

Integrating Biofeedback into Counseling: An Interactive Discussion and Demonstration

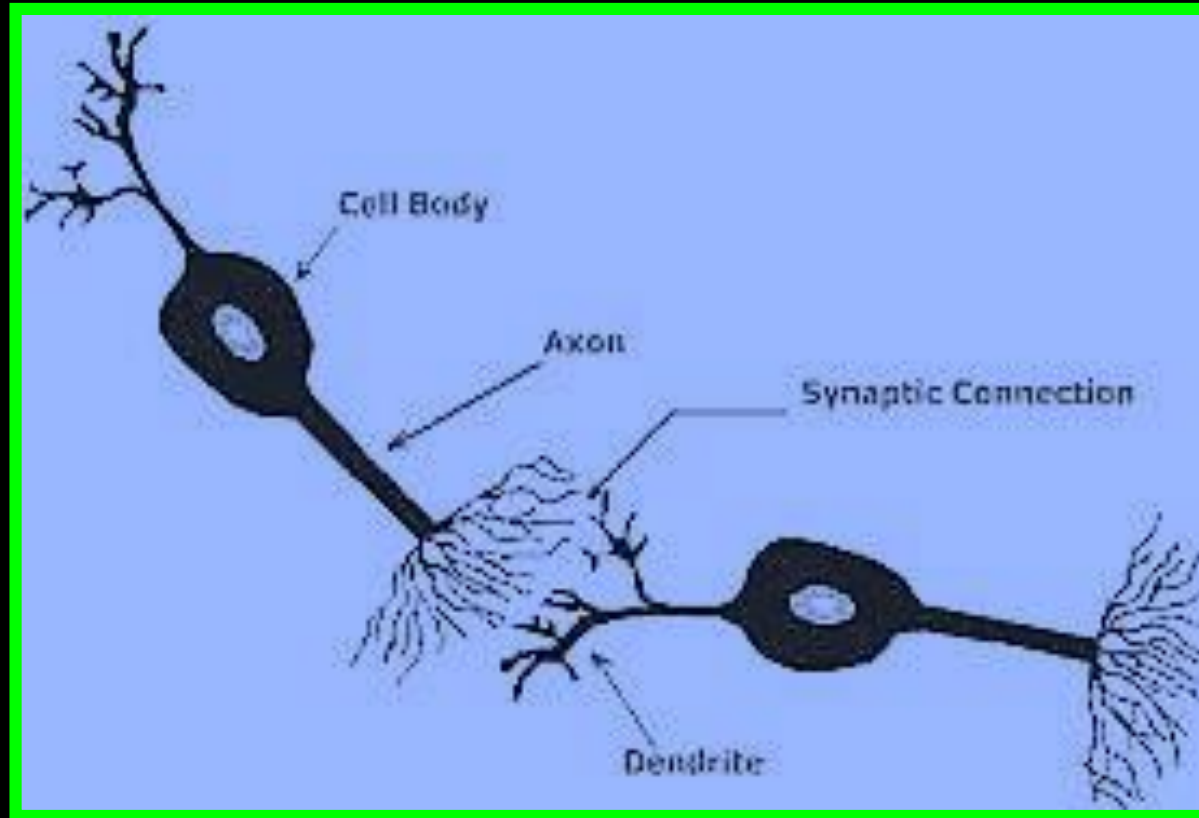


-Janet L. Wisinger, LPC, BCB, NCC

Nervous system – brain, spinal cord and all innervating branches



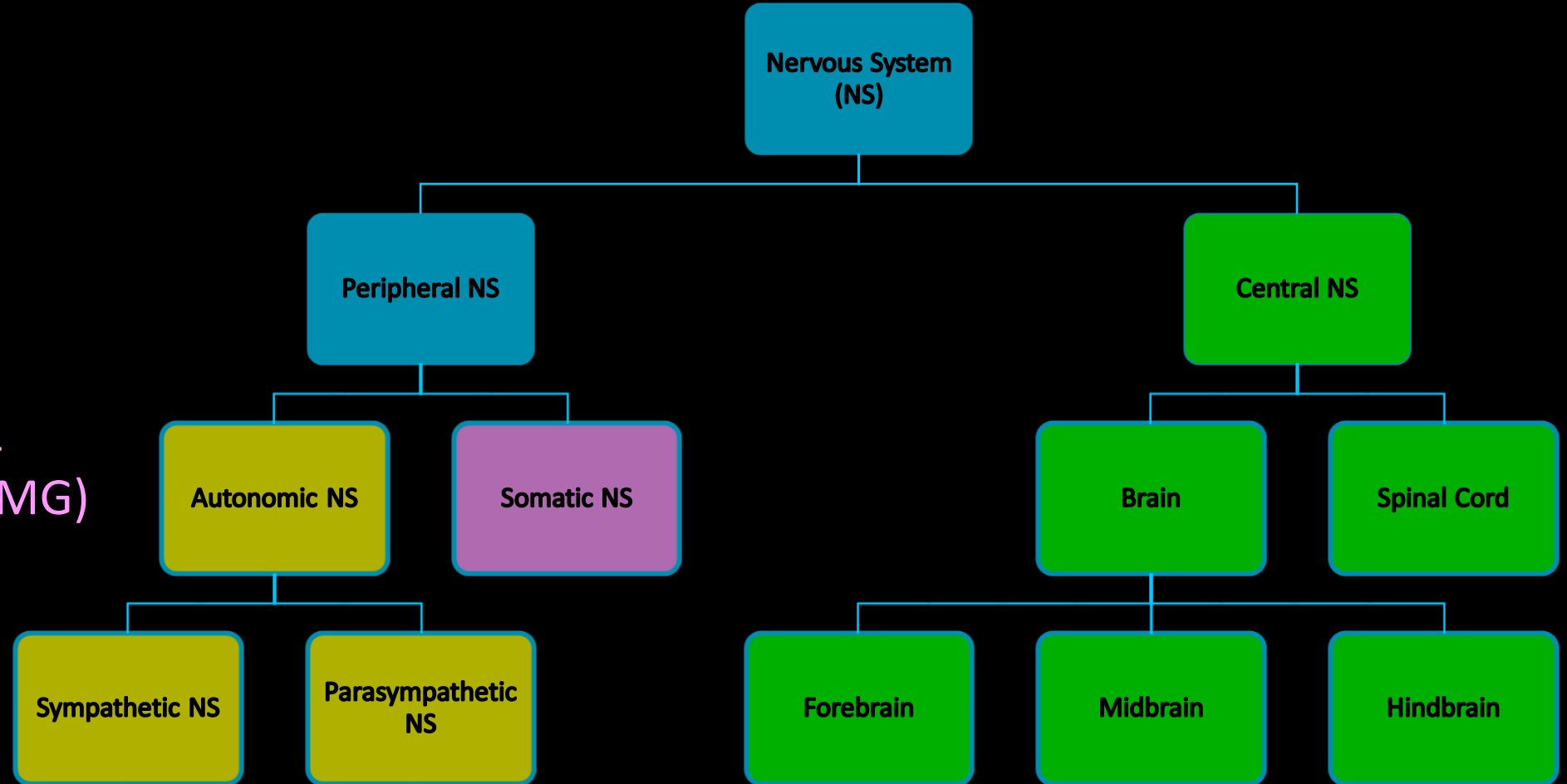
Neurons – cells found in the nervous system



Biofeedback Training

Respiration,
Thermal,
Skin Conductance, &
Heart Rate
Biofeedback Training

Pelvic Muscle
Dysfunction (PMD) &
Electromyography (EMG)
Biofeedback Training



Electroencephalogram (EEG) Biofeedback Training

Autonomic Nervous System: Produces Physical Responses to Stress

Sympathetic - "Fight or Flight"



Parasympathetic - "Rest and Digest"



PARASYMPATHETIC NERVES

"Rest and digest"

Constrict pupils

Stimulate saliva

Slow heartbeat

Constrict airways

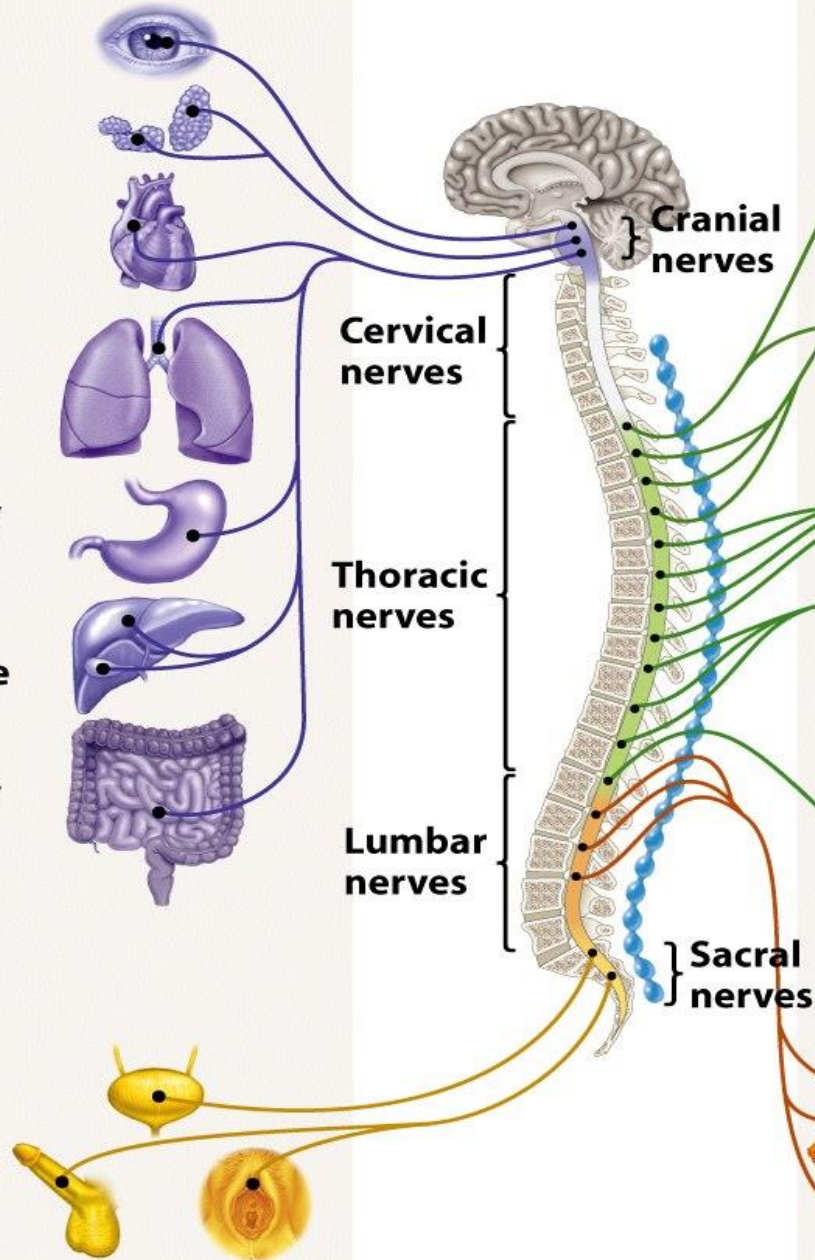
Stimulate activity of stomach

Inhibit release of glucose; stimulate gallbladder

Stimulate activity of intestines

Contract bladder

Promote erection of genitals



SYMPATHETIC NERVES

"Fight or flight"

Dilate pupils

Inhibit salivation

Increase heartbeat

Relax airways

Inhibit activity of stomach

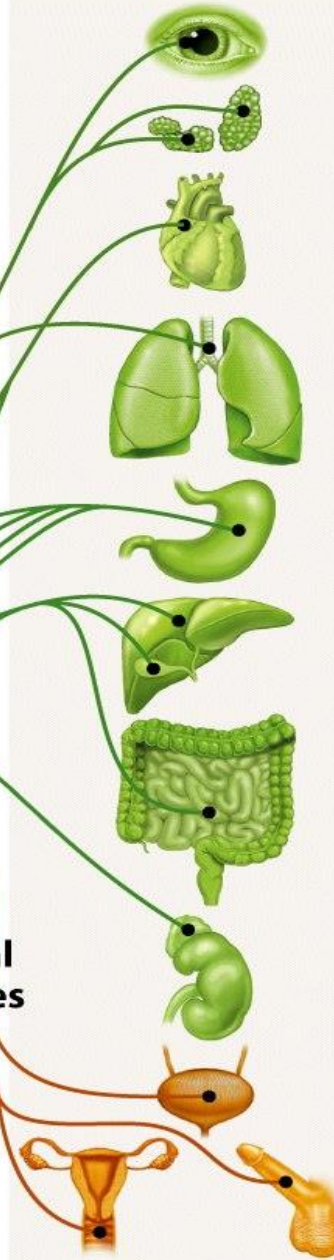
Stimulate release of glucose; inhibit gallbladder

Inhibit activity of intestines

Secrete epinephrine and norepinephrine

Relax bladder

Promote ejaculation and vaginal contraction



Brief History

STRESS RESEARCH

1930s Edmund Jacobson developed “progressive relaxation training”

1932 Cannon described and named the “fight or flight response” in *The Wisdom of the Body*

1940s Zen Buddhist teachers began emigration to US

1950s Applied biofeedback began in the US

1960s A very early form of physical relaxation, “hatha yoga,” became popular in the US

1965 David Shapiro taught the first academic course in *psychophysiology* at Harvard University

1970s Selye’s description of the stages of physical stress response began to link stress and disease

Brief History

BIOMEDICAL ENGINEERING

1934 EMG used to assist patient in neuromuscular reeducation

1940s After WWII, technology existed that could turn electromechanical signals into audio and visual feedback

1960s Alpha wave research began to identify relationships between brain and behavior

1969 First study to claim that Alpha waves could be voluntarily controlled (Kamiya)

1990s Alpha-Theta EEG biofeedback is successfully used to treat addictive disorders

Brief History

CULTURAL FACTORS

Yogis and Zen masters report altered physiological states with meditation; Some biofeedback experiences also lead to these changes.

Rising health care costs have driven consumers to seek more effective and less expensive treatments.

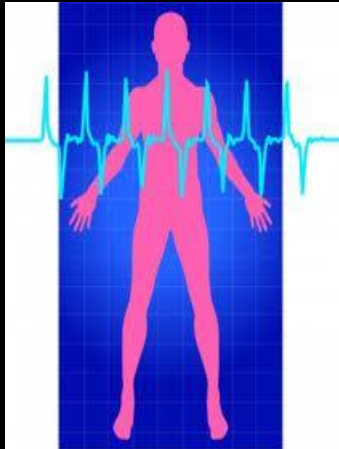
With medication non-compliance a recurrent problem, medical professionals as well as patients have looked to treatments beyond the pill bottle.

The movement toward prevention of disease (as opposed to treatment after the fact) has also driven consumers toward biofeedback.

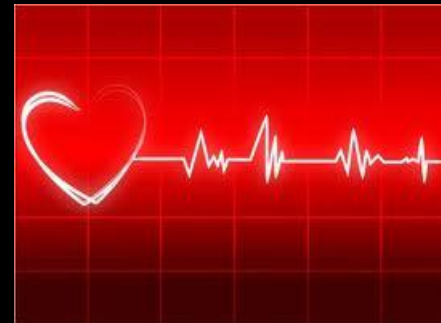
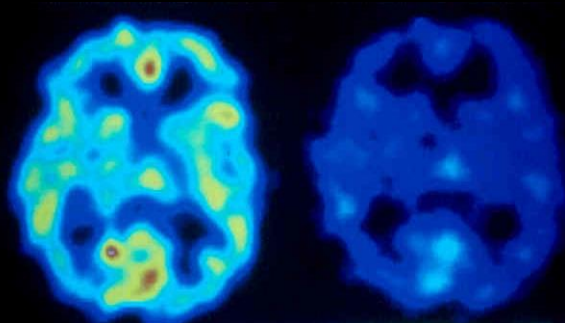
What is Biofeedback Training?

A technique of seeking to control certain emotional states by training oneself, using electronic devices, to modify autonomic body functions, such as heartbeat

Evidenced-based, non-pharmacological treatments that use precise instruments



to measure physiological information



leading to self-regulation for improved health

- BIOFEEDBACK: A PRACTITIONERS GUIDE

Board Certifications

Biofeedback (BCB)

The umbrella: The General Practitioner of the biofeedback world.
Uses EMG, EEG, thermal, skin conductance, heart rate, and respiration biofeedback to treat symptoms of a dysregulated nervous system.

Pelvic Muscle Dysfunction (BCB-PMDB)

Uses EMG, heart rate and respiration biofeedback to treat symptoms of elimination disorders and chronic pelvic pain.

Neurofeedback (BCN)

Uses EEG biofeedback to treat symptoms of a dysregulated Central Nervous System.

Heart Rate Variability (HRV)

Certificate of Completion is now available for completion of nationally-standardized program.

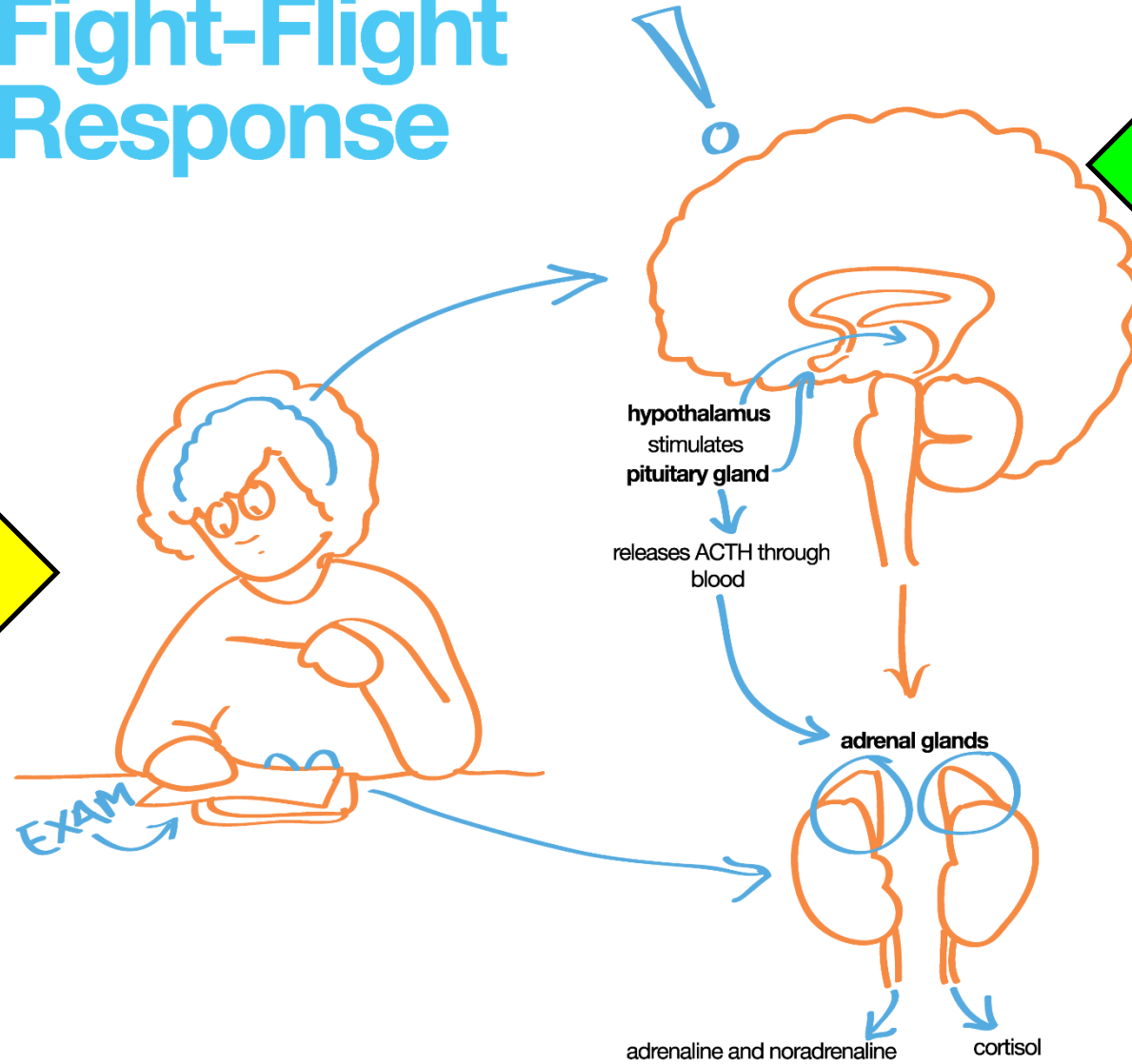


All biofeedback: regulates states of arousal by gearing up or calming down the autonomic nervous system.

**EMG, thermal, respiration, heart rate,
& skin conductance biofeedback use the body
and its organs to reach the ANS.**

**EEG biofeedback uses the electrical impulses generated in
the brain to reach the ANS.**

Fight-Flight Response



Electroencephalogram
(EEG) Biofeedback
Training Starts Here



Respiration, Thermal, EMG,
Skin Conductance, & Heart
Rate Biofeedback Training
Start Here

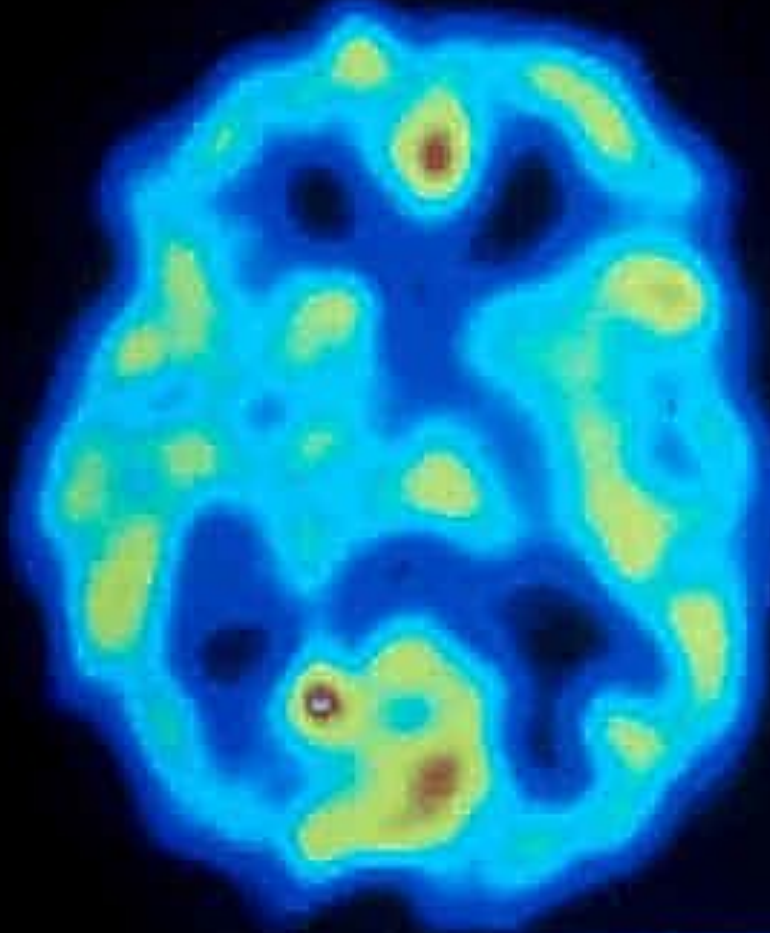
Respiration Biofeedback

- Heart rate and breath rate entrain at about 6 breaths per minute, creating optimal functioning.
- Taking fewer than 10 breaths per minute decreases blood pressure, heart rate and muscle tension. The average rate is 12-16 breaths per minute.
- Taking as few as 5-6 breaths too quickly begins to change the pH in blood, which alters the blood's ability to deliver oxygen.



Breathing incorrectly for 3 min can starve your brain of as much as 30% of the oxygen it needs to function.

NORMAL BREATHING



HYPERVENTILATION



Some Symptoms of Chronic Hyperventilation (Hypocapnia)

Neurological

Dizziness
Faintness
Migraines
Numbness
Intolerance of bright
lights or loud noise

Cardiovascular

Palpitations
Tachycardia (rapid HR)
Angina (chest pain)
Raynaud's

Respiratory

Asthma
Tight Chest
Dyspena (breathlessness)
Excessive sighing or
yawning
Irritable cough
Shortness of breath

Muscular

Cramps
Tremors
Twitches
Muscle Pain

Gastrointestinal

Dysphagia (difficulty
swallowing)
Dry throat
Gas
Belching
Globus (lump in throat)
Abdominal discomfort

Emotional

Tension
Anxiety
Phobias

General

Fatigue
Exhaustion
Weakness
Lack of concentration
Memory problems
Sleep disturbances
Nightmares

Respiration Biofeedback

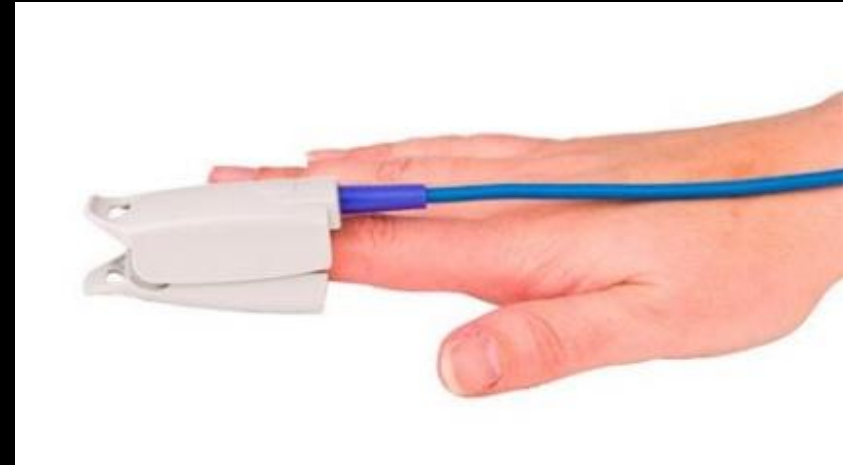
Goals of Training

- Gain control over diaphragm muscle
- Learn to breathe at rate of approximately 6 breaths per minute
- Transfer skills to settings away from the equipment
- Reset “normal” breath rate to improve general health and brain function
- Gain skills for calming the ANS by calming the breath

Heart Rate Biofeedback

Goals of Training Include:

- Entrainment with breath rate
- Evenly-paced, symmetrical rhythm
- Increased heart rate variability



EMG Biofeedback

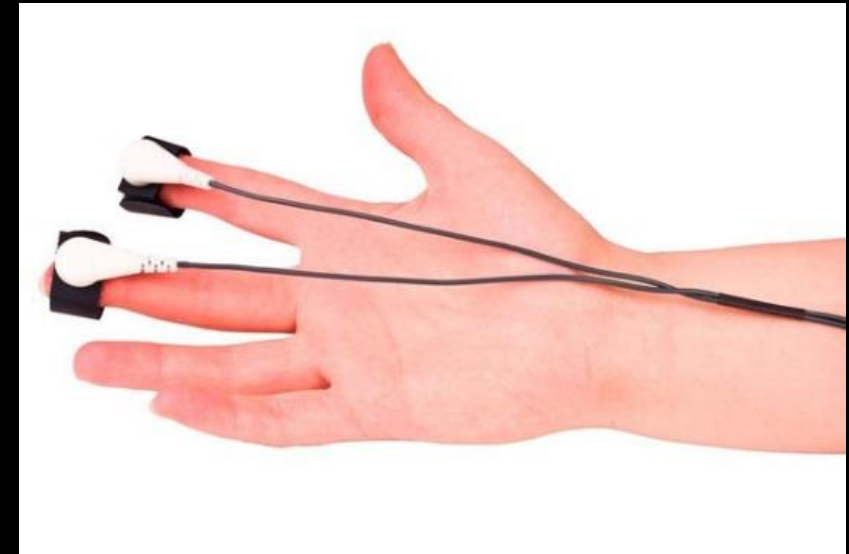


- Two-channel electrode is placed on the skin, directly above the targeted muscle
- Reference electrode is placed between the active electrodes
- Client is able to *see* on screen muscle movements so tiny they may not be *felt*
- The client learns to notice these tiny movements away from the equipment



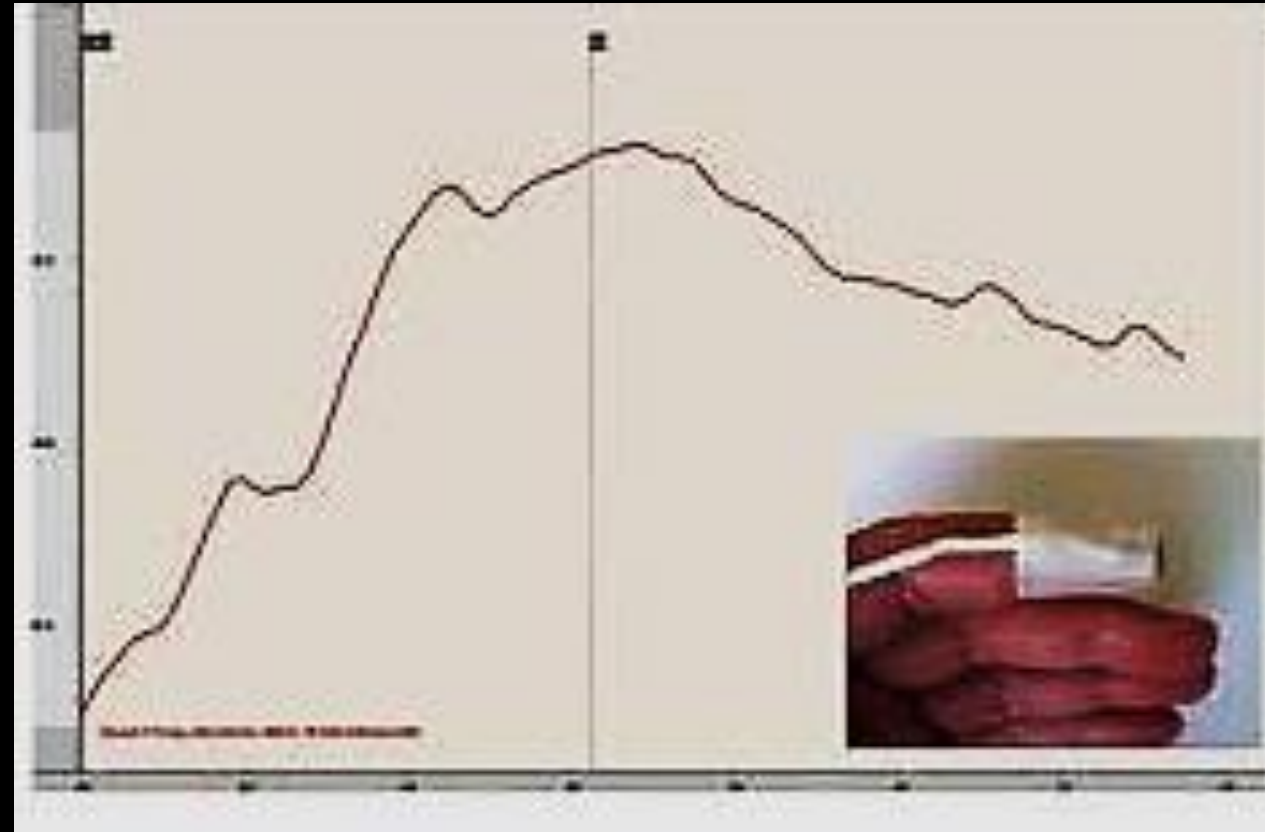
Galvanic Skin Response (Skin Conductance) Biofeedback

- Two electrodes are placed (generally) on the hand
- Measurements on screen tell the client how sweaty the hand is – and measure any change in that state during training



Temperature Biofeedback

- Thermistor is taped to the skin – usually either to a finger or a toe
- Client is able to see (otherwise undetectable) temperature changes on the screen
- The training goal is self-regulation of the temperature of extremities



EEG Biofeedback



"To Fire, or Not to Fire"

That is the Question



"Resting" Potential



"Action" Potential

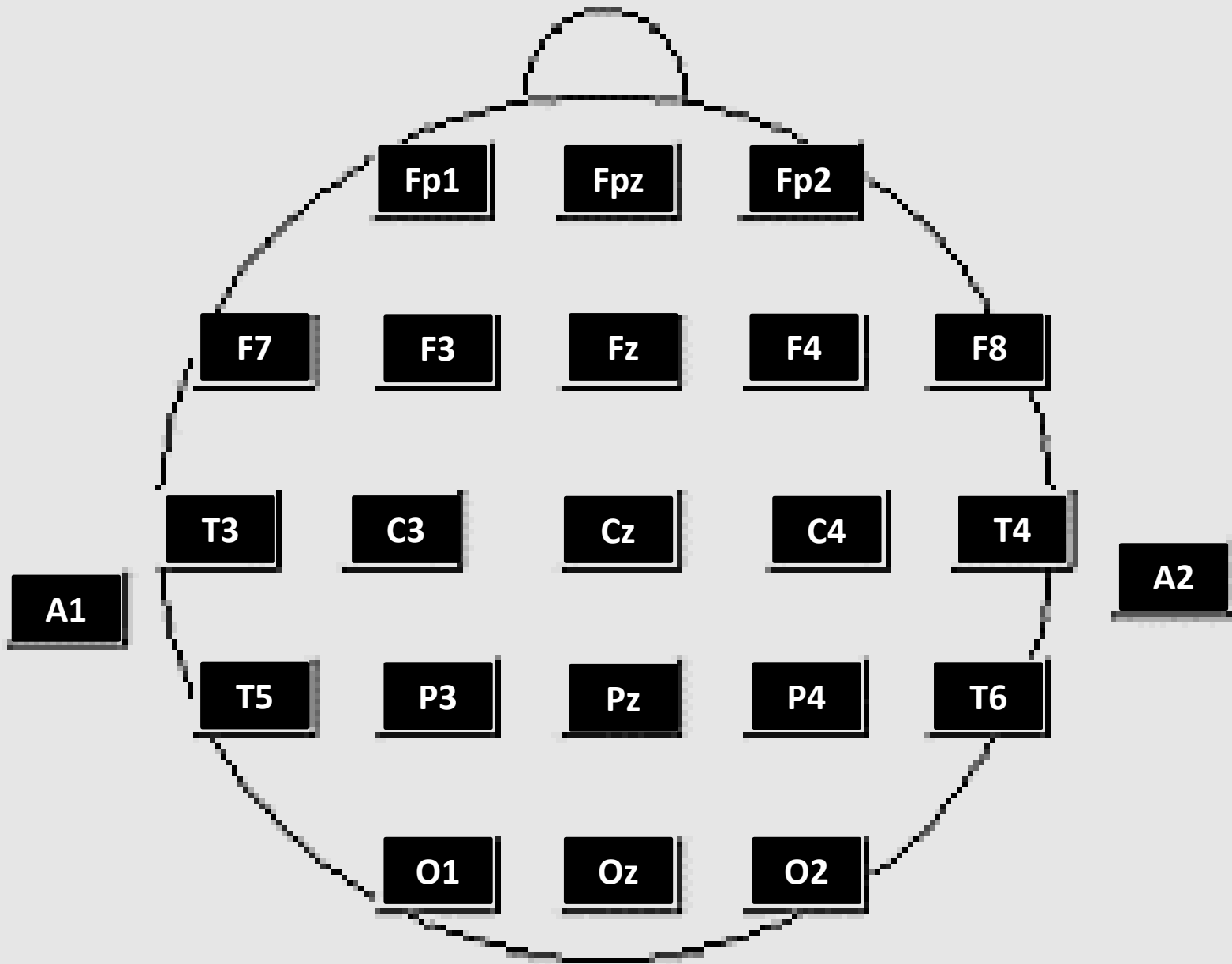
POP QUIZ



PARTS OF THE BRAIN

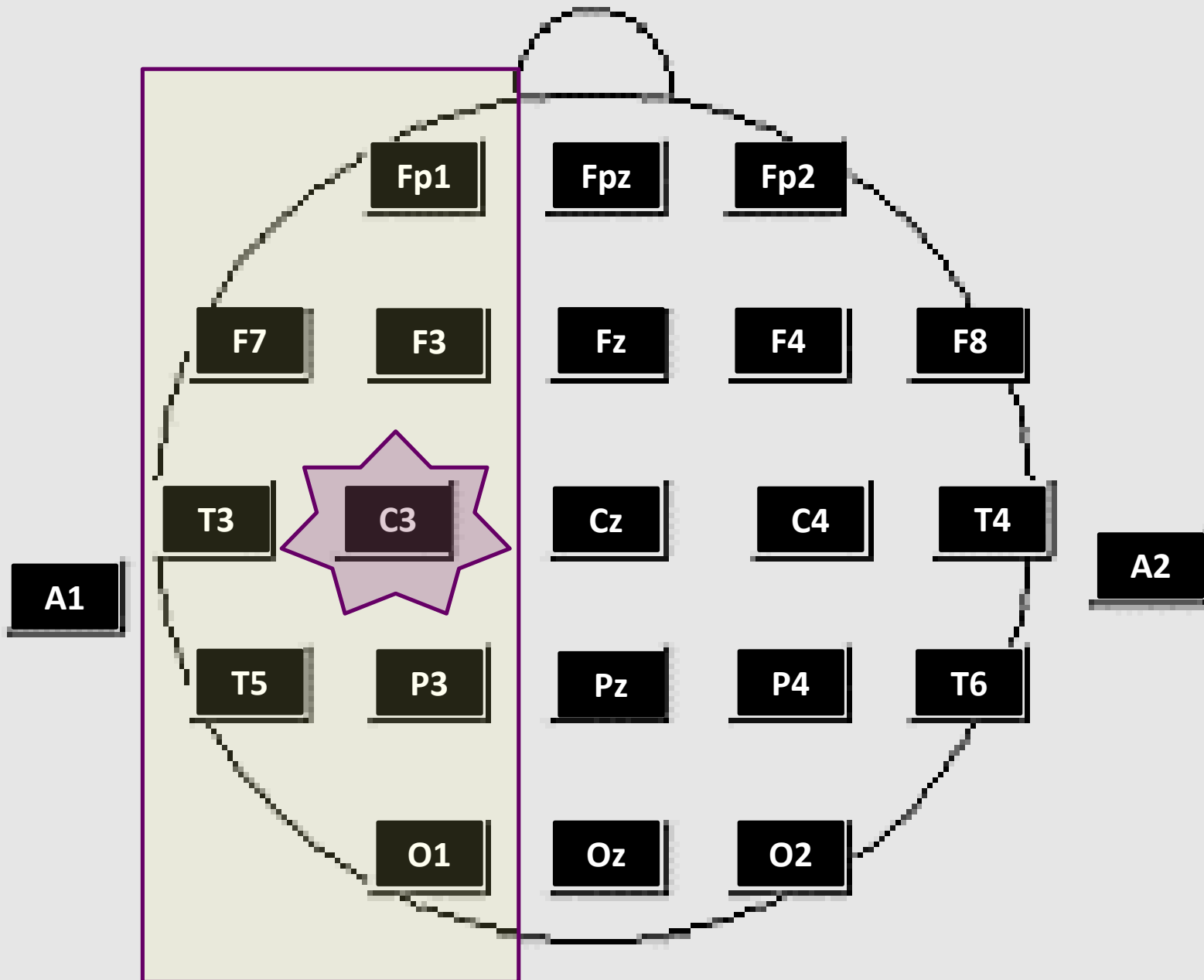
| Wave Name | Approx Frequency | Associated with | Train |
|-----------------------|------------------|---------------------------------------|---|
| DELTA | 0 – 4 Hz | Deep sleep | |
| THETA | 4 – 8 Hz | Light sleep Dreaming Meditation | Down to lower interference with concentration/focus |
| ALPHA | 8 – 13 Hz | Relaxed Deep calm | Down to improve focus Up to improve relaxation |
| SMR (aka Low BETA) | 12 – 15 Hz | Focused | Up to improve focus/attention |
| BETA | 13 – 40 Hz | Awake Regular consciousness | Increase in low-end frequencies = better focus Increase in high-end frequencies = more anxiety |
| GAMMA | 40 – 85 Hz | Deep meditation | |

Theta is the bridge between the conscience and unconscious – “stuff” will come out!

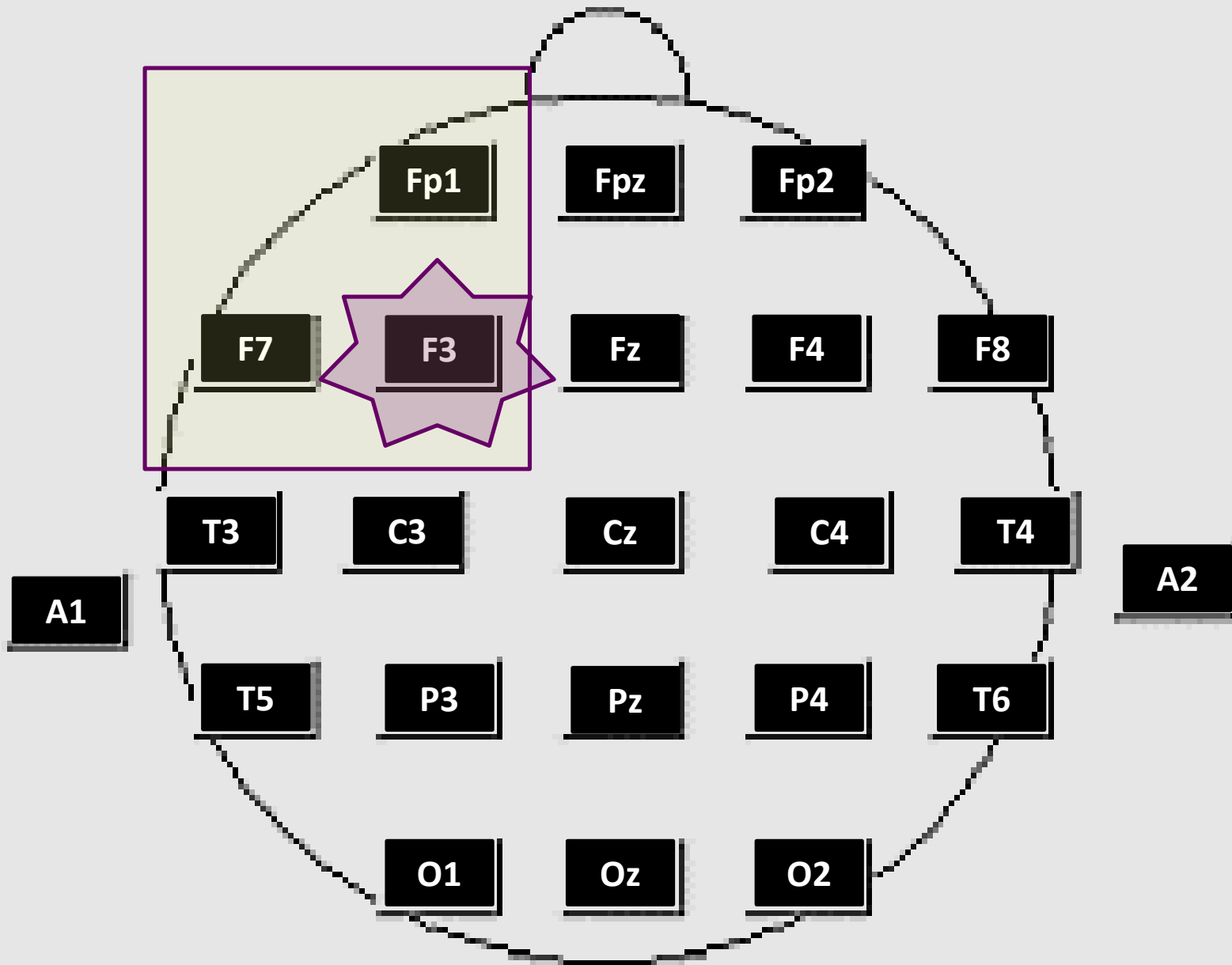


International 10-20 Measuring System

Attention Deficit / Hyperactivity Disorder (ADHD)

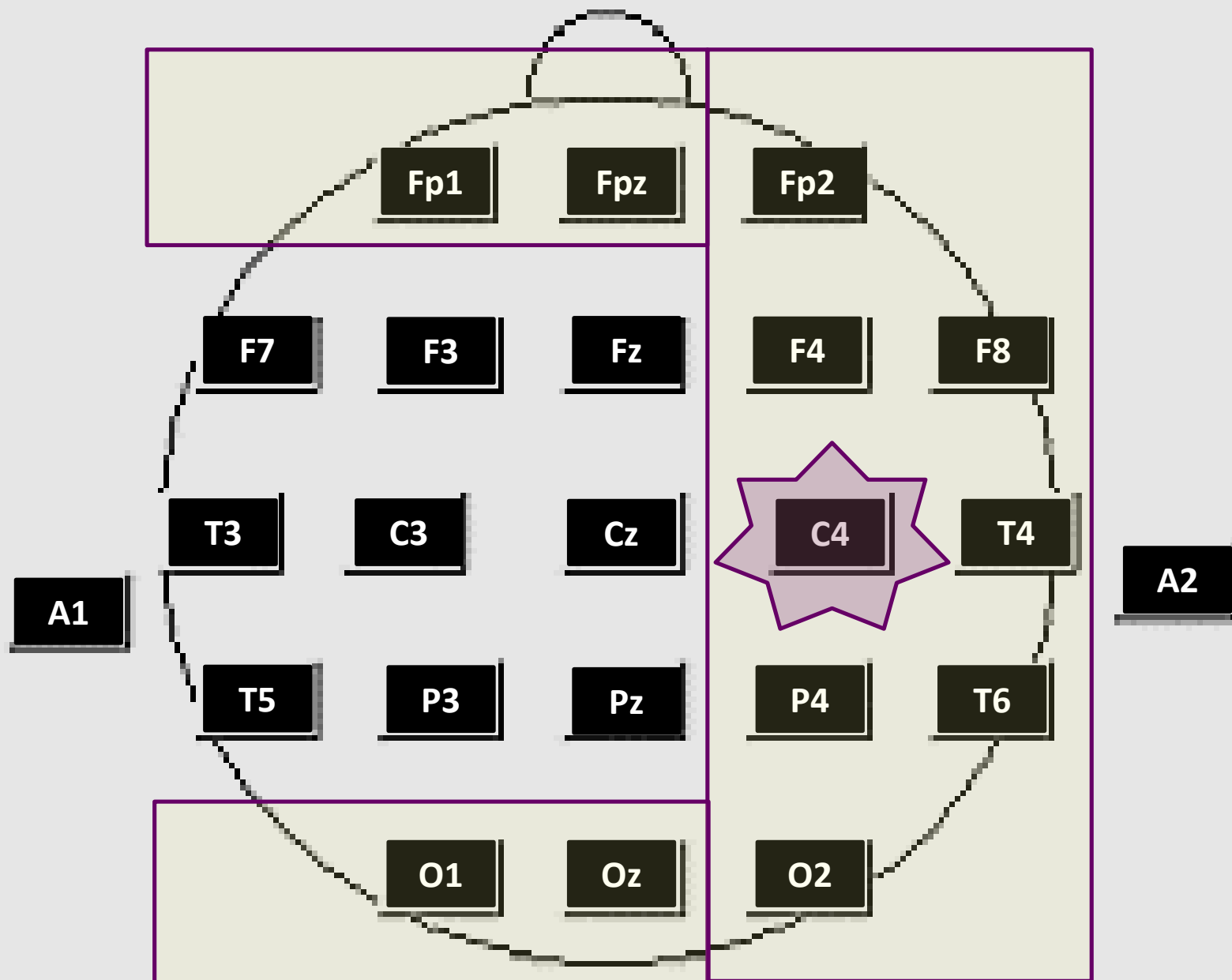


Low Beta in LH:
uptrain beta and downtrain
theta at C3 to increase
attention and focus



Developmental Trauma, Post-Traumatic Stress Disorder (PTSD)

Excess Beta in frontal LH suppressing limbic system: downtrain beta at F3 and be prepared to counsel client



Anxiety, Obsessive Compulsive Disorder (OCD), Rumination

Excess Beta in frontal areas,
global RH, posterior areas:
downtrain beta and uptrain
alpha

One Channel: at C4
Two Channels: at F4 and P4
Or: at Fz and Pz

Introducing a Client to BFT

- I. Introduce concepts of Autonomic NS responses.
NOTE: Client does **not** have to understand *how* biofeedback works for it to work.
- II. Teach controlled breathing techniques with goal of heart and breath rate entrainment.
- III. Tailor sessions to individual patient needs. (5-Session Protocol)
- IV. **Process the experience!***

*this is what traditional BFT misses

GETTING PAID FOR BFT

The treatment codes for biofeedback therapy used in the United States are established by the Current Procedural Treatment (CPT) Code committee of the American Medical Association.

Health & Behavior CPT codes were developed to provide psychologists and other health care providers with a way to accurately capture services that focus on the bio-psycho-social factors affecting physical health.

- BIOFEEDBACK CERTIFICATION PROGRAM

PSYCHIATRIC/BIOFEEDBACK 2015 CPT CODES

| CODE | DESCRIPTION | NON-FACILITY PMT | FACILITY PMT |
|-------|--|------------------|--------------|
| 90875 | Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (e.g., insight oriented, behavior modifying or supportive psychotherapy); 30 minutes | \$60.81 | \$60.81 |
| 90876 | Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy; 45 minutes | \$107.16 | \$97.60 |
| 90901 | Biofeedback training by any modality | \$36.00 | \$36.00 |
| 90911 | Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry | \$80.16 | \$44.46 |

- Current Procedural Terminology (CPT) 2015 American Medical Association

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