

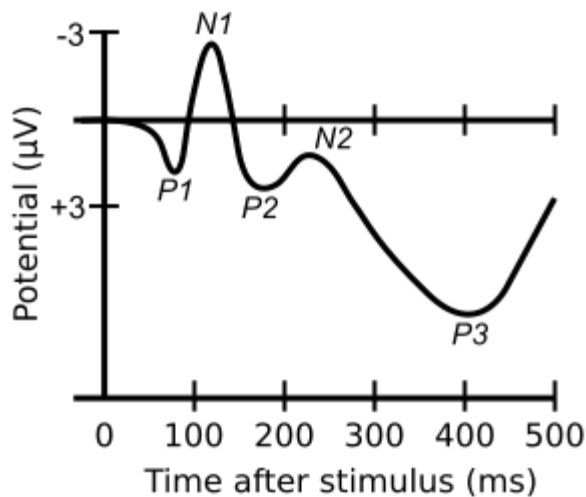
A BRIEF INTRODUCTION TO THE COGNITRACE SYSTEM

Cognitrace EEG's & QEEG's

Cognitrace is a computer that can record and display electroencephalograms (EEG's) from noninvasive electrodes on the patient's head, converting the analog signals into digital waveforms. When the digital EEG waveforms are processed by computer analysis they are called quantified EEG or QEEG. The QEEG can display EEG frequency bands (i.e., showing percent of slow waves versus faster waves). The Cognitrace computer does this type of EEG spectral analysis, but can also display special electrical events in the brain called event-related potentials (ERP's). A Neurologist or Neuropsychiatrist may interpret the location of the ERP generator site (within the brain) to determine which medications will be most effective in treating explosive or impulsive behaviors. More on these critical ERP's below:

EVENT RELATED POTENTIALS (ERP's)

The Cognitrace does more than just EEG and QEEG analysis. The Cognitrace computer can be used to show the brain's electrical responses to stimulation, which are called event-related potentials (ERP's). Auditory ERP's come from auditory stimuli (e.g., clicks in an earphone) and visual ERP's come from visual stimuli (e.g., flashes of light). Cognitrace ERP's are measured in microvolts (μV), with components labeled as negative (N) or positive (P). By tradition, negative waves are shown above the baseline and positive waves below. The diagram below shows a normal long latency (500 msec), auditory ERP. The N100 is a negative wave seen at 100 milliseconds (ms) after the onset of the stimulus and reflects the sensory or perceptual quality of the stimulus. The P300 is a positive wave seen at 300 msec after the onset of the stimulus and reflects a higher level of processing, relating to novelty of the stimulus.



The following table is a comparison between the Cognitrace system used at Meridell Achievement Center and systems used by other facilities. Meridell's Cognitrace system is basically similar to systems used for medical evaluations of epilepsy, whereas other systems may be used strictly for psychiatric or psychological evaluations. The Cognitrace system is designed to include measures of ERP's whereas some systems just measure EEG or QEEG. The Cognitrace system is a medical testing system used as part of a Neuropsychiatric assessment, and it meets all standards for medical tests of brain electrical activity. Some facilities suggest that their systems are the same as, or equivalent to, the system at Meridell. The chart below shows that such claims are usually not correct.

<u>Meridell's Cognitrace System</u>	<u>Other Systems (e.g., Neurofeedback & QEEG)</u>
Cognitrace system is FDA approved for safety	FDA approval may or may not be required
EEG/ERP test prescribed by physician	Non-physicians can order the test
Standard electrode placements for EEG	EEG may or may not use standard methods
EEG/ERP Technician supervised by Neurologist	Medical supervision may not be required
EEG/ERP interpreted by Neurologist	Interpretation may be by non-physicians
Neurologist is board certified EEG expert	Board certification may not be required
ERP's are the major component of analysis	ERP's not usually measured
Neuropsychiatrist reviews ERP test	Non-physicians generally consult on QEEGs
ERP's used to help select medications	ERP's are not usually available

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