

# **DISCLAIMER**

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The information contained herein includes both psychological and non psychological interventions. The delivery of psychological services requires a medical referral whilst non psychological services do not.

Each person is an individual and has a unique psychological profile, biochemistry, developmental and social history. As such, advice will not be given over the internet and recommendations and interventions within this website cannot be taken as a substitute for a thorough medical or allied health professional assessment or diagnosis.

# LENS

## Low Energy Neurofeedback System

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### INTRODUCTION

LENS is a new form of EEG driven biofeedback which provides stimulation to cortical neurons via an extremely low power electromagnetic field which is correlated to the dominant frequency. This is the frequency that, at that site, at that moment, has an amplitude higher than any other frequency. (For an explanation of EEG please see the [QEEG](#) and [neurofeedback](#) articles).

It is suitable to application for assistance in a large range of disorders.

The system was developed by Len Ochs Phd, of Ochs Labs in Sebastopol, California.

LENS neurofeedback uses a feedback frequency that is different from, but correlates with, the dominant brainwave frequency. When exposed to this feedback frequency, the EEG amplitude distribution changes in power resulting in a changed brainwave state, and a much greater ability for the brain to regulate itself.

The feedback travels down the same wires carrying the brain waves to the amplifier and computer. Although the feedback signal is weak, it produces a measurable change in the brainwaves *without conscious effort from the individual receiving the feedback*. The LENS software allows the EEG signals that are recorded at the scalp to control the feedback.

Most (Except for the fatigue syndromes) of the clients we see have high amplitude, low frequency EEGs.

That is, most of the high amplitudes are found at the Delta-Theta-Alpha end of the EEG spectrum.

Lower amplitude EEGs are more characteristic of people who function well.

In fact, most of the measured EEG comes from sub-cortical sites; i.e. most of the EEG is not produced from the cortex.

EEG is measurable primarily because the cortex is not inhibiting properly. When it is not functioning properly, it is said to be permeable to subcortical activity. When the cortex is inhibiting properly, we see higher functioning. Cortical permeability can be decreased by stimulating the cortex (via the LENS feedback) with such minute stimulation that the neurochemical defenses are not evoked again.

The cortex is the last organ to develop through evolution, and the last to develop in any one person's lifetime. This is why we see higher functioning when it inhibits properly.

The measured EEG represents the activity of the topmost layer, which may either be pathology and/or a filtered view of the EEG through layers of different kinds of suppression.

Neurofeedback can remove the suppressive influences of inner or external medications, leading to increased EEG activity, usually accompanied by better functioning.

Because the stimulation is offset from the dominant frequency by the degree empirically chosen, this feedback tends to lower the amplitude of the EEG.

In other words, the Offset, which appears to have somewhat of an anticonvulsant effect due to stabilisation of the cortex, is also responsible for lowering the EEG amplitudes of EEG slowing.

- The Feedback signal is an electromagnetic field.
- It is not a voltage.
- No electricity goes into the client.

The power of a mobile phone is  $200 \times 10^{-3}$  Watts/cm<sup>2</sup> , or .2 Watts/cm<sup>2</sup>.

In contrast, the strength of the electromagnetic field of the Feedback signal generated by LENS is 1-18 Watts/cm<sup>2</sup> or .00000000000000000001 Watts /cm<sup>2</sup>

The electromagnetic frequencies are generated by a crystal clock at a fundamental frequency of 11 MHz. They are square waves that generate [evoked potentials](#) at their leading and trailing edges, i.e., when they turn on and turn off. Harmonics of the fundamental frequency are generated up into the 150 MHz range. It's rather like a very high frequency smooth noise.

The feedback signal is imposed upon the radio frequency field by pulse width modulation – just the way FM radio signals are generated in what we listen to on the radio.

These feedback signals, then, travel down the EEG wires to the head, and permeate the neurological tissues much more uniformly.

**Note** : In neurophysiology, an evoked potential (or "evoked response") is an electrical potential recorded from a human or animal following presentation of a stimulus

## **FURTHER READING SUGGESTIONS**

- Quantitative Electroencephalography - (QEEG)
- QEEG and Neurofeedback - diagnostic and training modalities for the enhancement of CNS functioning in ADHD and other disorders

## **LINK**

### **PLEASE NOTE :**

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- **Och Labs Inc**

<http://www.ochslabs.com/>

Developer of the FLEXYX and LENS systems of EEG driven biofeedback.

**For more information or to make an appointment please contact us on (02) 9637 9998 during business hours.**