Electromagnetic  
Communication**

Requires random collisions on a hit or miss basis that has little statistical chance of occurring and takes a long time.

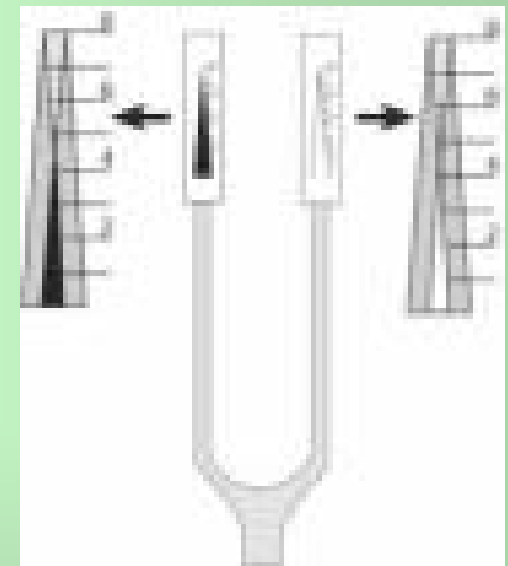
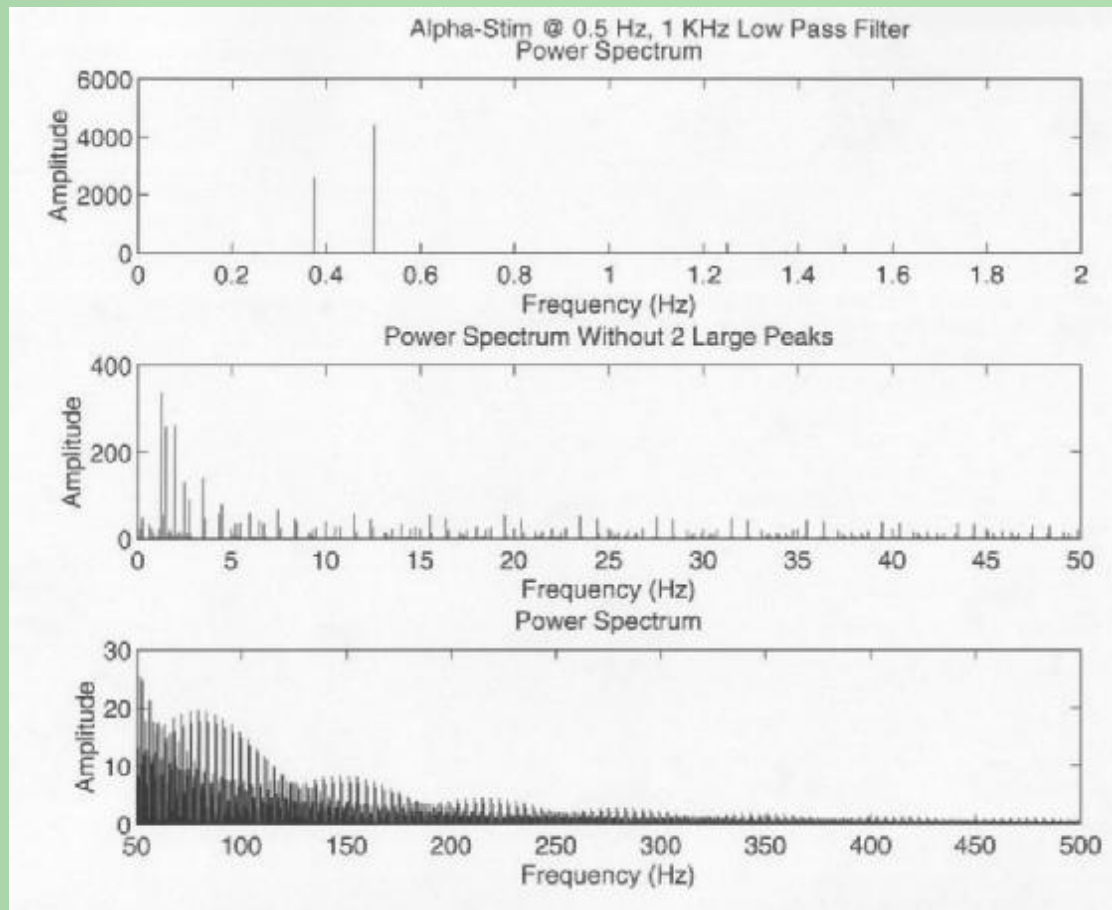
An electrical signal with a frequency that perfectly matches the receptor to resonate and activate intracellular responses, even from long distances (like tuning in a radio).



# Alpha-Stim CES Waveform on an Oscilloscope

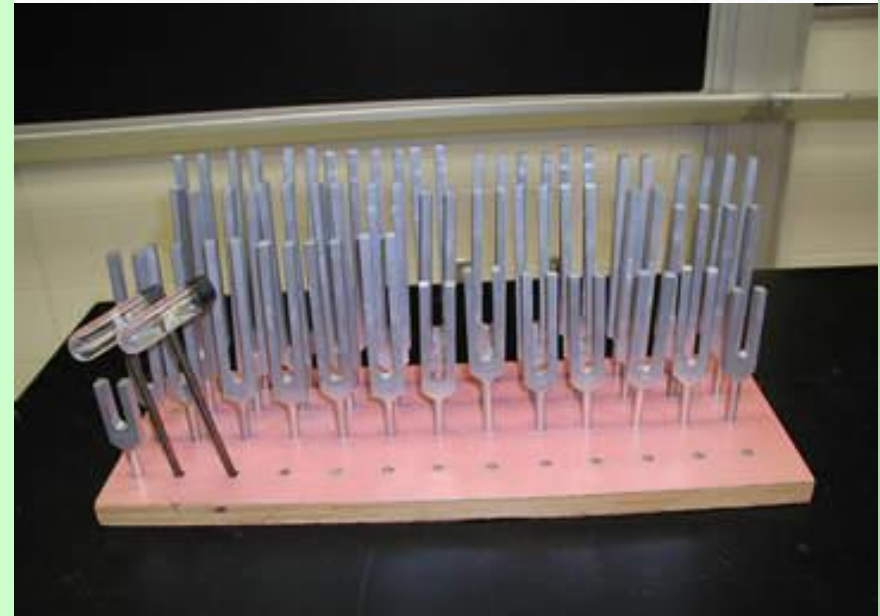
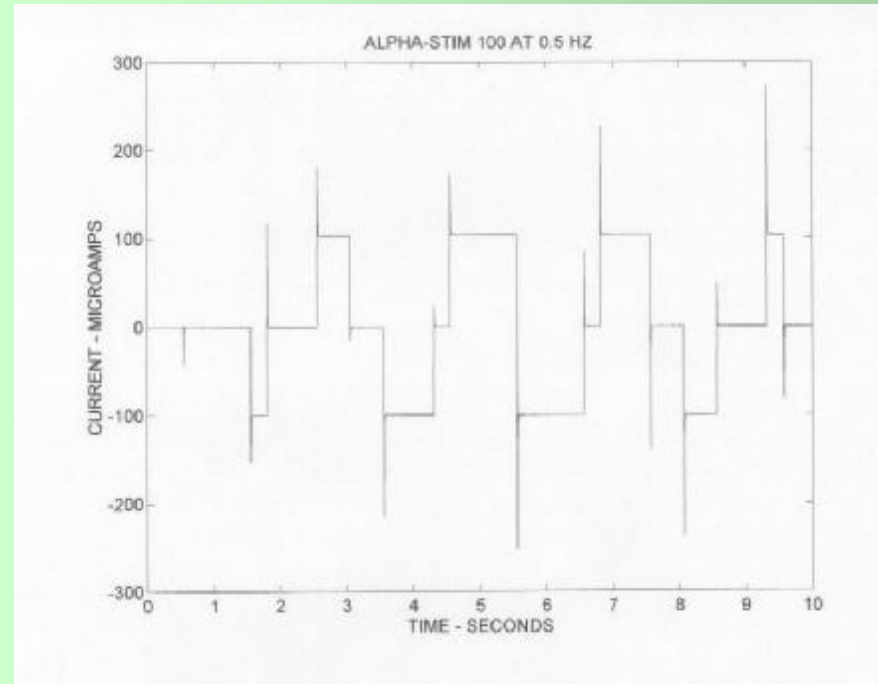


# Alpha-Stim Waveform on a Spectrum Analyzer



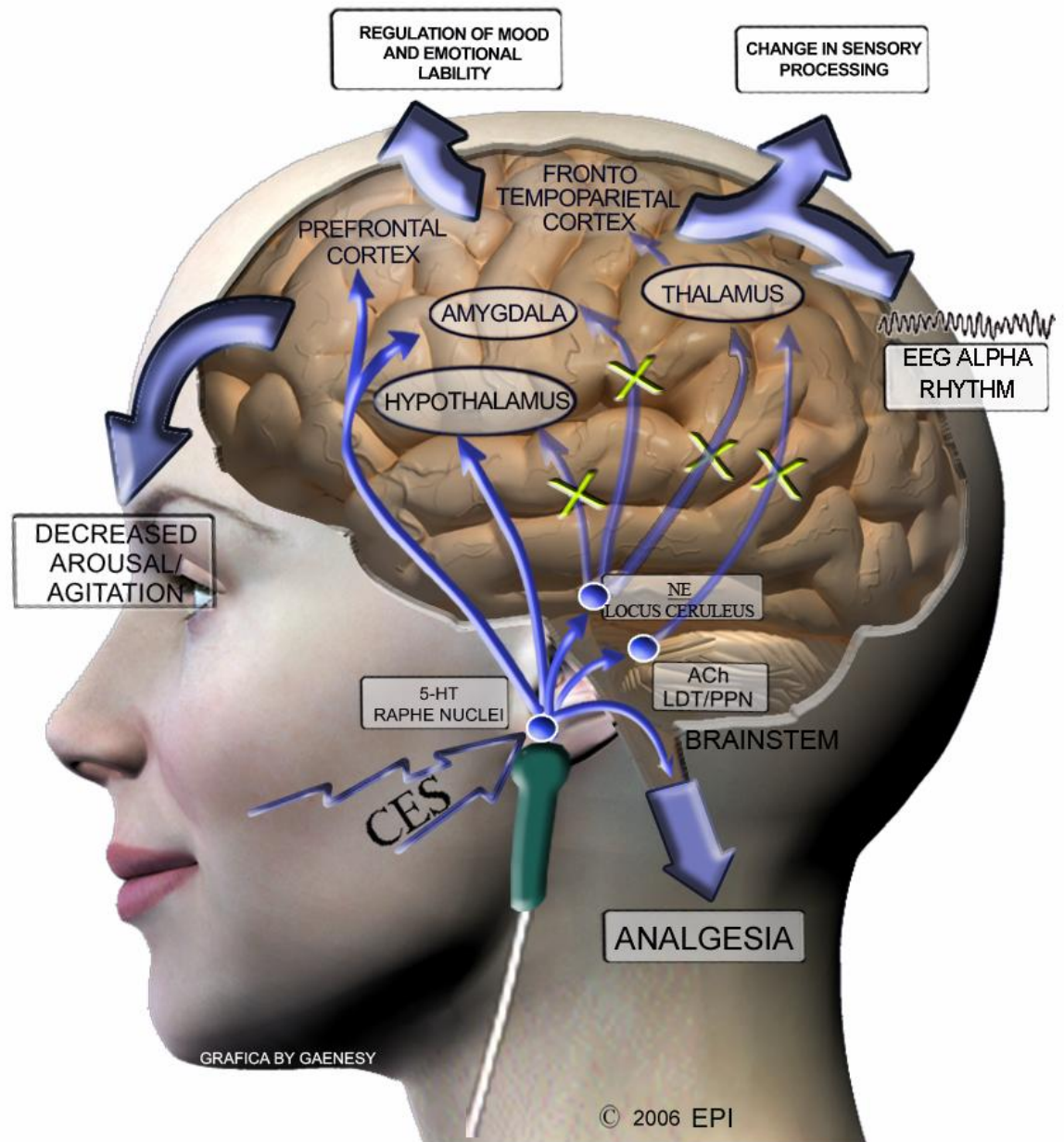
**Similar to thousands of tuning forks**

**Therefore,  
electromedical  
intervention with the  
proper variable  
frequency waveform  
may act on a receptor  
in the same way as a  
drug activating it via a  
wide range of  
biological harmonics  
to send specific  
messages into cells**



# Proposed Mechanisms of CES

James Giordano, PhD  
Georgetown University



## Beta-endorphins



98% in plasma

219% in cerebral spinal fluid

## Serotonin



15 – 40% in plasma

50 – 200% in cerebral spinal fluid

From research by neurosurgeon C. Norman Shealy, MD

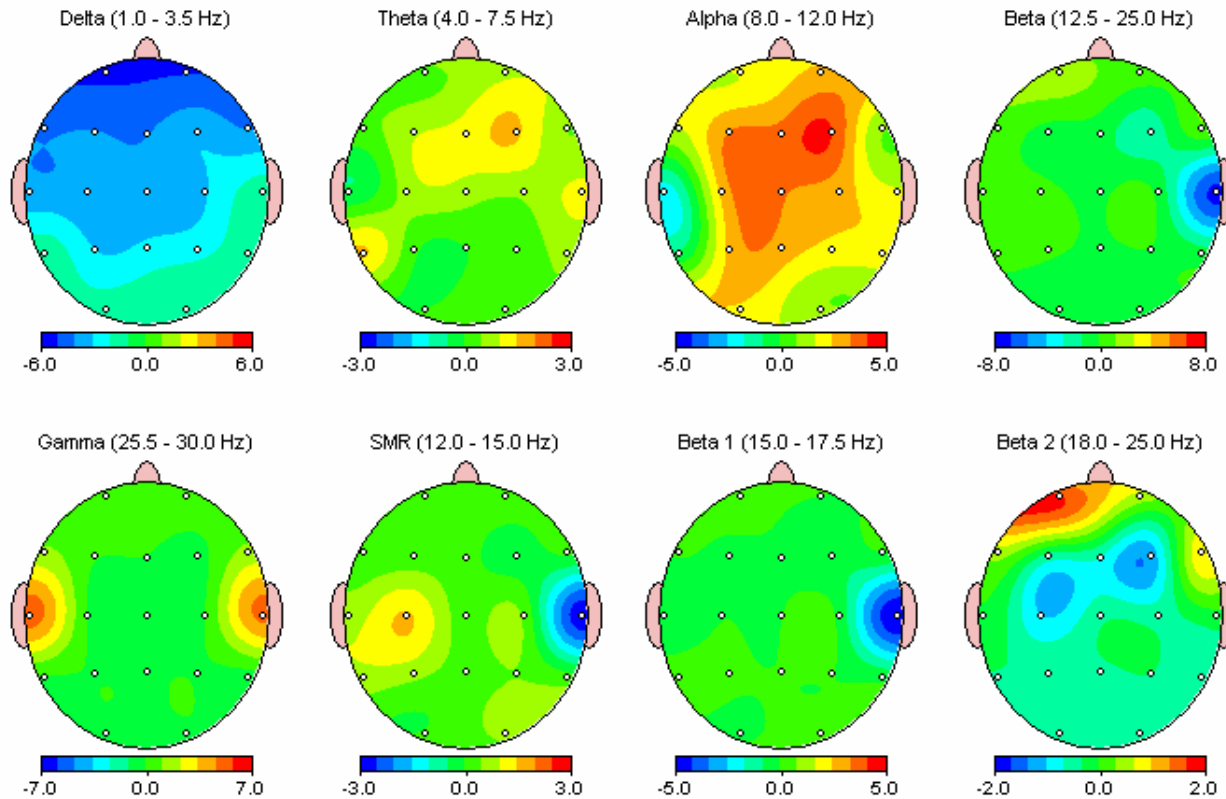
**QEEG changes in 30 subjects treated with 20 minutes of Alpha-Stim CES. There is an increase in alpha activity with a simultaneous decrease in delta activity.**      **Blue = decrease   Red = increase**

Courtesy of Richard Kennerly, University of North Texas Ph.D. dissertation

Montage: DEFAULT

combinedcsb2c.NGA - combinedcsb1c.NGA

**FFT Relative Power Difference (%)**



# Results

Achieved with Alpha-Stim Microcurrent Technology  
Based on a **Physician Survey** of 500 Patients

Condition	N	No Worse	No Change	Slight <24%	Fair 25-49%	Moderate 50-74%	Marked 75-99%	Complete 100%	Significant >25%
Pain	286	1 0.35%	5 1.75%	20 6.99%	48 16.78%	77 26.92%	108 37.76%	27 9.44%	260 90.91%
Anxiety	349	0 0.00%	8 2.29%	14 4.01%	39 11.17%	89 25.50%	181 51.86%	18 5.16%	327 93.70%
Depression	184	0 0.00%	8 4.35%	11 5.98%	31 16.85%	38 20.65%	82 44.57%	14 7.61%	165 89.67%
Stress	259	0 0.00%	6 2.32%	12 4.63%	37 14.29%	70 27.03%	124 47.88%	10 3.86%	241 93.05%
Insomnia	135	0 0.00%	16 11.85%	12 8.89%	17 12.59%	34 25.19%	45 33.33%	11 8.15%	107 79.26%
Headache	151	1 0.66%	8 5.30%	6 3.97%	25 16.56%	32 21.19%	63 41.72%	16 10.60%	136 90.07%
Muscle Tension	259	2 0.77%	6 2.32%	6 2.32%	42 16.22%	76 29.34%	111 42.86%	16 6.18%	245 94.59%

**Depression: 73% >50% or 52% >75% improved**

**Pain: 74% >50% or 47% >75% improved**

# Results Achieved with Alpha-Stim Technology

## Based on a Survey of Patients Reporting Psychological Disorders

Condition	N*	Slight <24%	Fair 25-49%	Moderate 50-74%	Marked 75-100%	Significant >25%
Psychological (all cases)	723	61 8.44%	175 24.20%	237 32.78%	250 34.58%	662 91.56%
Anxiety (alone)	128	13 10.16%	29 22.66%	42 32.81%	44 34.38%	115 89.84%
Anxiety (with other)	370	33 8.92%	85 22.97%	122 32.97%	130 35.14%	337 91.08%
Anxiety/Depression	58	3 5.17%	19 32.76%	19 32.76%	17 29.31%	55 94.83%
Depression (alone)	53	7 13.21%	11 20.75%	23 43.40%	12 22.64%	46 86.79%
Depression (with other)	265	29 10.94%	61 23.02%	93 35.09%	82 30.94%	236 89.06%
Stress	123	6 4.88%	30 24.39%	39 31.71%	48 39.02%	117 95.12%
Chronic Fatigue	50	3 6.00%	30 60.00%	10 20.00%	7 14.00%	47 94.00%
Insomnia	163	10 6.13%	47 28.83%	47 28.83%	59 36.20%	153 93.87%

\*Total N = 2500 patients with multiple symptoms. Results of those using Alpha-Stim™ at least 3 weeks before mailing warranty card. Warranty cards are 2500 consecutive cards received as of July 2000.

**Depression: 66% >50% or 23 - 31% >75% improved**



# Research Methodology of 86 Pivotal (out of 126) Studies of CES

- 35 Double-Blind Placebo-Controlled
- 9 Single-Blind
- 15 Controlled Study
- 6 Crossover
- 22 Open Clinical Trial
- 2 Retrospective Study
- 3 Case Study
- 13 Follow-up

# HOW WE DOUBLE-BLIND CES

- § ***Decrease current to a subsensory level*** of 100  $\mu\text{A}$  by oscilloscope.
- § ***Increase time to 1 hour to compensate*** for the reduced current dose.
- § The frequency is set to ***0.5 Hz***.
- § ***Half the wires are non-conducting***.
- § The controls are taped over so only the power-on button and battery compartments are accessible.
- § Serial numbers are then randomized as per protocol (researchers must record SN for each subject to know if device is active or sham).

# Topics of Scientific Research on CES

Number of Pivotal Scientific Studies:

42 Anxiety + 1 Phobia

26 Depression

27 Insomnia

10 stress

**CES is FDA  
approved for  
anxiety,  
depression,  
and insomnia**

# **Outcomes of Cranial Electrotherapy Stimulation (CES) with Soldiers for Combat-related Symptoms**

Brooke Army Medical Center (BAMC)

§ LTC Mona O. Bingham, LTC, AN

§ Alice W. Inman, Psy.D, GS 12, USA

IRB approved – in progress

# **Effect of CES on PTSD in Burned Outpatients USAISR**

§ Elizabeth A. Mann, MAJ, AN

§ Alfredo Montalvo, LTC, AN

§ Kathryn Gaylord, COL, AN

§ Scott Dewey, PT, CHT, OCS

§ Reg Richard, MS, PT

§ Travis Hedman, CPT, SP

IRB approved – in progress

# Two Meta-Analyses Confirmed the Significance of CES Research for Treating Anxiety:

- ◆ **University of Tulsa** (O'Connor, Presented at the 12<sup>th</sup> annual meeting of the Bioelectromagnetics Society, 1991)
- ◆ **Department of Health Policy and Management, Harvard School of Public Health** (Klawansky, et al, Journal of Nervous and Mental Disease 183(7):478-485, 1995)

**Both Found CES  
Significantly Effective  
for Anxiety ( $P < .05$ )**

# Meta-Analysis of CES for Anxiety

Kirsch and Gilula, *Practical Pain Management*, 7(2&3): 2007

§ 40 Studies

§ r Effect Size = .58

§ 17 Double Blind Studies, r = .53

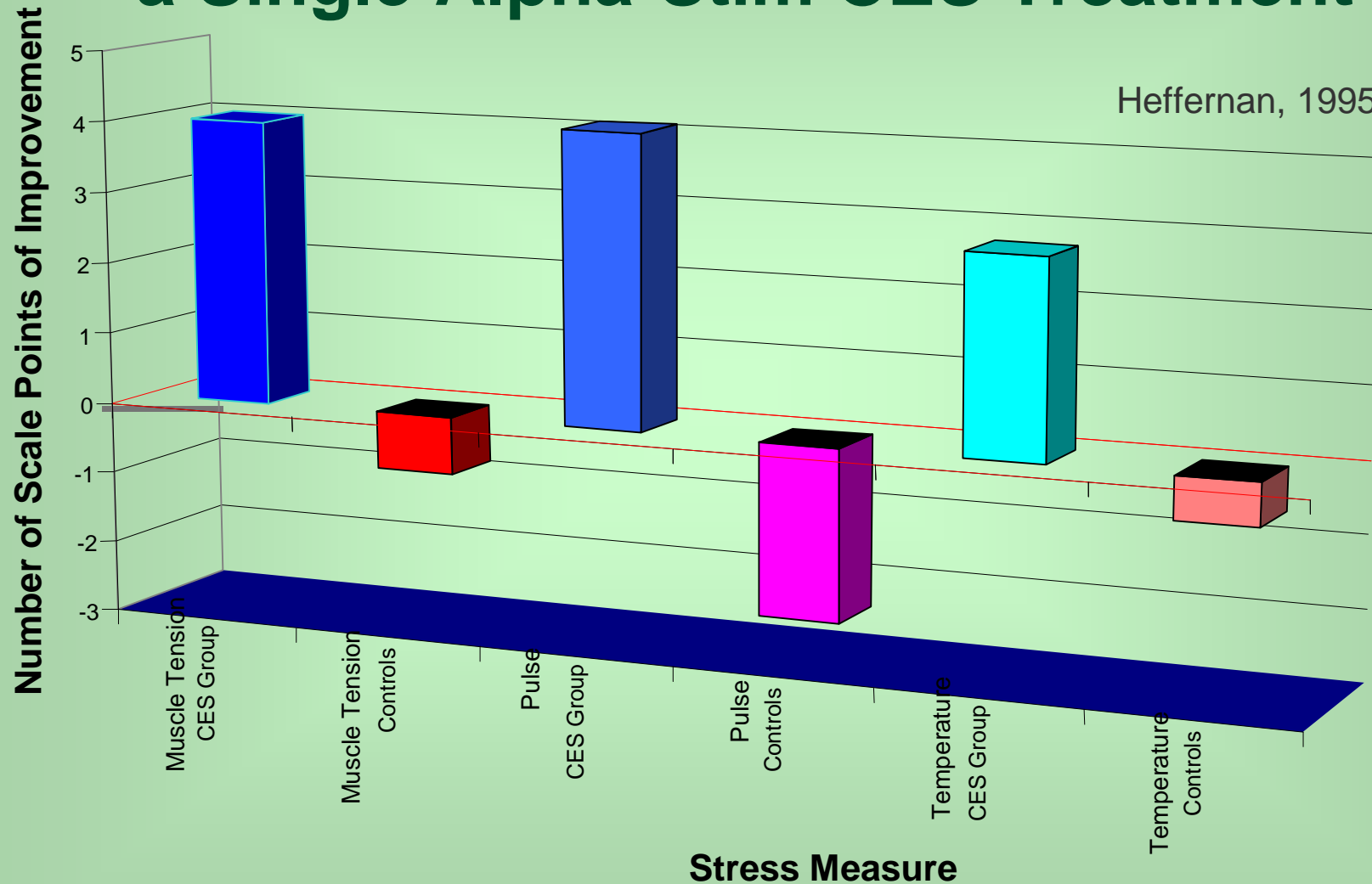
§ Effect sizes of  $r = .44$  to  $r = .70$  would be expected to be found in the next 99 out of 100 meta-analyses of CES for anxiety

§ R effect size = % improvement based on 100%

§ Scale: .10 is small, .30 is moderate, .50+ is considered high

# Change in Stress Measures from a Single Alpha-Stim CES Treatment

Heffernan, 1995

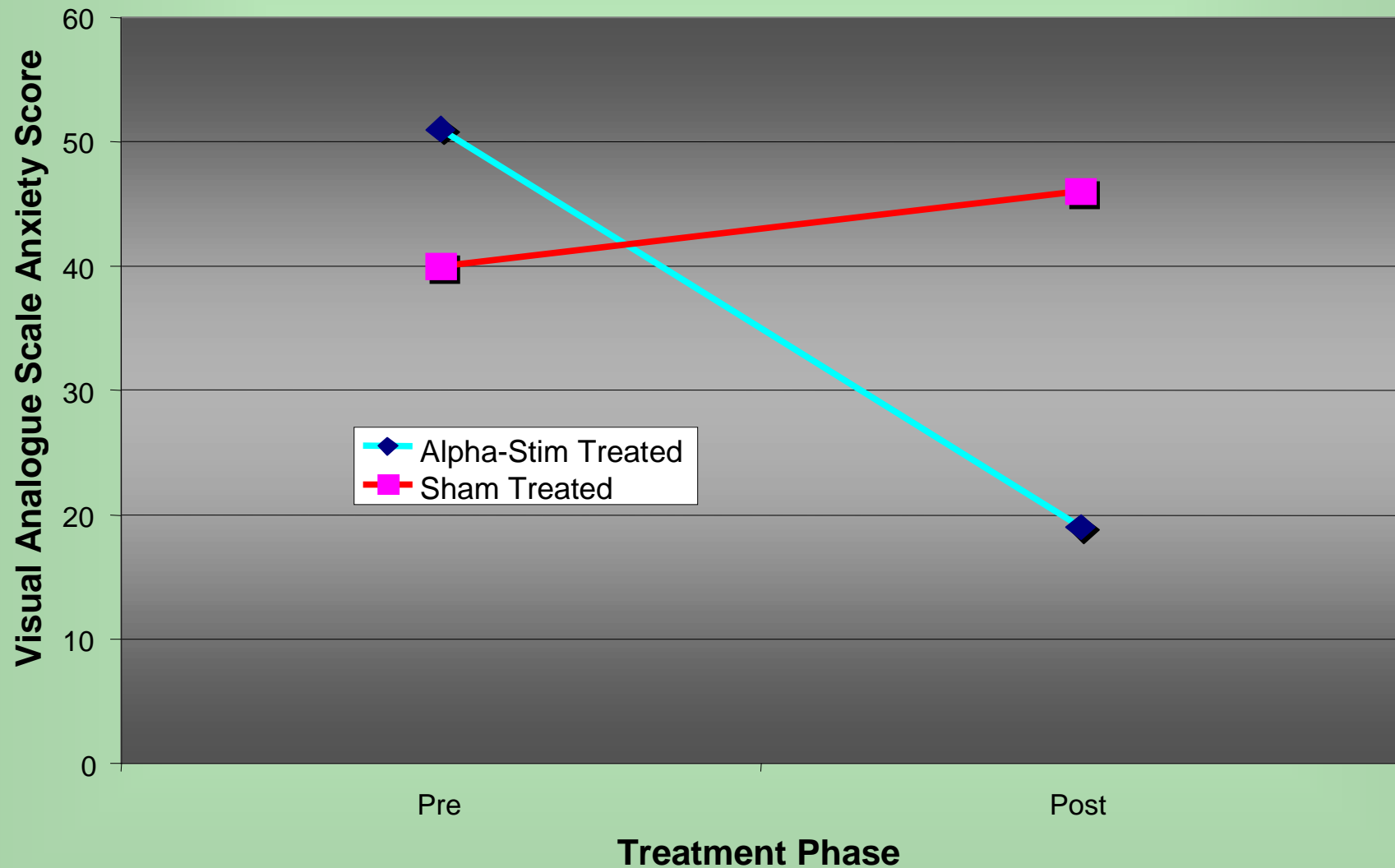




# Situational Anxiety in Dentistry

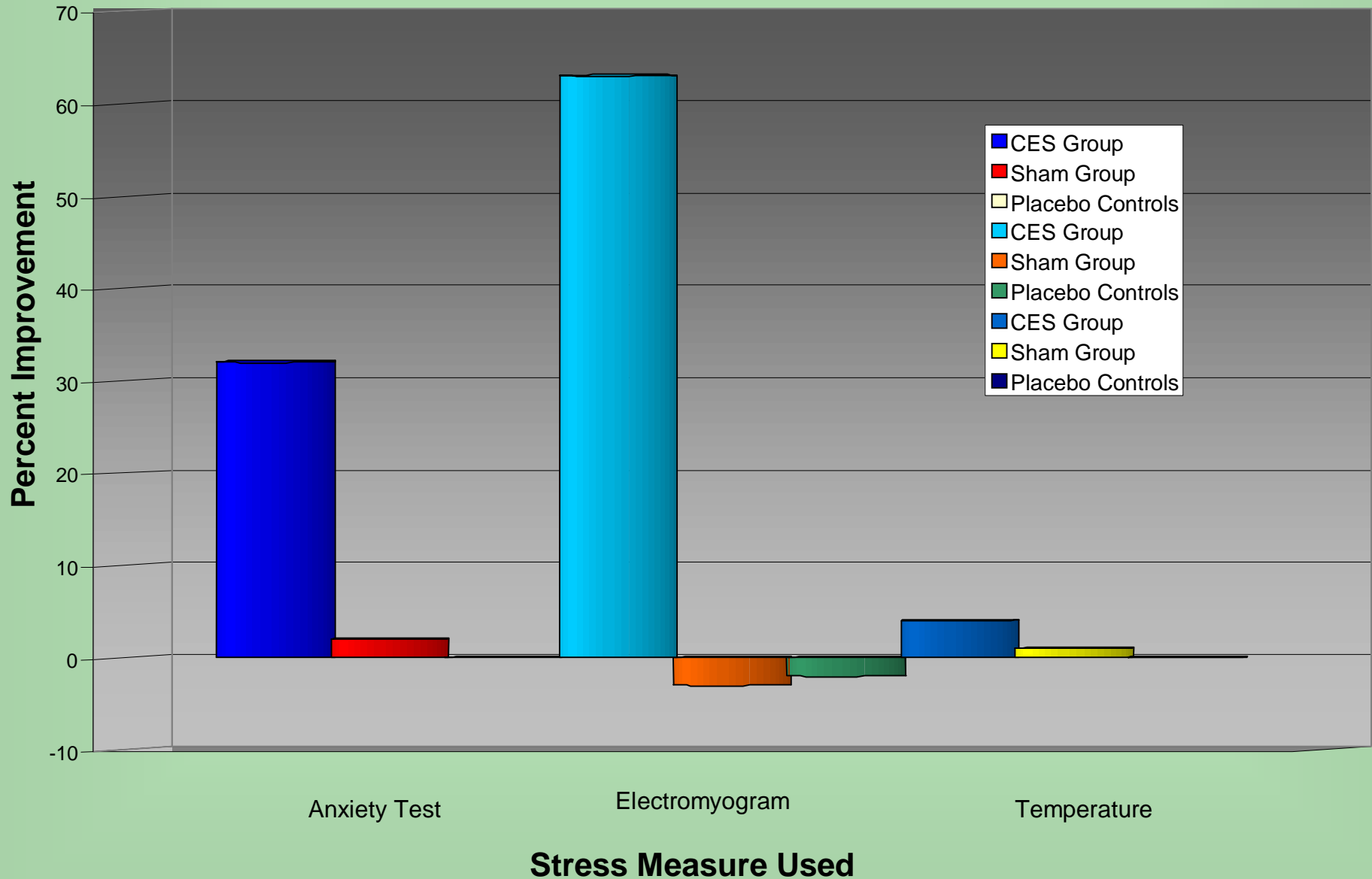
## Following Real or Sham Alpha-Stim CES Treatment

Winick, 1999



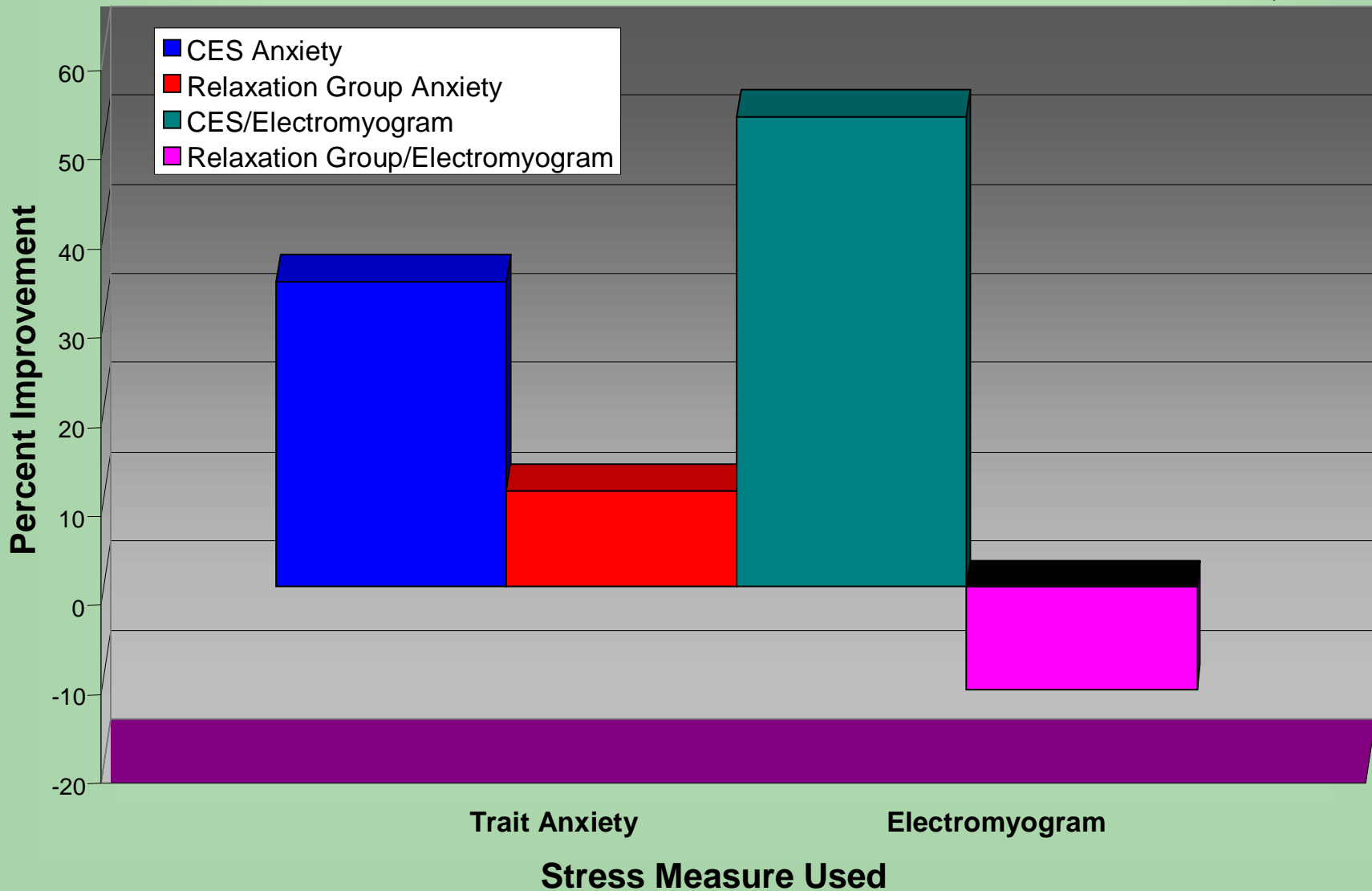
# Response of Anxious Parolees to Alpha-Stim CES

Voris, 1995



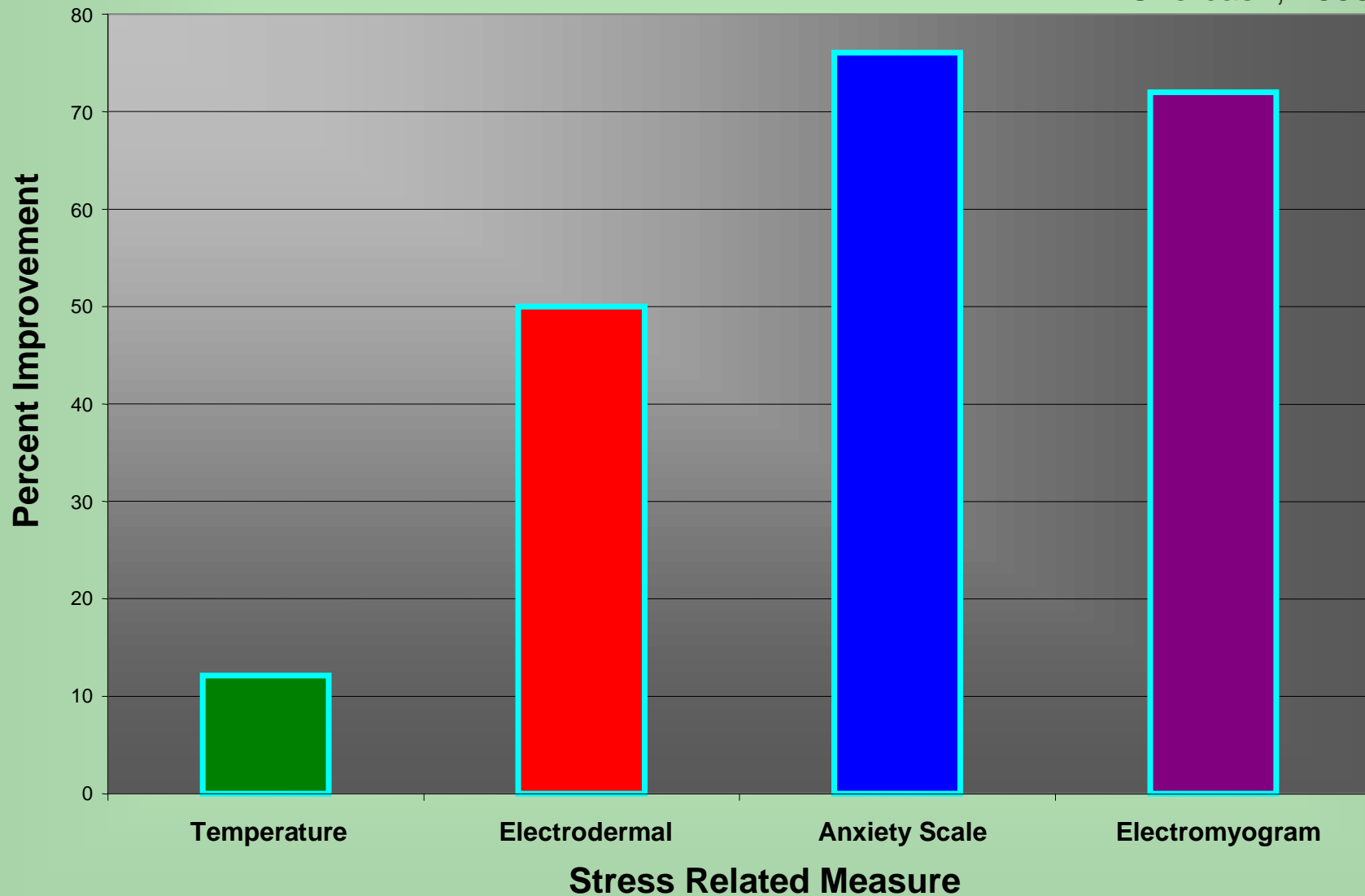
# Treating Sexual Offenders for 6 Weeks with Alpha-Stim CES or Relaxation Training

Voris and Good, 1996



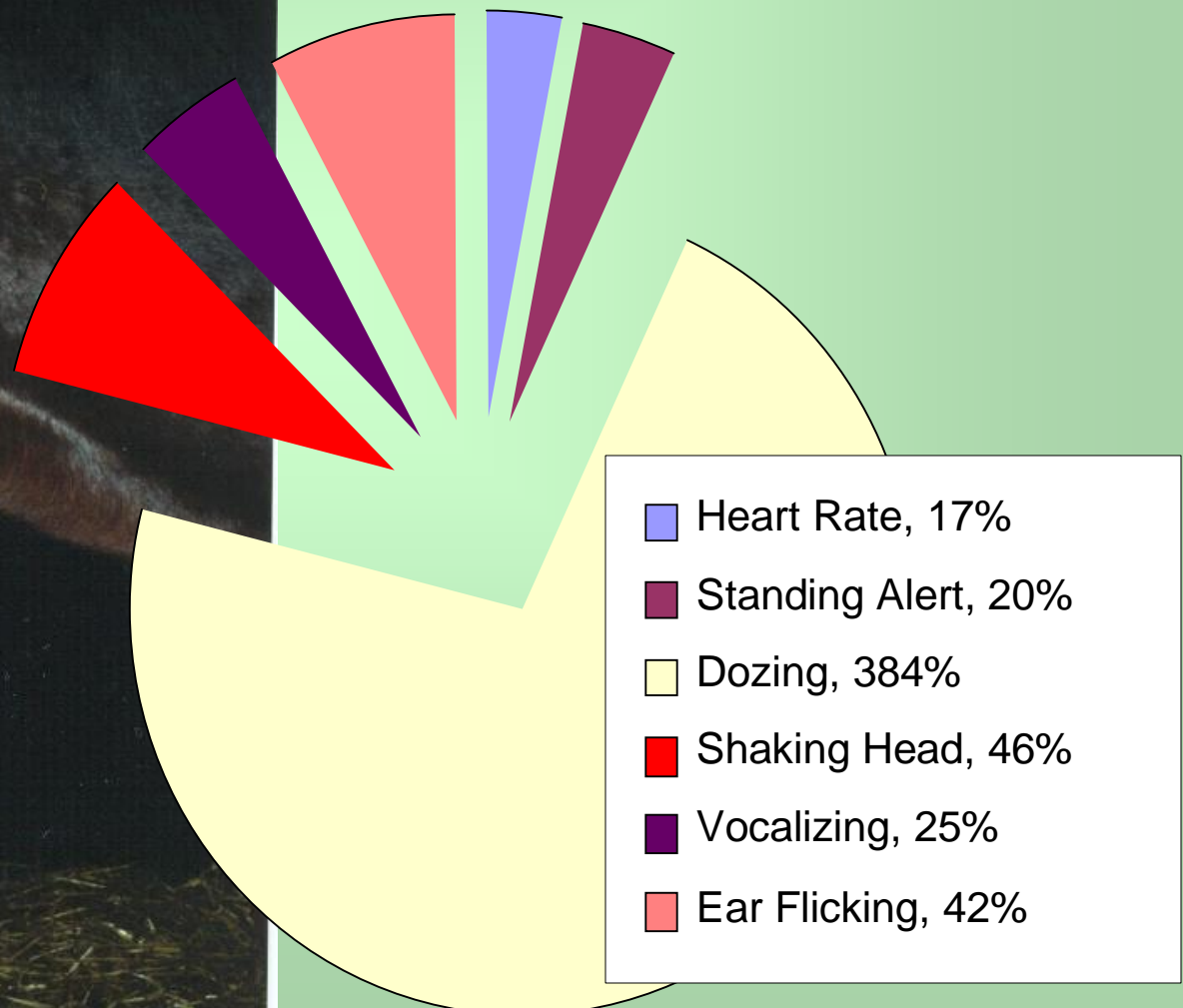
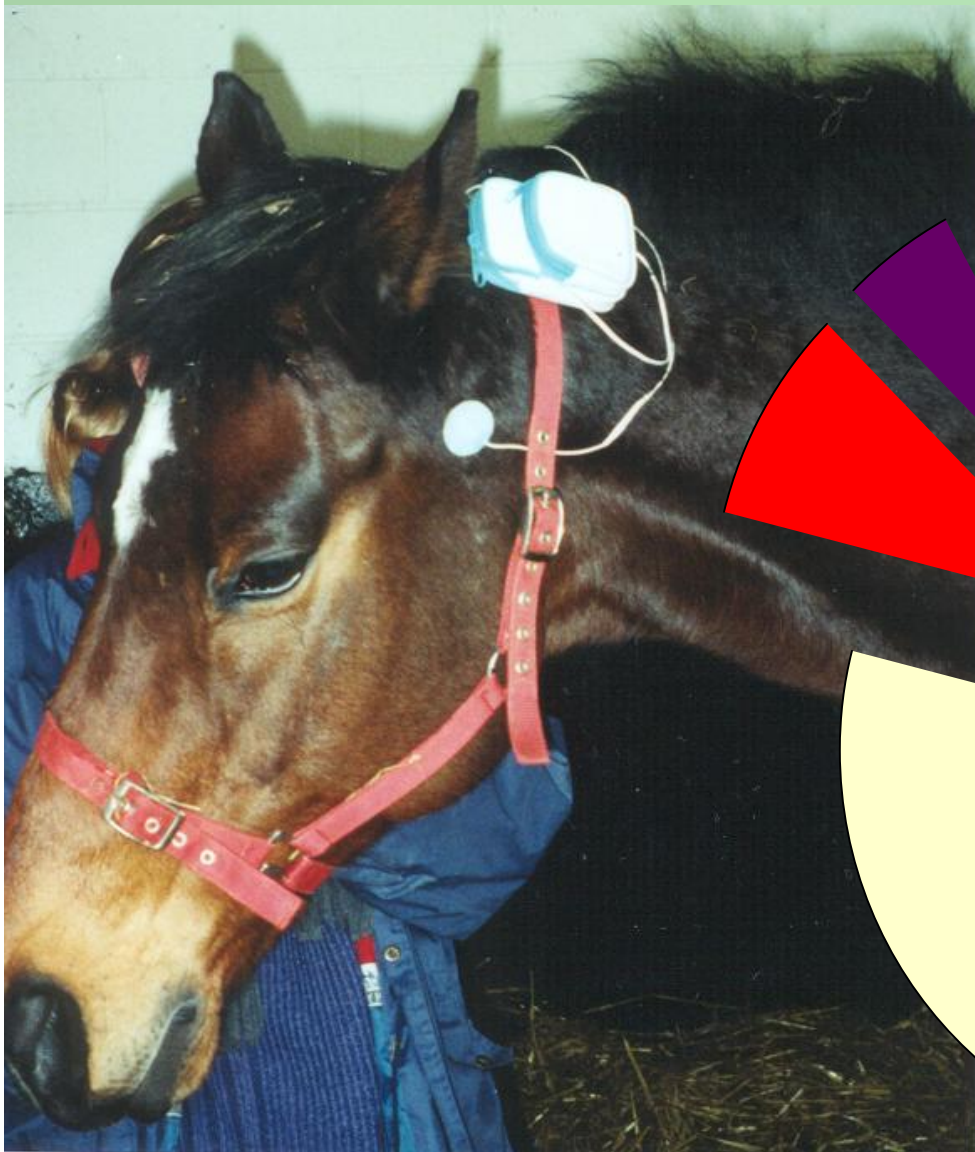
# Improvement of Stress Measures in 182 Anxious Patients Following 9, 25 Minute Alpha-Stim Treatments

Overcash, 1999



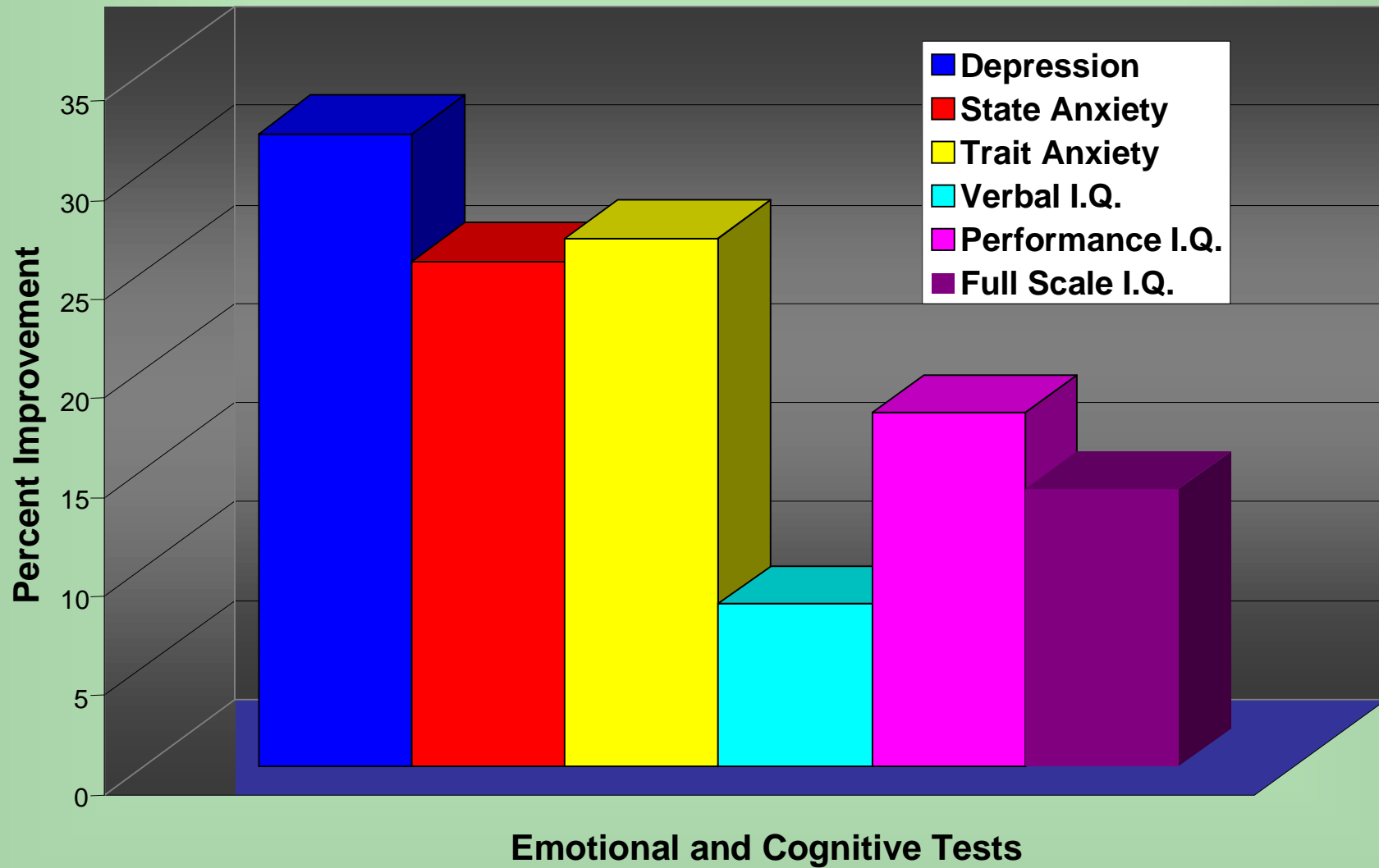
# Percent Increase in Relaxation Response of 8 Horses Following 20 minutes of Alpha-Stim Treatment

Clark, Mills and Marchant, 2000



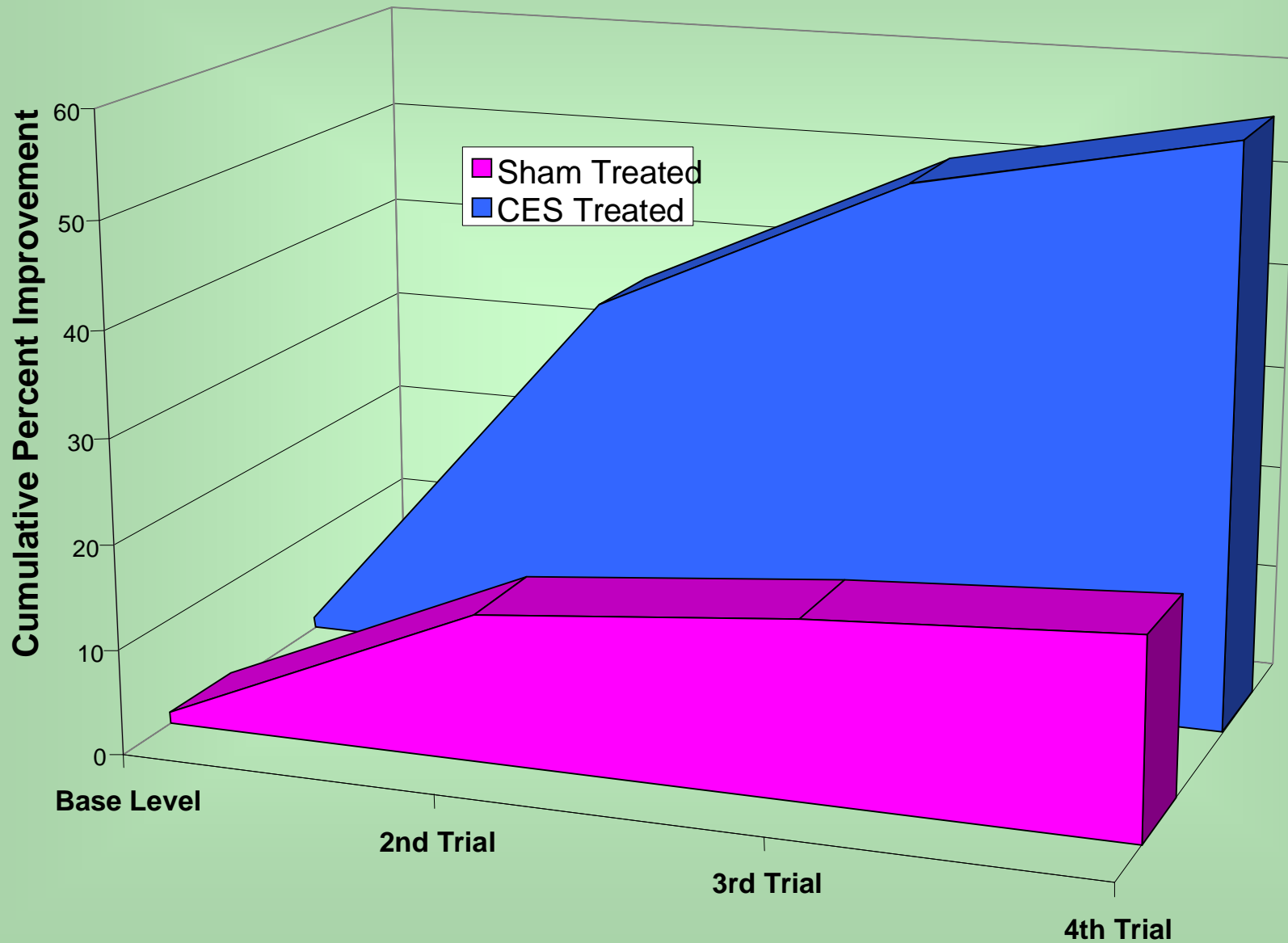
# Attention Deficit Disorder (ADD)

Smith, 1999



# The Impact of CES on Learning Psychomotor Tasks

Madden and Kirsch, 1987



# Meta-Analysis of CES for Depression

Kirsch and Gilula, *Practical Pain Management*, 7(4&5): 2007

§ 20 Studies

§ r Effect Size = .50

§ 9 Double Blind Studies

§ Effect sizes of  $r = .32$  to  $r = .68$  would be expected to be found in the next 99 out of 100 meta-analyses of CES for depression

§ R effect size = % improvement based on 100%

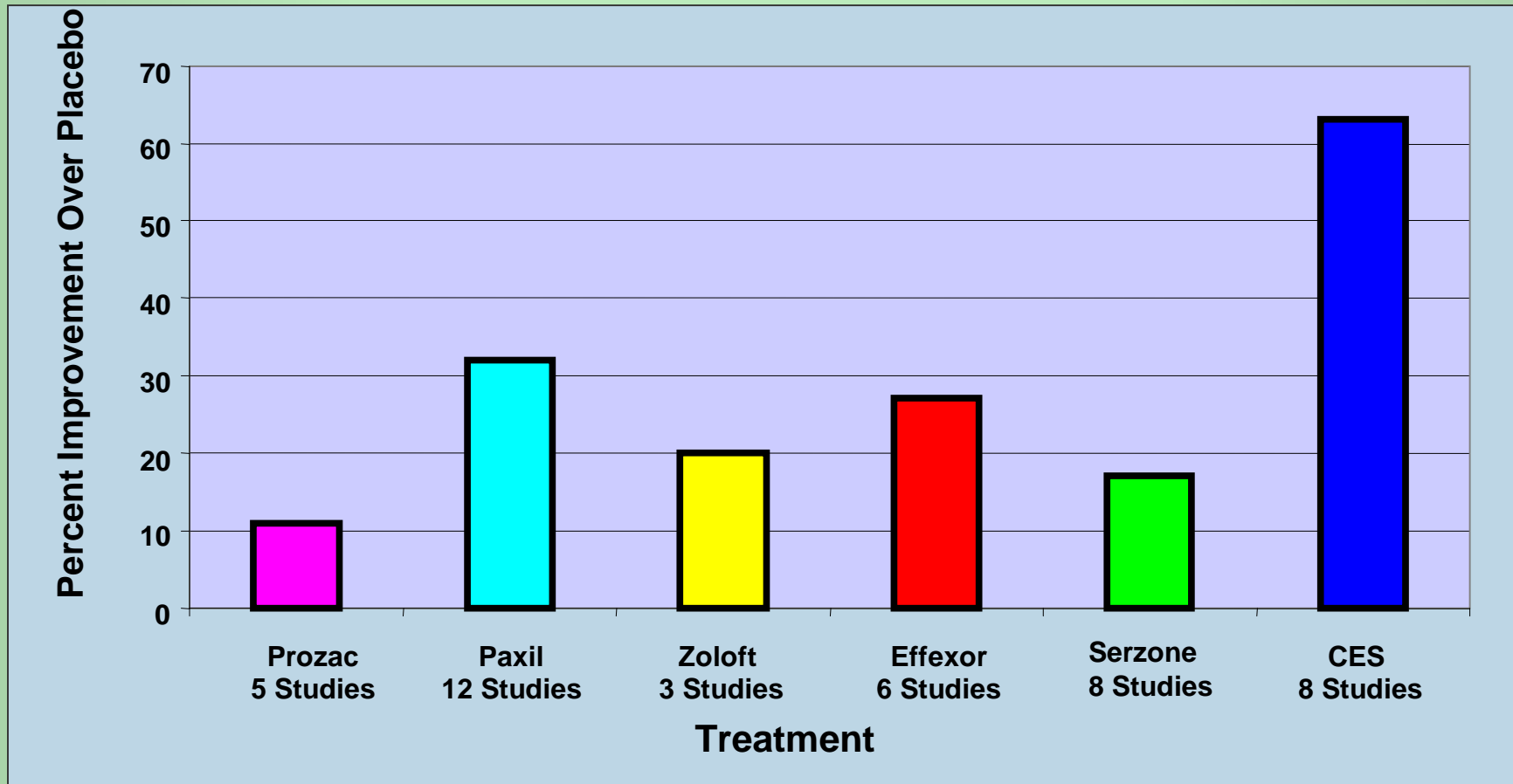
§ Scale: .10 is small, .30 is moderate, .50+ is considered high



# CES Review: A Safer Alternative to Psychopharmaceuticals in the Treatment of Depression

Marshall Gilula, MD and Daniel L. Kirsch, PhD

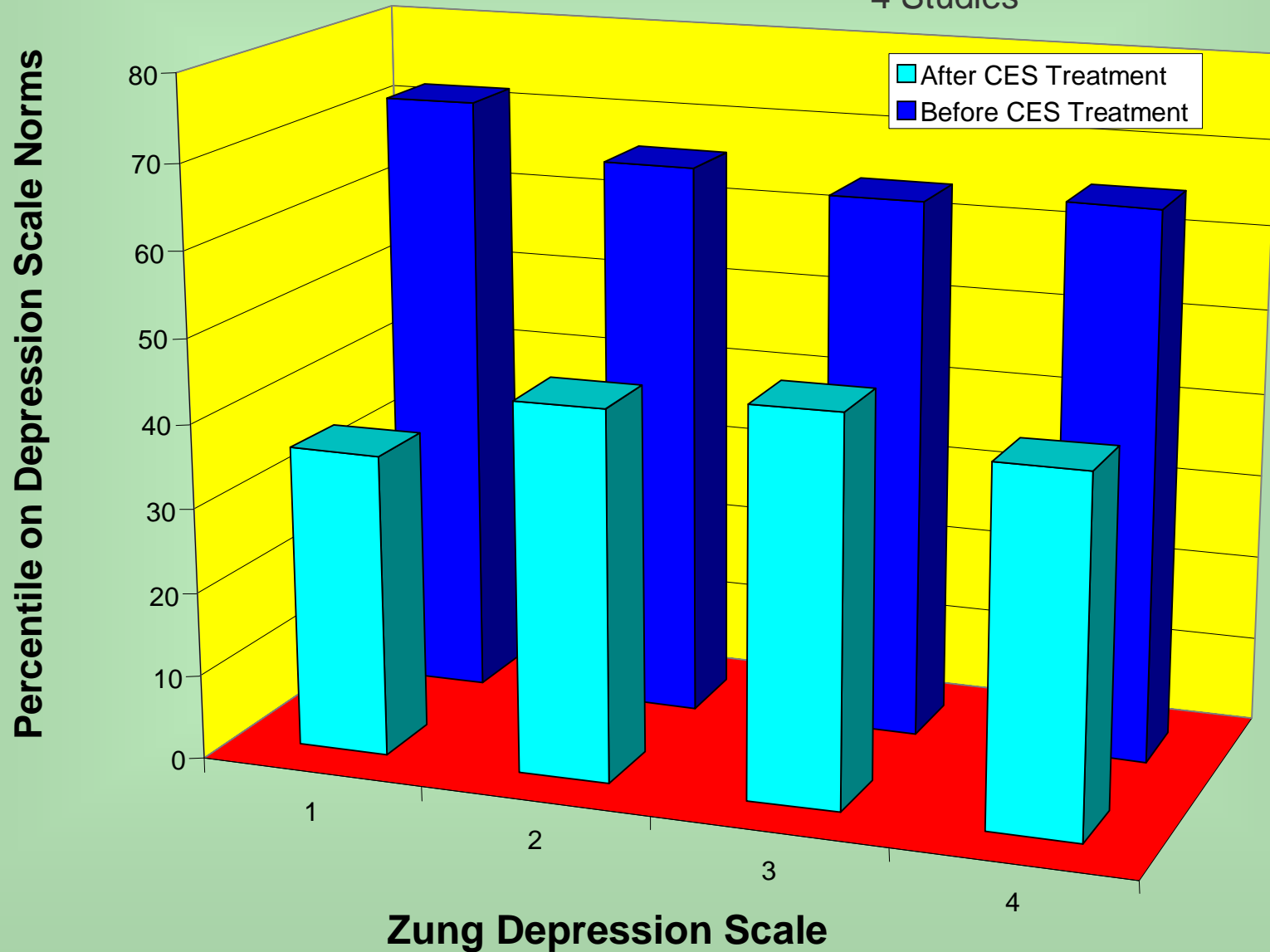
*Journal of Neurotherapy*, 9(2):2005 downloadable at [www.alpha-stim.com](http://www.alpha-stim.com)



**CES is 3x more efficacious than the average SSRI**

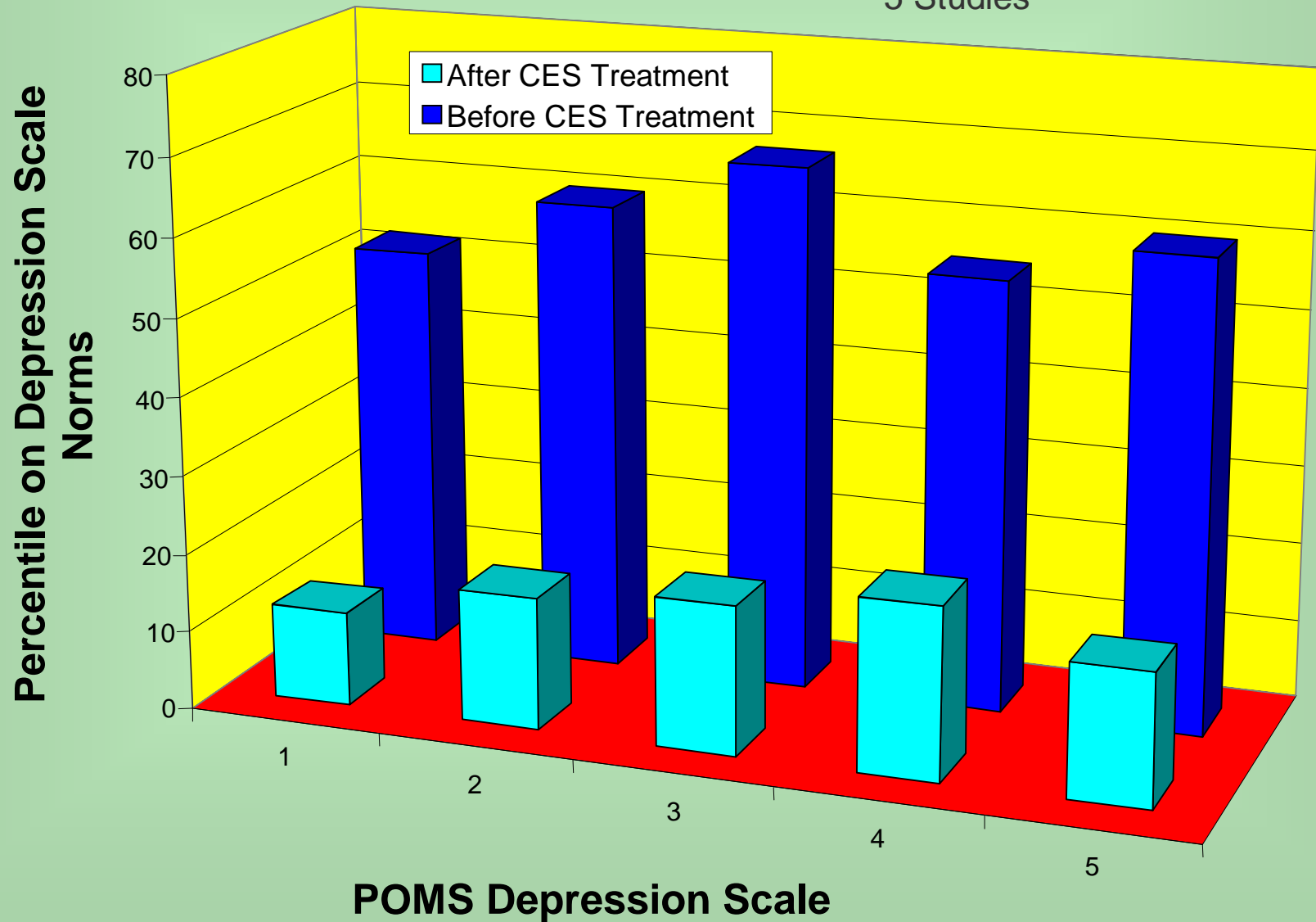
# The Effects of 7 to 10 Days of CES Treatments on Depression

4 Studies



# The Effects of 2 and 3 Weeks of CES Treatments on Depression

5 Studies



# Meta-Analysis of CES for Insomnia

Kirsch and Gilula, *Practical Pain Management*, 7(in press): 2007

§ 20 Studies

§ r Effect Size = .64

§ 7 Double Blind Studies

§ Effect sizes of  $r = .41$  to  $r = .87$  would be expected to be found in the next 99 out of 100 meta-analyses of CES for insomnia

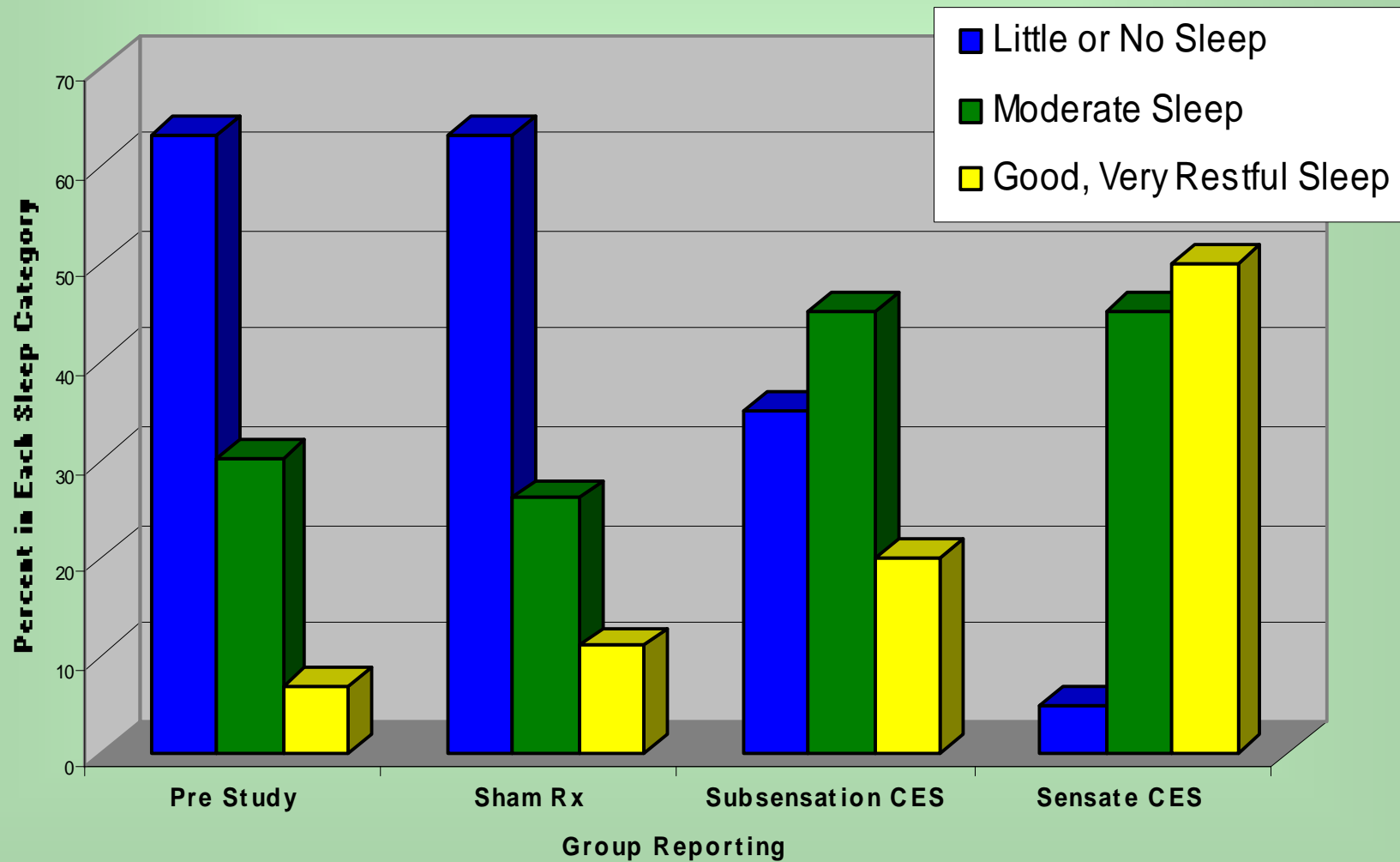
§ R effect size = % improvement based on 100%

§ Scale: .10 is small, .30 is moderate, .50+ is considered high

# CES Double-Blind Fibromyalgia Study Rheumatology

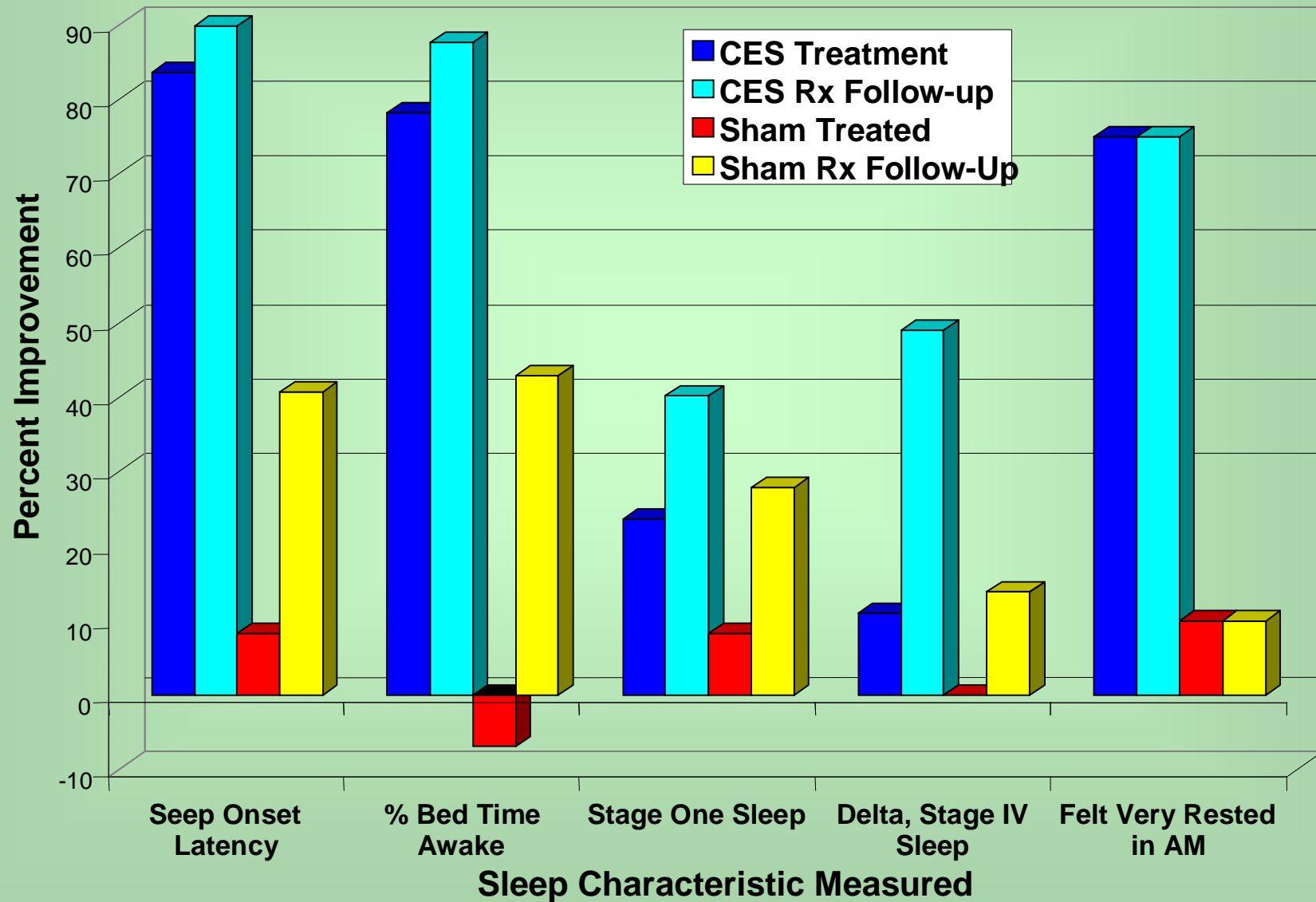
Lichtbroun et al. 2001 (N=60)

Sleep Pattern of Study Groups



# Response of Insomnia Patients to CES Treatment

Weiss, 1973



# Topics of Scientific Research on CES

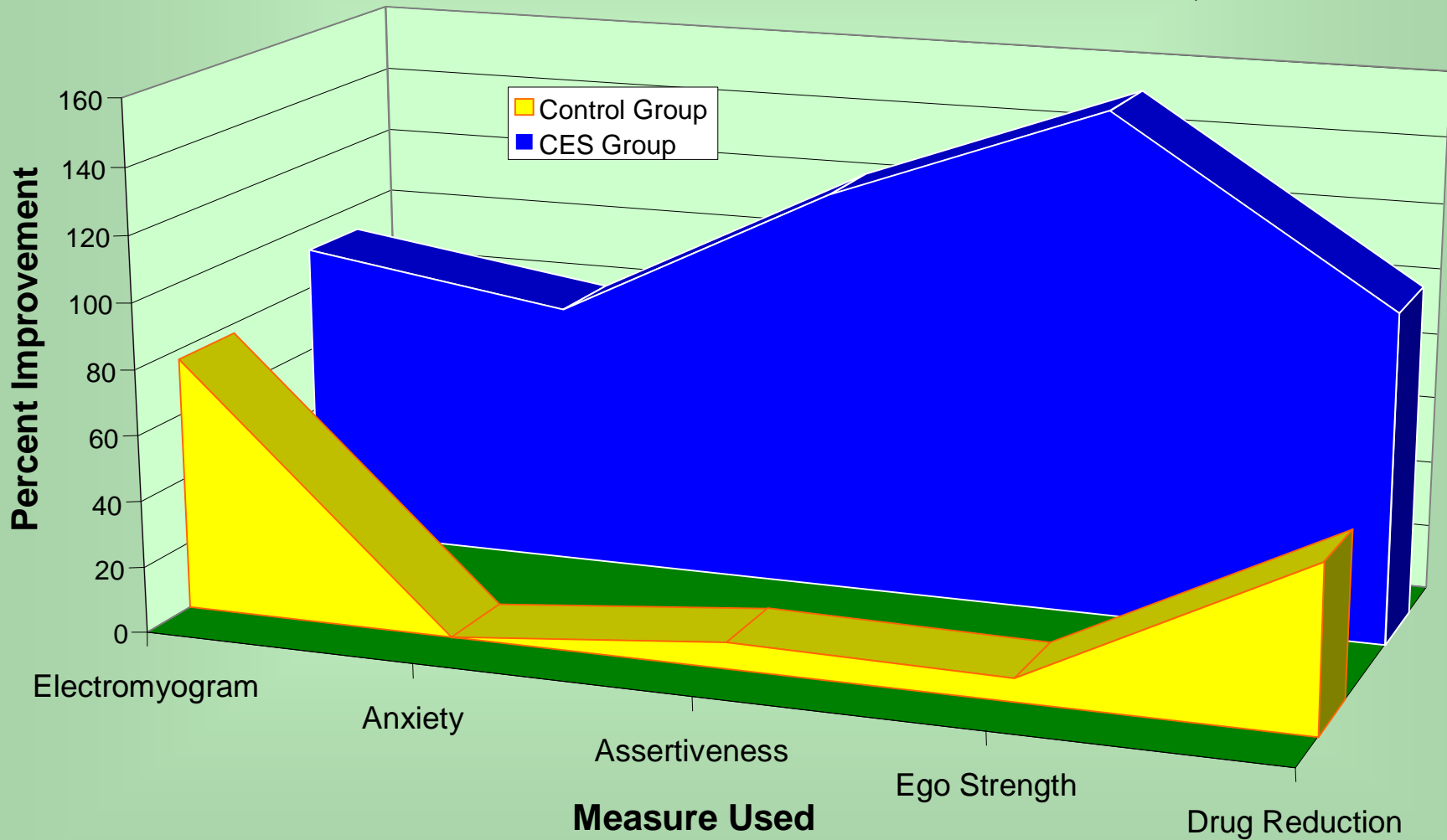
Number of Pivotal Scientific Studies:

**much of the early  
research was in  
substance abuse  
populations**

- 14 alcohol
- 1 cigarette
- 3 cocaine
- 2 heroin
- 2 marijuana
- 3 methadone
- 3 opiates
- 9 polysubstance abuse
- 8 withdrawal

# The Effect of Adding Alpha-Stim CES to a Marijuana Drug Treatment Program

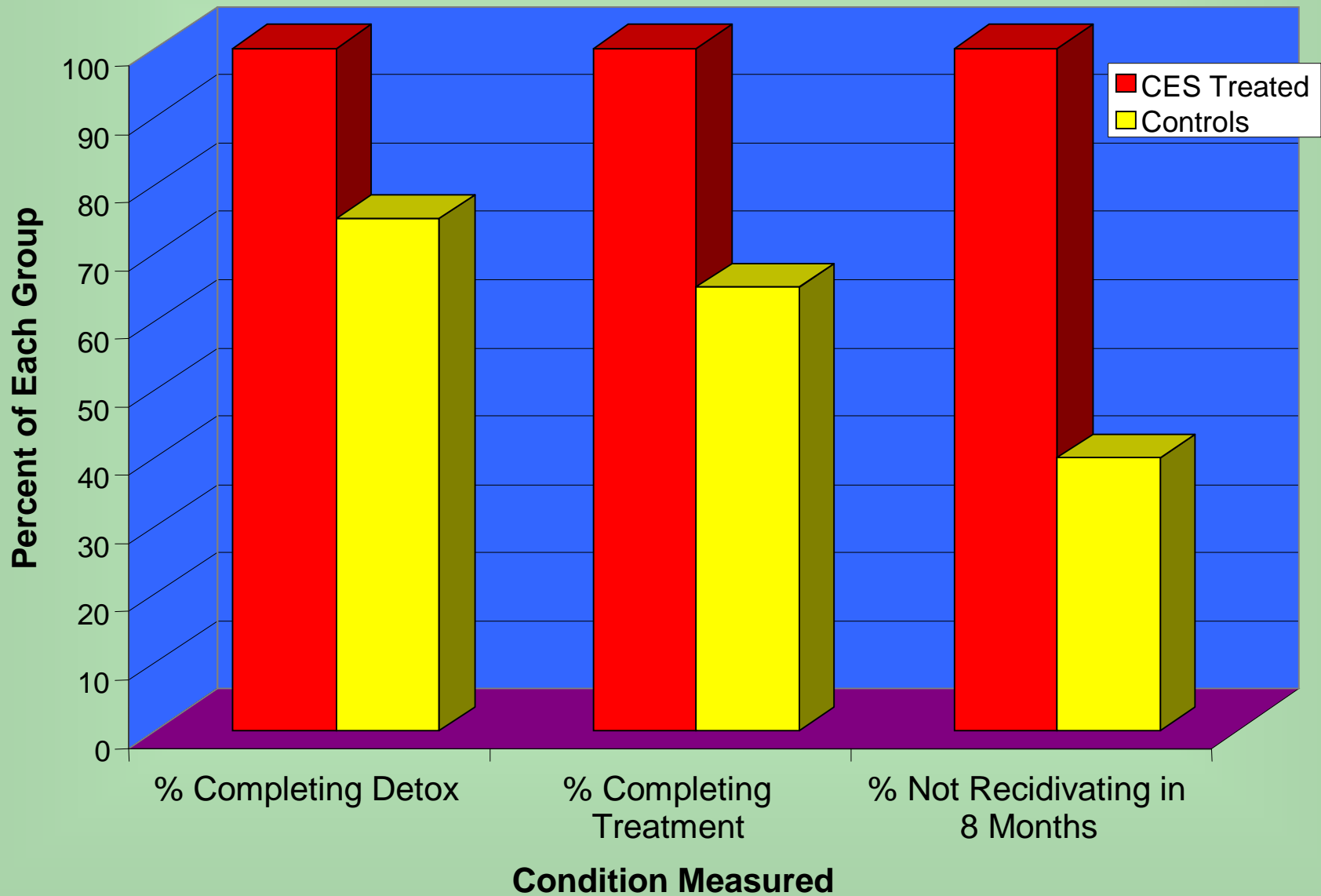
Overcash and Siebenthal, 1989





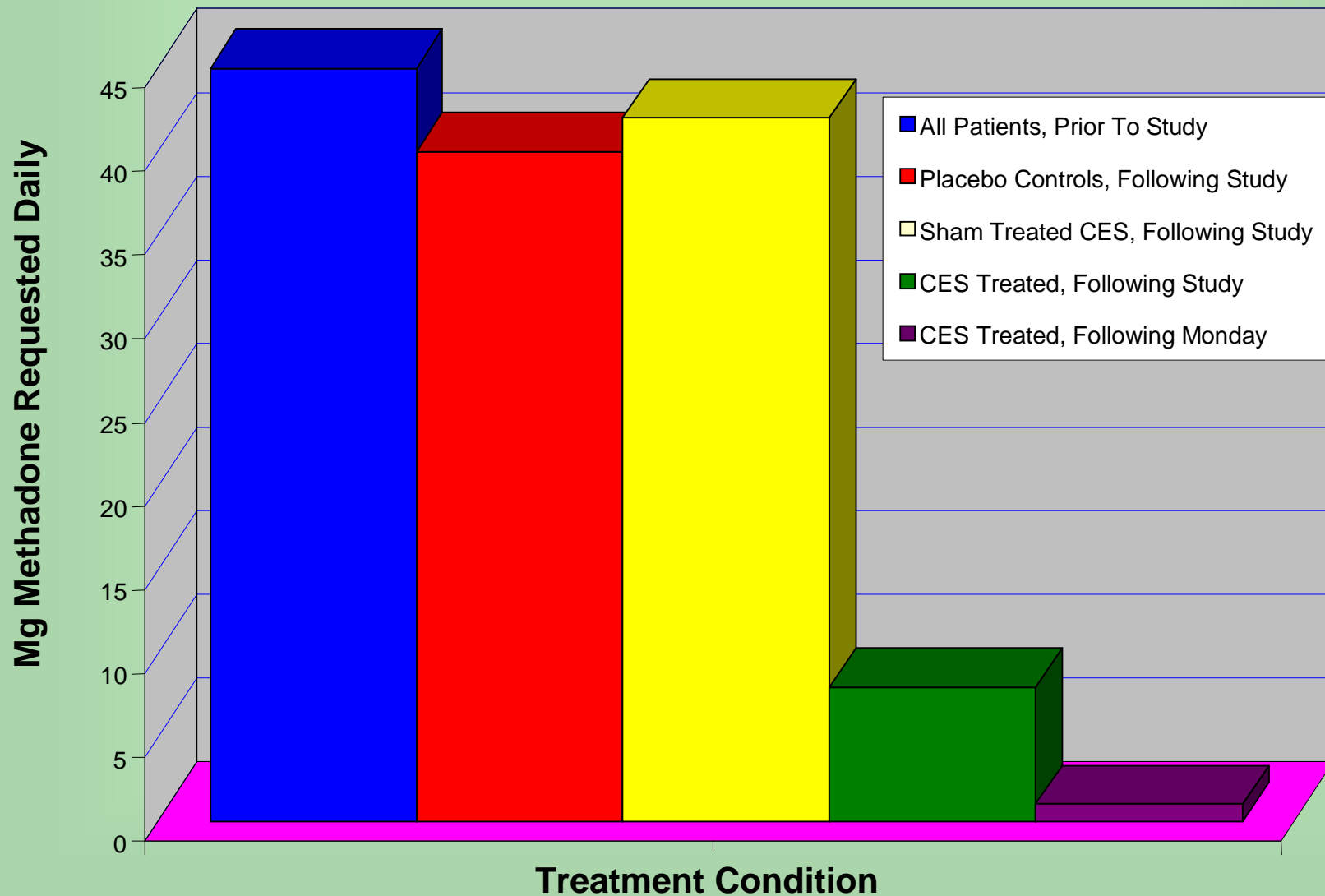
# CES in the Treatment of Cocaine Addiction

Brovar, 1984



# Methadone Self Withdrawal Study

Gomez and Mikhail, 1979



**Dr. Brad May**

**Comments from Alcoholic Patients:**

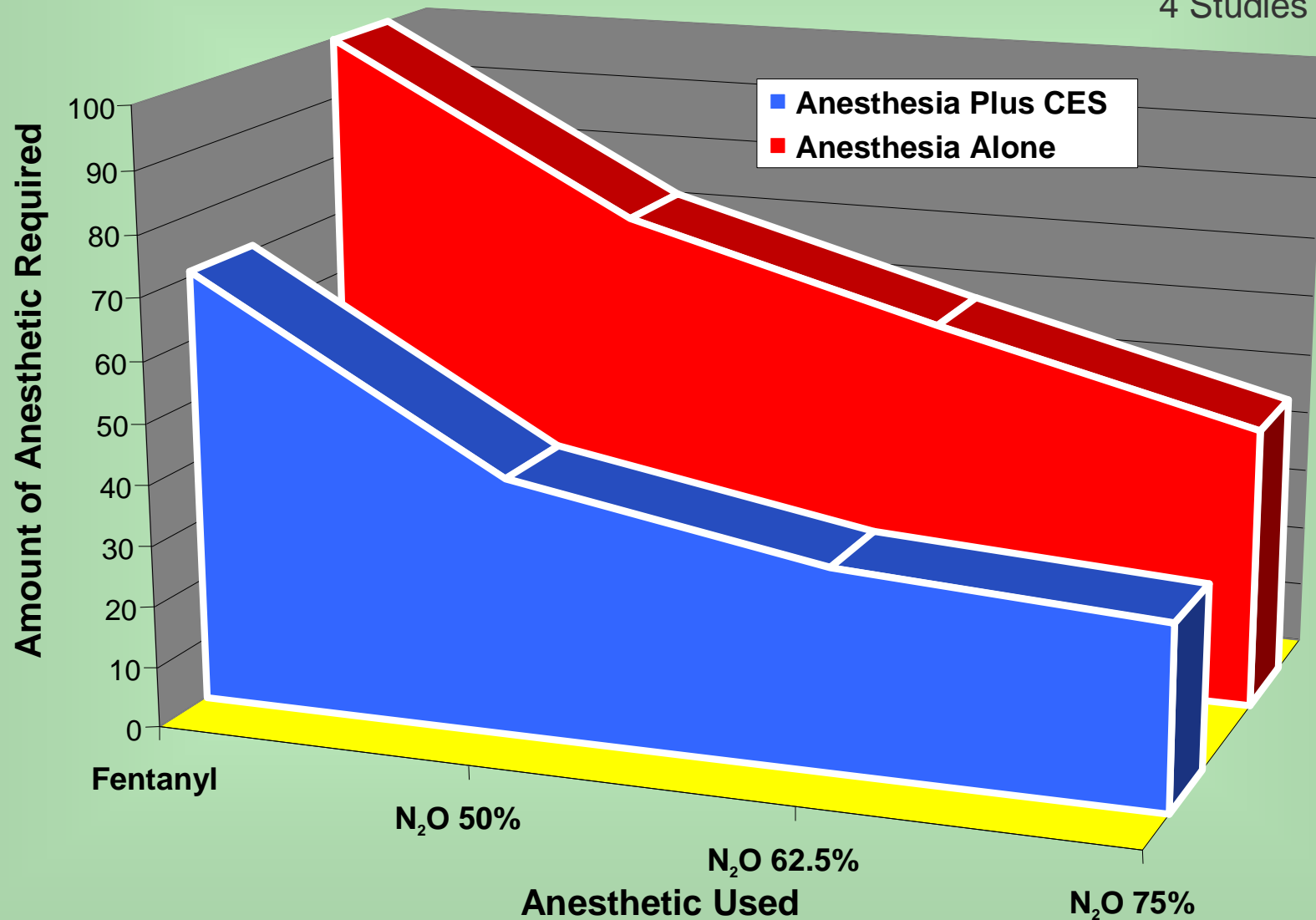
**“Something inside me has shifted  
and I just know I’m never  
going to take another drink of alcohol again.”**

**“I’ve been sober for about 75 days,  
but it feels like I’ve been sober for years.”**

# Watch Meds! Decrease Dosage by 1/3 to 1/2

## The Use of CES to Potentiate Anesthesia in Surgery

4 Studies



# Watch Meds! Decrease Dosage by 1/3 to 1/2

## Experimental Rat Studies of CES

- ◆ There was as much as a threefold increase in b-endorphin concentration after just one CES treatment (Krupisky, 1991).



◆ Tail Flick Latency (TFL) studies	TFL as % of baseline	Drug Alone	Drug + CES
Revealed a significant increase in analgesic effect of opiates. (Stinus, 1990).	morphine	174%	306%
	fentanyl	176%	336%
	alfentanil	160%	215%
	dextromoramide	267%	392%

Results were also obtained after intracerebroventricular injection of 10 micrograms of morphine: *analgesic effect increased from 152% to 207% with CES.* Suggests potentiation of opiate-induced analgesia is centrally mediated.

# Topics of Scientific Research on CES

Number of Pivotal Scientific Studies:

## for brain functions

- 3** attention deficit disorder (ADD)
- 3** cerebral palsy
- 2** closed head injuries
- 9** cognitive dysfunction
- 3** learning and memory
- 3** reaction time, vigilance

## pain

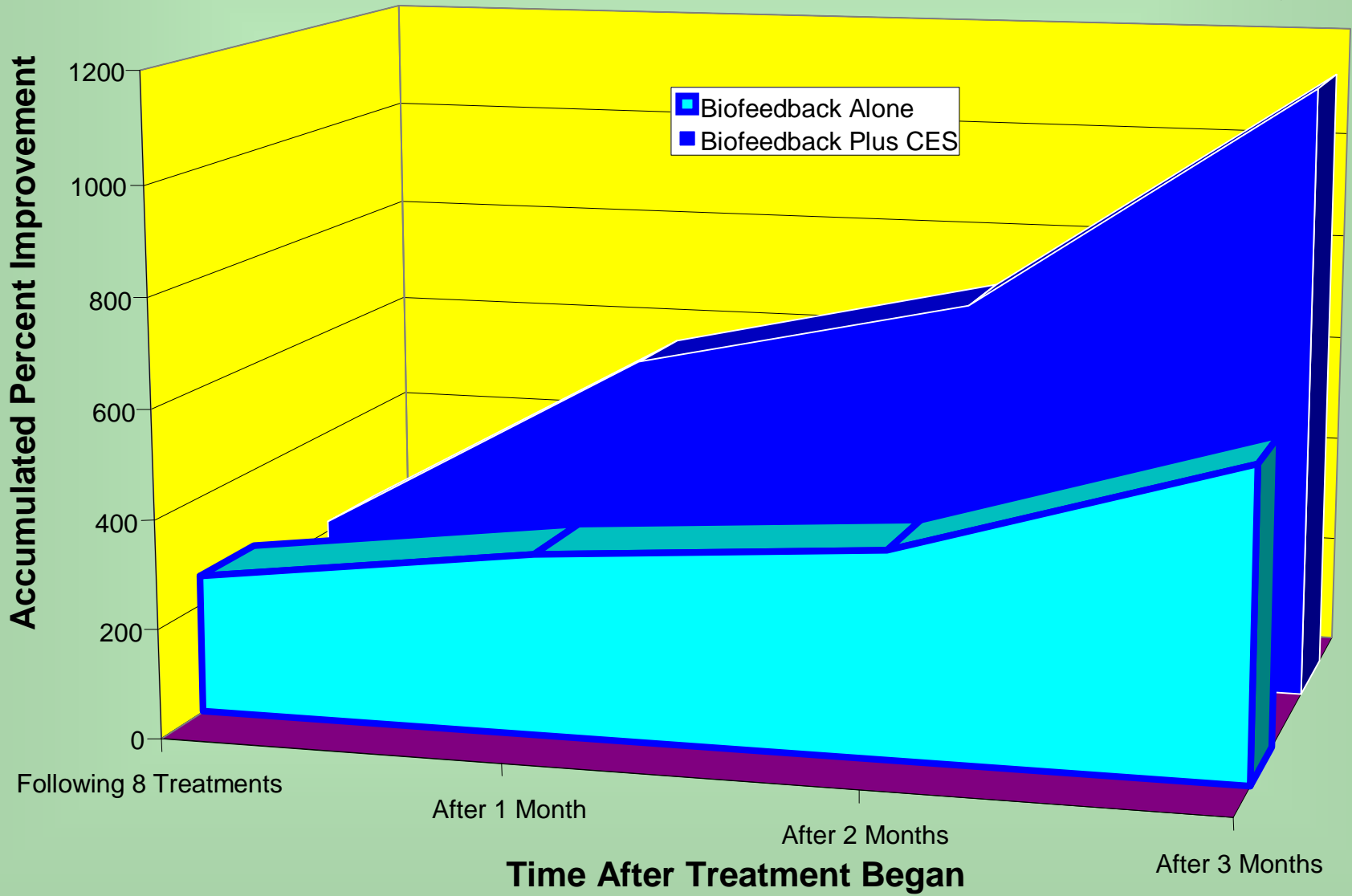
- 4** anesthesia
- 3** dental
- 2** fibromyalgia
- 5** headaches
- 8** muscle tone/  
movement/tremor
- 13** pain
- 1** rehabilitation

## and other applications

- 2** bronchial asthma
- 1** gastric acidity
- 1** labor
- 2** sex offenders
- 3** suggestibility

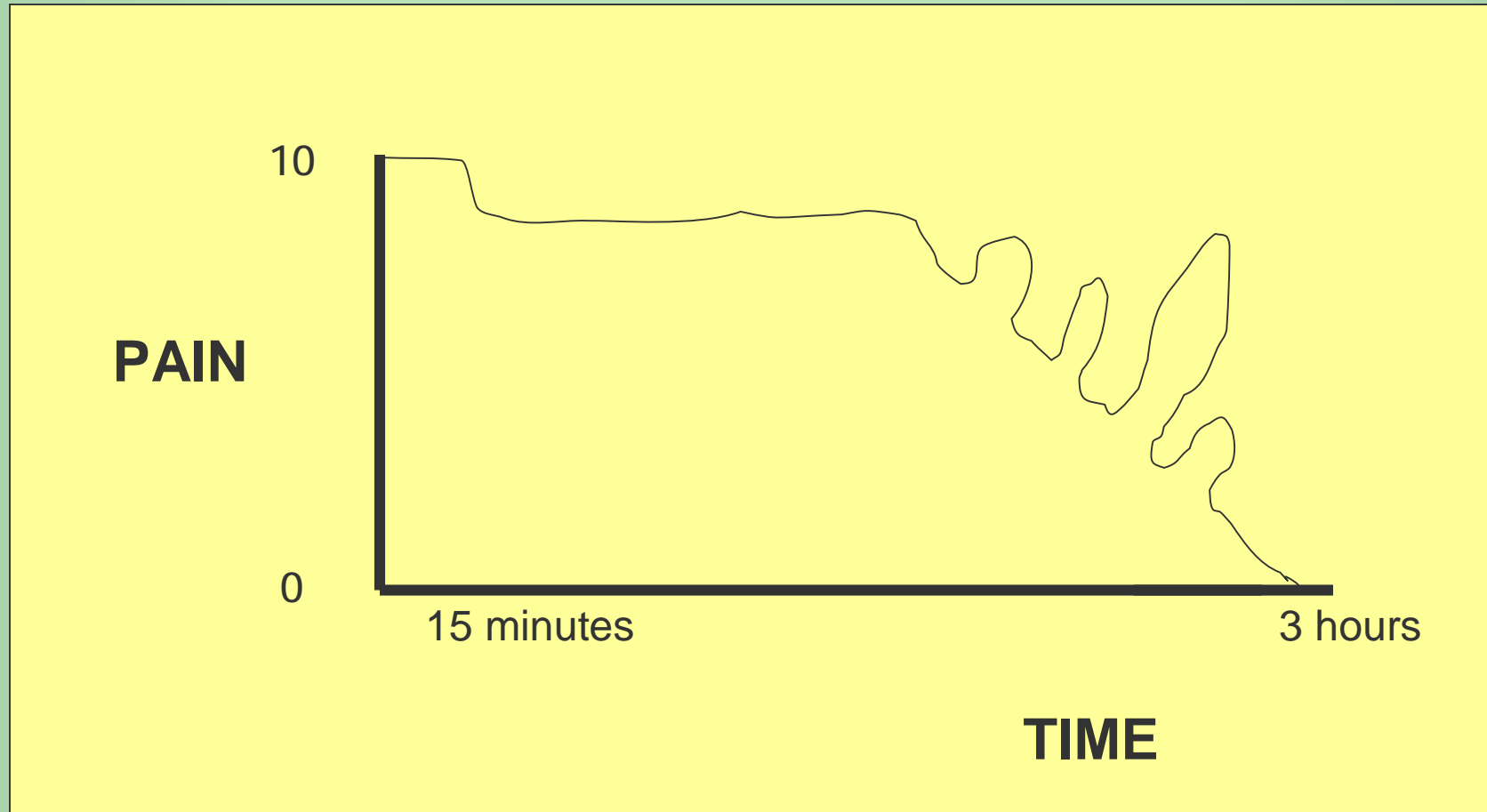
# Migraine Headaches -- Frequency and Intensity

Brotman, 1989



# Example of the CES Response in a Patient with Severe Migraine

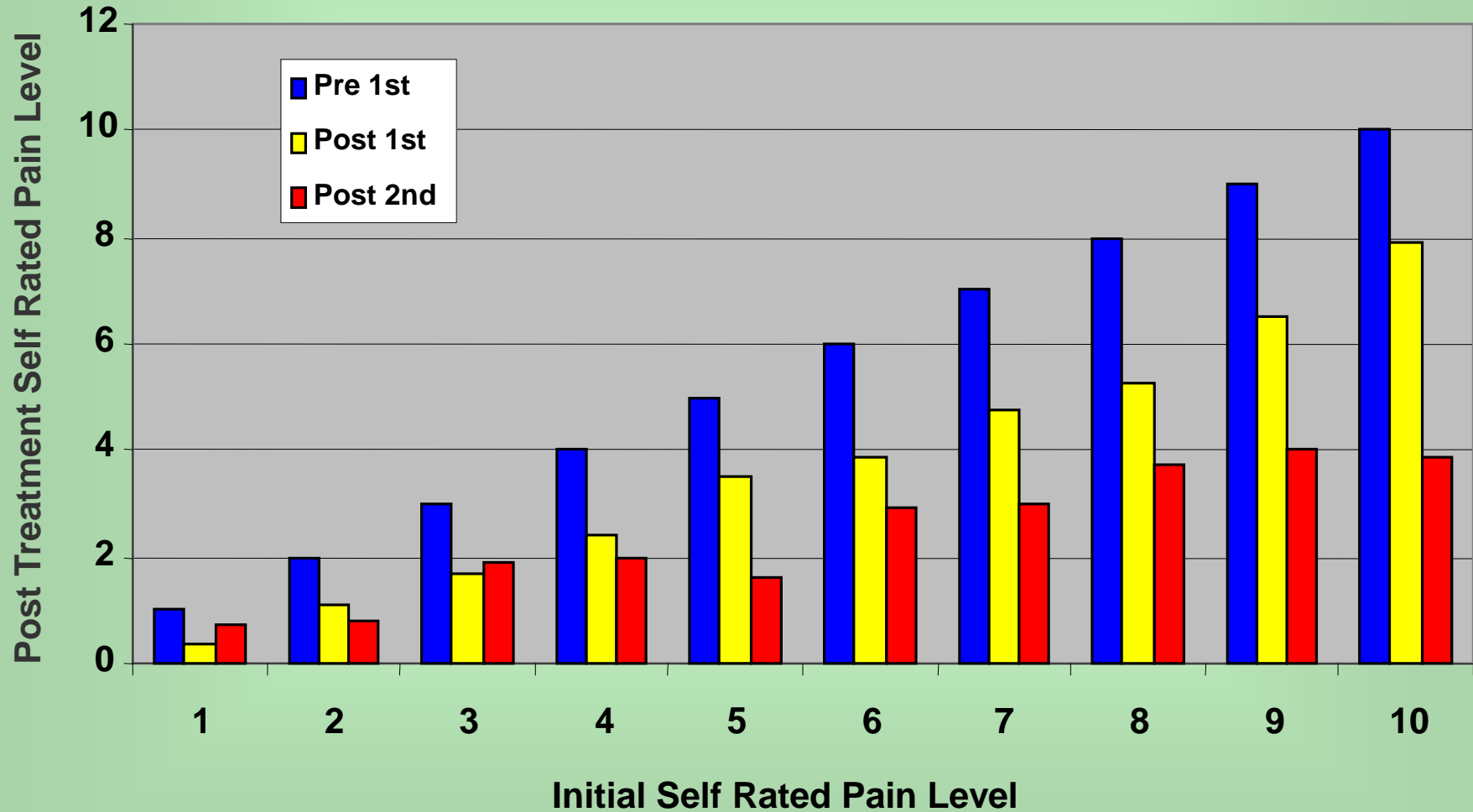
Courtesy of COL Michael Singer (retired), Walter Reed Army Medical Center



**Stay with it!**



## Cumulative Responses to 1st and 2nd 20 Minute CES Pain Treatments, N = 174



# VA Houston Spinal Cord Injury Study



## Treating Spinal Cord Injury Pain with Cranial Electrotherapy Stimulation

G Tan, PhD<sup>1,2</sup> DH Rintala, PhD<sup>1,2</sup> J Thornby, PhD<sup>1,2</sup> J. Yang, MD<sup>3</sup> WH Wade, MD<sup>1,2</sup> C Vasilev<sup>4</sup>

<sup>1</sup>Michael E. DeBaakey Veterans Affairs Medical Center, <sup>2</sup>Baylor College of Medicine, Dept. of PM&R  
<sup>3</sup>Washington, DC Veterans Affairs Medical Center, <sup>4</sup>University of Texas M. D. Anderson Cancer Center



### INTRODUCTION

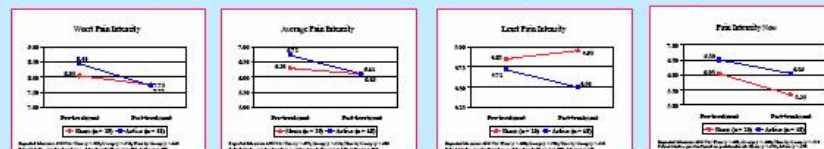
Chronic pain is a serious problem following spinal cord injury (SCI) and a major impediment to successful rehabilitation. Cranial electrotherapy stimulation (CES) has been shown to "normalize" neurotransmitter homeostasis, stimulate the hypothalamic-pituitary axis by increasing IGF-1 production, and bring neurotransmitters in stressed subjects to normal levels of homeostasis. Recent studies have shown CES to be effective in reducing pain and enhancing quality of life of chronic pain sufferers with a number of pain conditions, including fibromyalgia, which has a centrally mediated pain component. A pilot study was undertaken to assess the effectiveness of CES in persons with SCI.

### PROCEDURE

1. Recruited veterans with SCI known to have pain from the Michael E. DeBaakey Veterans Affairs Medical Center (MEDVAMC) SCI registry via telephone
2. Obtained informed consent and pre-treatment data in person at the MEDVAMC (See Measures below)
3. For each participant's worst pain (study target pain), a physician determined whether it was neuropathic or musculoskeletal
4. Trained participants in the use of the cranial electrotherapy device and daily pain rating sheet
5. Randomized (double blind) participants into Sham and Active groups
6. Participants used the device one hour per day for 21 consecutive days and completed the Daily Pain Rating Sheet before and after each session
7. Contacted participants weekly by telephone to assure compliance, identify and solve any problems, and answer questions
8. Obtained post-treatment data in person at the MEDVAMC and collected the device and the daily pain rating sheet
9. Provided an open-label device to Sham group to use for another 21 days, which allowed participants to adjust the level of stimulation
10. Obtained post-open-label data from Sham group in person at the MEDVAMC and collected the device and the daily pain rating sheet

### RESULTS

#### Brief Pain Inventory - Pain Intensity - 0 to 10 Scale



Pain decreased more in the Active group than in the Sham group for pain at its worst, average pain, and least pain, however the differences were not statistically significant. Change from pre- to post-treatment within the Active group approached significance ( $p < .10$ ) for worst and average pain.

### CHARACTERISTICS OF THE SAMPLE

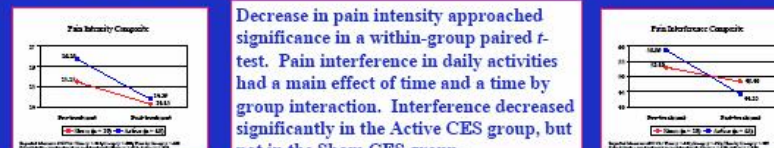
	SHAM (n=18)	ACTIVE (n=18)
Gender	12 M 6 F	12 M 6 F
Age (mean)	56.2	56.9
Time Since Onset of SCI (years)	4.07	3.4
Level (mean)	4.07	4.07
Level (range)	1-10	1-10
Level (SD)	2.1	2.1
Level (IQR)	1-5	1-5
Level (Median)	4	4
Level (Mode)	4	4
Level (Frequency)	4	4
Level (Percentage)	22.2	22.2
Level (Chi-Square)	0.0	0.0
Level (p-value)	1.0	1.0
Level (Significance)	NS	NS
Level (Interpretation)	NS	NS

### MEASURES

1. Demographic information
2. Level and completeness of injury from medical records
3. Brief Pain Inventory (BPI) - Pain Intensity and Pain Interference scales
4. Daily Pain Rating Sheet - Numeric pain intensity on 0 - 10 scale before and after each daily session

*This pilot study was sponsored by the Veterans Affairs Rehabilitation Research and Development Service Center of Excellence on Healthy Aging with Disabilities*

#### Composite Pain Intensity (0 to 40 scale) and Pain Interference Scores (0 to 100 scale)



Decrease in pain intensity approached significance in a within-group paired t-test. Pain interference in daily activities had a main effect of time and a time by group interaction. Interference decreased significantly in the Active CES group, but not in the Sham CES group.

### DEVICE

1. AlphaStim® Cranial Electrotherapy Stimulator
2. Treatment group received 100 micro amp sub-sensation cranial electrotherapy stimulation (CES)
3. Device for Sham group delivered no CES



#### Pain Ratings Before and After Each Daily Session - 0 to 10 Scale



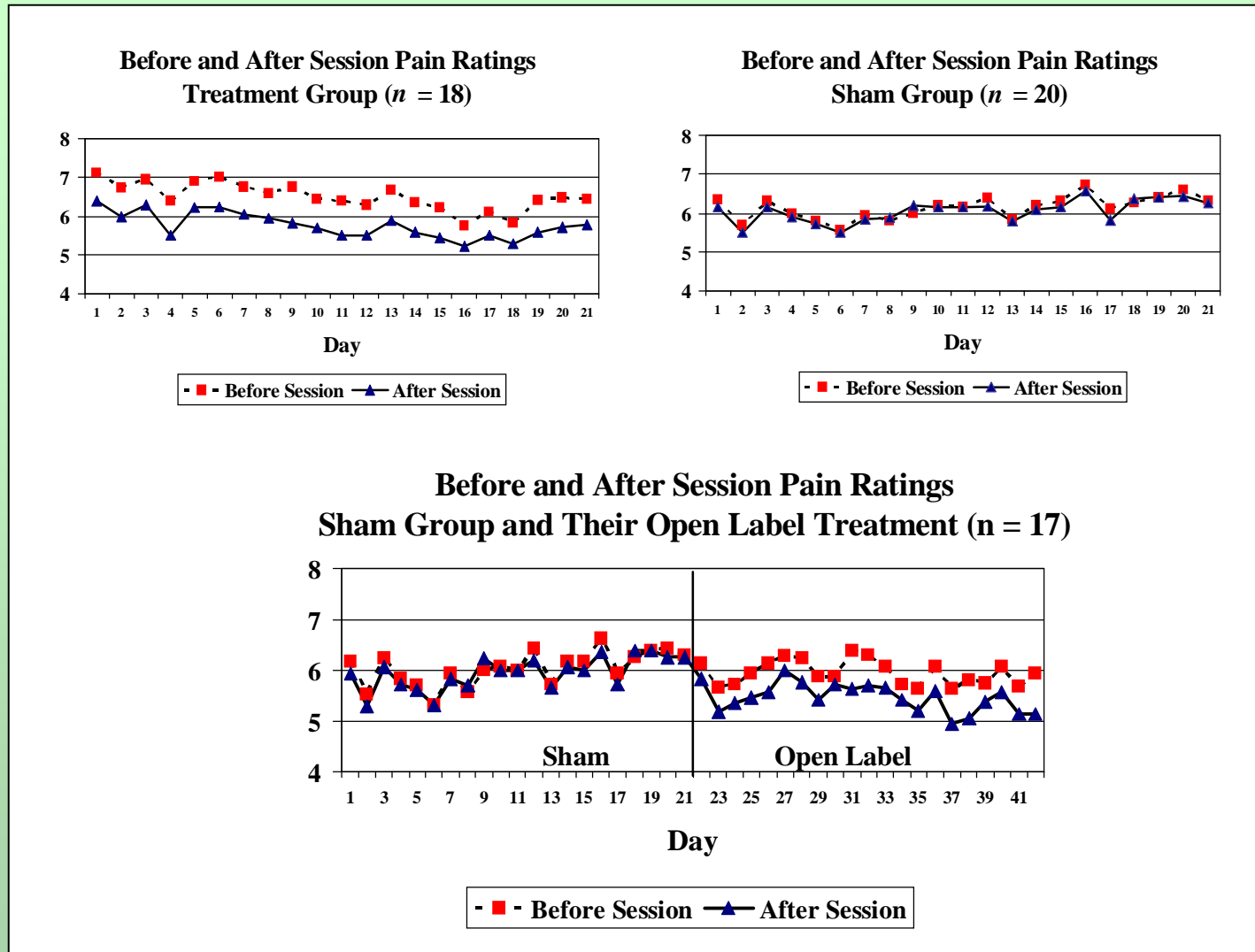
Pain was reduced after the sessions in the Active group and in the Open-Label treatment for the Sham group. An independent-samples t-test comparing Active and Sham average daily change was significant ( $t = -.73$  vs.  $-.08$ ,  $p = .034$ ).

### CONCLUSIONS

Based on reported pain reduction pre and post each session, the Active CES treatment was found to be significantly more efficacious than the Sham treatment with a moderate to large effect size (Cohen's  $d = .76$ ). Future studies will be needed to evaluate the long-term effectiveness of CES.

# VA Houston Spinal Cord Injury Study

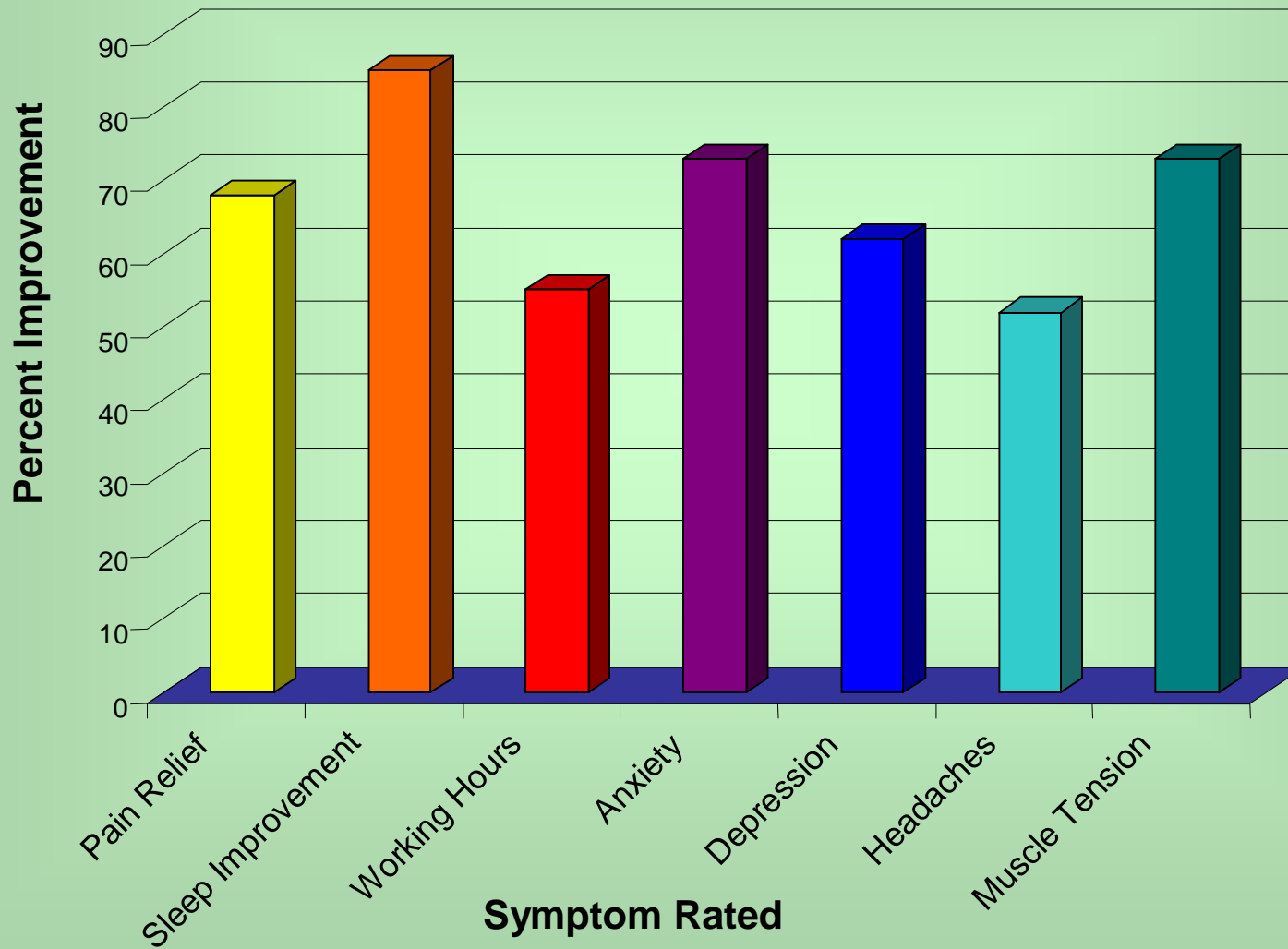
Tan at al., 2006



Figures 1, 2, and 3: Daily Pain Rating for Active CES and Sham CES Groups

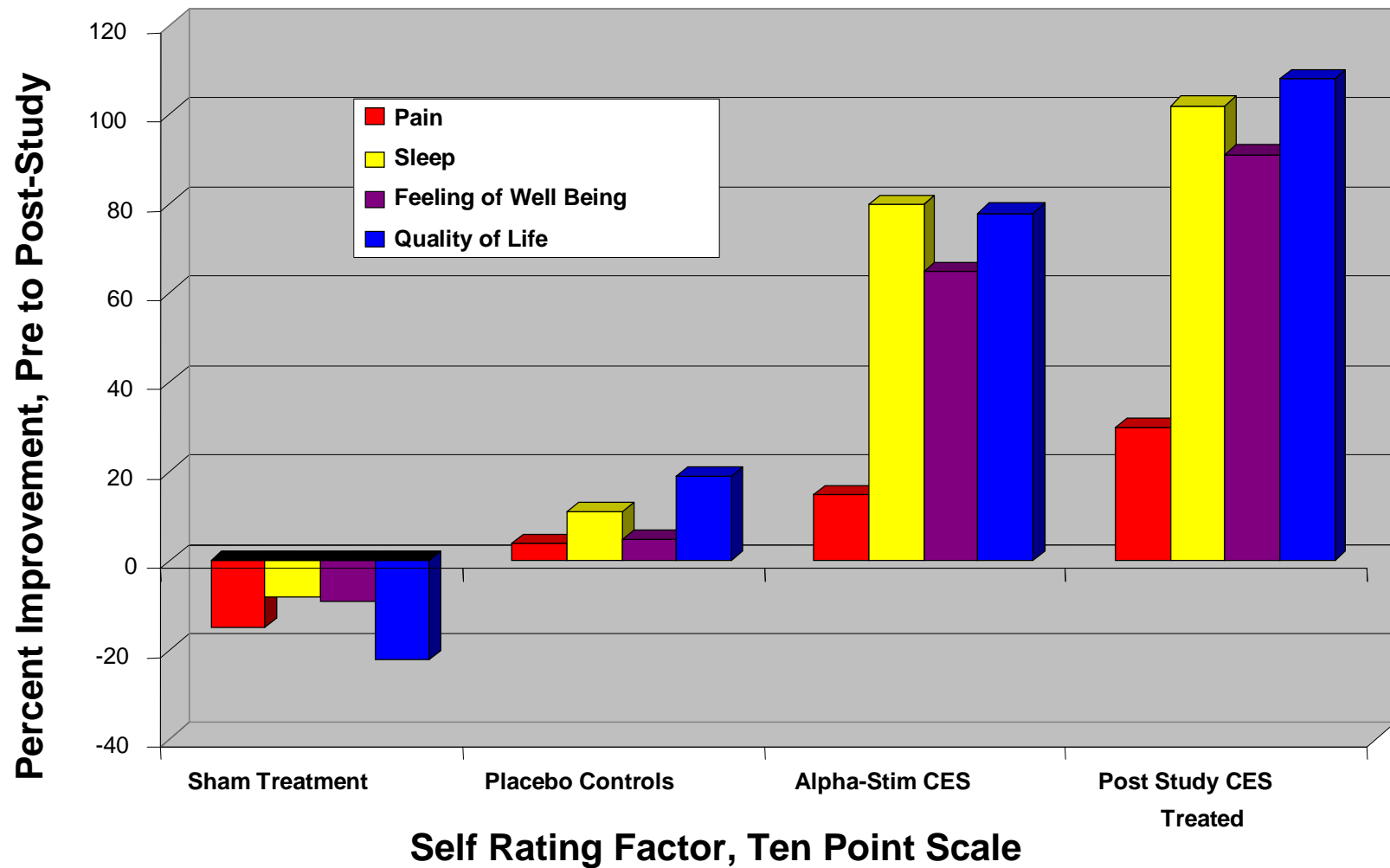
# Improvement in a TBI/RSD Patient Following Alpha-Stim CES Treatment

Alpher and Kirsch, 1998



# Alpha-Stim CES DB Fibromyalgia Study Rheumatology

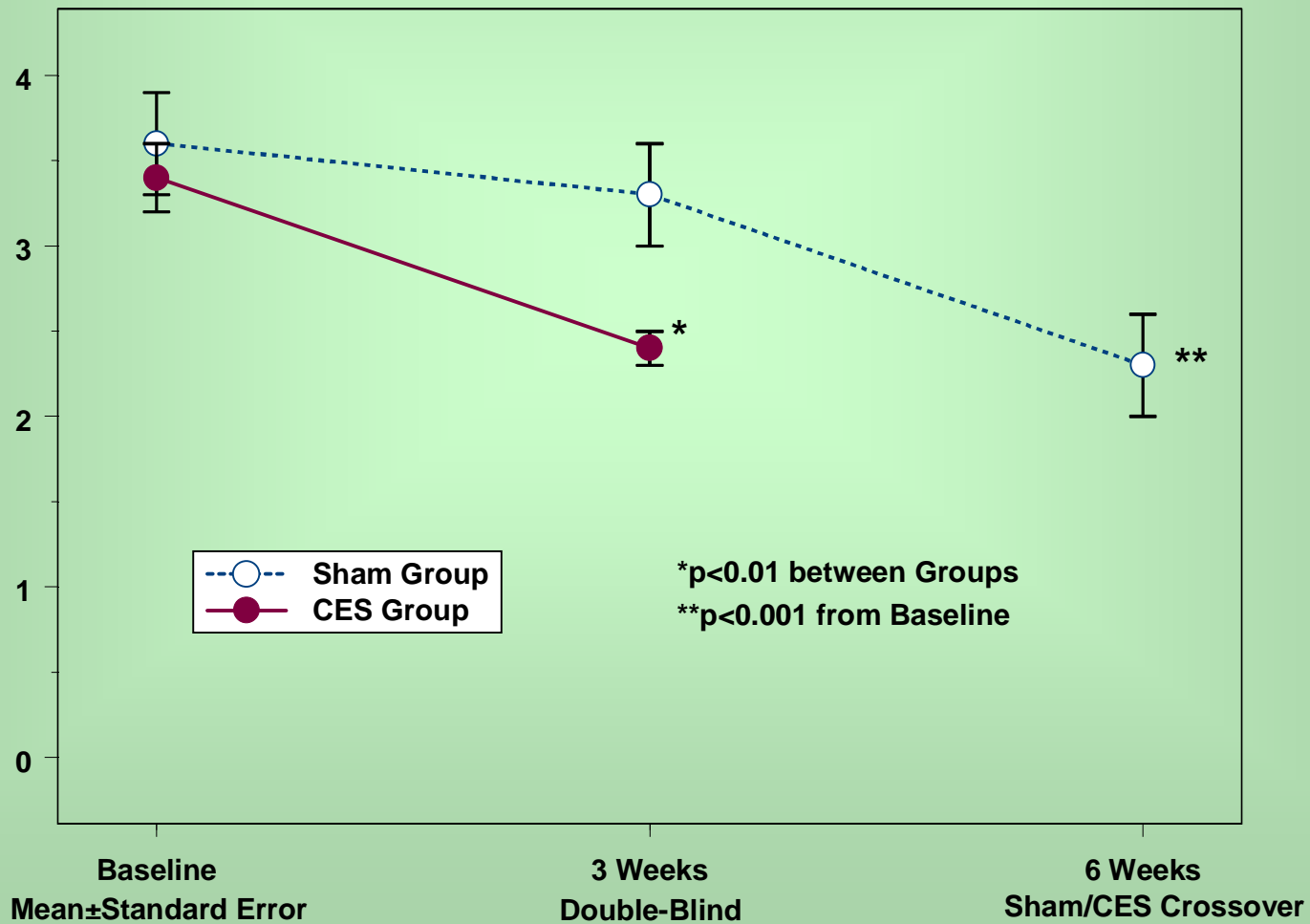
Lichtbroun et al. 2001 (N=60)



# CES Double-Blind Fibromyalgia Study LSU Dept of Anesthesiology

Cork et al. 2004 (N = 74)

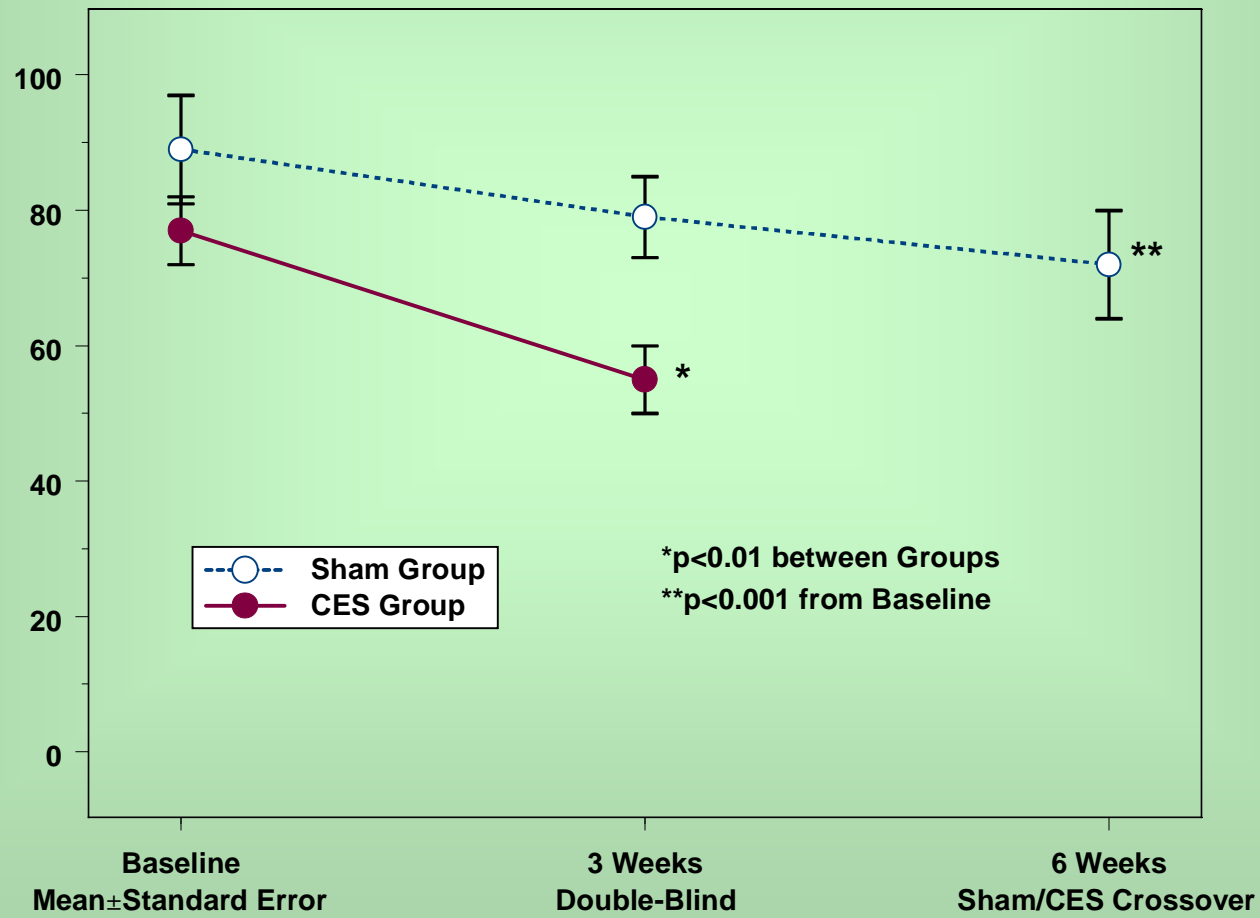
Pain Intensity (0-5)



# CES Double-Blind Fibromyalgia Study LSU Dept of Anesthesiology

Cork et al. 2004 (N = 74)

POMS Score



# Comments on Follow-up from all CES Research Studies

## FROM PIVOTAL SCIENTIFIC STUDIES:

First Author Year	N	Subject Description	Authors' Comments on Follow-up
Brotman, Philip 1986	36	classical migraine pts	CES group responded significantly better than the other 2 groups over the <b>3 month</b> follow-up.
Brovar, A. 1984	25	cocaine abusers	No CES patients had returned for treatment, while 50% of the CES refusers and 39% of the controls recidivated in <b>6 to 8 months</b> .
Flemenbaum, A. 1974	28	anxiety, depression, insomnia outpatients unresponsive to medication	Those who had beneficial results maintained them throughout the <b>6 month</b> follow-up.
Hearst, E.D. 1974	28	psychotherapy outpatients	3 patients showed continued improvement for <b>2 weeks to 2 months</b> .



Heffernan, Michael 1995	20	generalized stress pts >1 year, unresponsive to medication	1 week follow-up measures in the CES group showed significant carryover effects in EMG and HR
Magora, F. 1967	A: 20	A: anxiety, depression, insomnia hospitalized polysubstance abusers, and	A: Follow-up has continued for 8-12 months after treatment and has revealed no relapse.
	B: 9	B: asthmatic children unresponsive to medication	B: The asthmatic attacks stopped completely in 3 children and 4 months later the children felt well without taking any drugs.
Matteson, Michael 1986	62	32 CES graduate students, 22 controls	A follow-up measure 2 weeks post study found that 11 of the 13 variables were still significantly improved in the treatment group.
Moore, J.A. 1975	17	anxiety and insomnia pts	a remarkable improvement" in their symptoms 2 - 3 weeks after CES.

**Overcash,  
Stephen  
1999**

**197**

**anxiety  
outpatients**

On **6 - 8 month** follow-up, 73% of the patients were “well satisfied with their treatment and had no significant regression or other anxiety disorder.

**Patterson, M.  
1984**

**186**

**hospitalized  
alcohol and  
polysubstance  
abusers**

78.5% were addiction-free (80.3% of drug addicts) **1 to 8 years** after CES, with an average time in rehabilitation of only 16 days.

**Smith, Ray  
1999**

**23**

**psychiatric  
outpatients  
with anxiety,  
depression,  
ADD**

On **18 month** follow-up the patients performed as well or better than in the original study.

**Weiss, Marc  
1973**

**10**

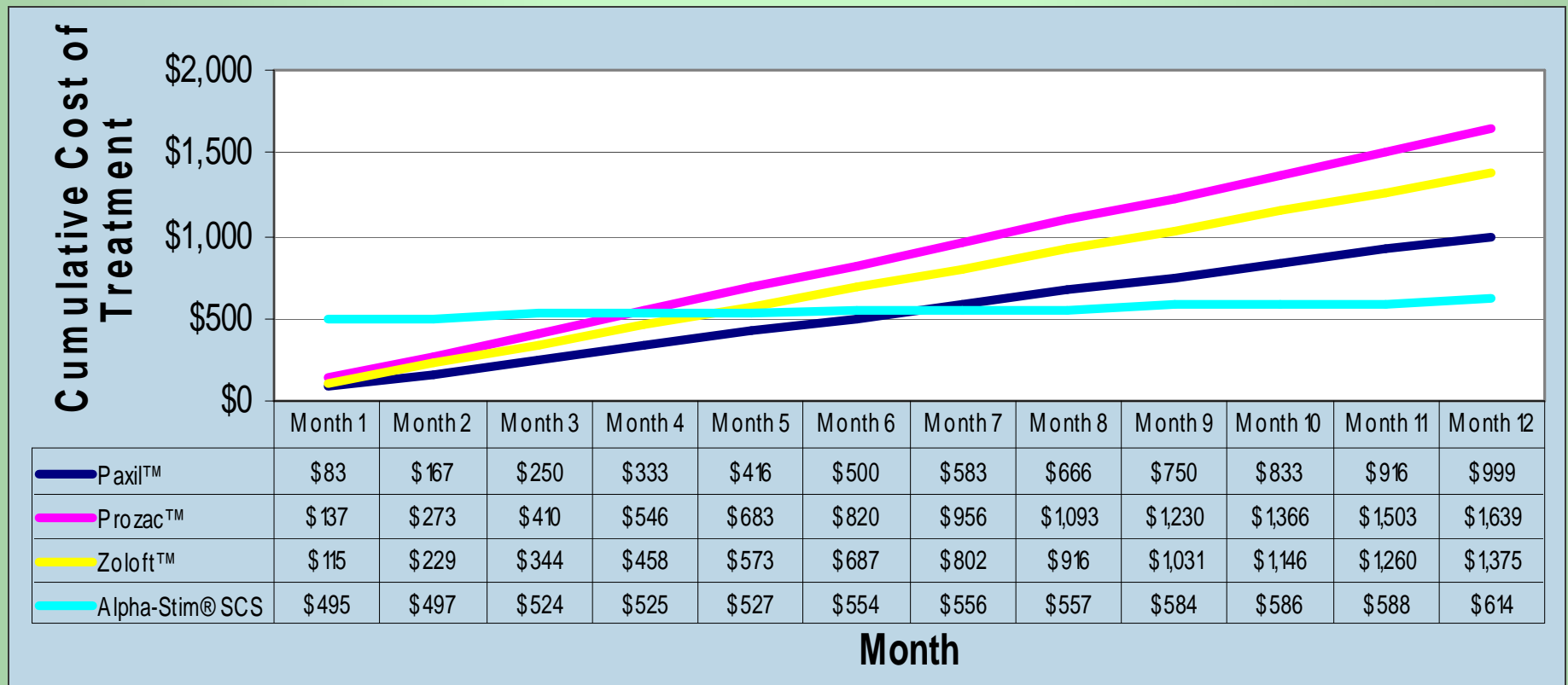
**insomnia  
patients**

All differences found were maintained at the **2 week and 2 year** follow-up.

# First Year Cost Comparison Alpha-Stim SCS CES Device vs. SSRI Drugs

## Breakeven at 4 to 6 Months

(5-Year SCS Warranty and Assuming No Drug Price Increases)



# Summary

- § **CES is safe**
- § **CES is easy to use**
- § **CES is proven effective**
- § **CES works quickly and lasts**
- § **CES research can be double-blinded**
- § **CES is FDA and DoD/VA approved**
- § **CES is available to help people NOW!**

**Are Your Patients in Pain?  
Having Difficulty Sleeping?  
Depressed? Anxious? Stressed?**



**Why Not Try CES?**

**Questions? Email: [dan@epii.com](mailto:dan@epii.com)**

**Call: 1-800-FOR-PAIN**

**Chat: [www.alpha-stim.com](http://www.alpha-stim.com)**