



GABRIEL E. SELLA, MD CLINICAL SEMG PROTOCOLS

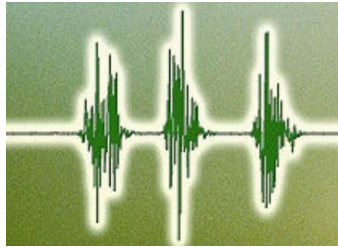


Gabriel E. Sella

Gabriel E. Sella, MD, MPH, M.Sc. Ph.D (HC), BCIA, DACPM, FAAFP, FAADEP, is a world expert in Surface Electromyography . Surface electromyography is a computerized electrophysiological technology that is an objective tool for assessment and diagnosis of muscular electrical activity in health and disease. It is an objective electronic monitor during the course of physical and occupational therapy for most neuromuscular conditions. It measures the summation of passage of multiple units of action potentials (m.u.a.p) between two points on a muscle belly from the vantage point of the skin surface. It can also measure the frequency of passage of the m.u.a.p.s.

Limited Edition Software Suite

The Clinical SEMG Protocols Limited Edition software suite published by the BFE and designed by Dr. Sella records surface electromyography measures using Dr. Sella's techniques and proprietary database. The software provides a report of SEMG activity and a pathway for SEMG biofeedback for rehabilitation. The suite addresses the importance of muscle assessment and is based on Dr. Sella's book entitled "Muscles in Motion". It includes a comprehensive manual to cover every step from connecting the equipment to installing the software, to recording an initial assessment and printing a report. It includes one specific elbow protocols.



Webinars & Grand Rounds featuring the Sella Methodology

These up-to-date, relevant summaries from practice and research are a convenient method focus on the use of Dr. Sella's clinical assessment protocols. Learn from professionals that use the Sella database as you see and learn from live demonstrations of SEMG technology set in an interactive framework. This series of 1-hour online lectures or webinars provides an overview of Dr. Sella's methods and is given by members and affiliates of Dr. Sella's international research and education team. The series features content from peer reviewed research on EMG biofeedback that is independently researched and shows how SEMG can be used to measure/ monitor the muscles involved.

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ELECTROMYOGRAPHY Applications in Clinical, Pain, Physical Medicine & Rehabilitation Towards an Integrated Approach of sEMG Utilization: Quantitative Protocols of Assessment and Biofeedback

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Introduction

Surface electromyography is a computerized electrophysiological technology that can be utilized in an array of applications. It is an objective tool for assessment and diagnosis of muscular electrical activity in health and disease. It is an objective electronic monitor during the course of physical and occupational therapy for most neuromuscular conditions.

sEMG is similar to a voltmeter device. It measures the summation of passage of multiple units of action potentials (m.u.a.p) between two points on a muscle belly from the vantage point of the skin surface. It can also measure the frequency of passage of the m.u.a.p.s. The summation of the action potential passage is an electrical force. As the greater the number of passing action potentials, the higher the amplitude of the m.u.a.p. voltage. The greater the number between the two surface electrodes in the electrodes, if the electrodes are placed at a large distance, the number of action potentials crossing between the two points will be larger and thus the amplitude will be higher.

sEMG Can Measure Parameters of Muscular Activity in Health and Disease

The electrical muscular activity in a normal muscle will include three parameters:

1. A normal value, which is generally less than most and can increase to 100% or even less, in some conditions. The resting value should be the same, before, and after a muscular contraction through a single or many repetitions.
2. A normal activity value, which may change according to gravity and resistance over a period of time. This muscular activity can be enhanced through muscle contractions, repeated a number of times and characterized with a distinct period of time.
3. A median frequency of passage of m.u.a.p.s. in the course of time. This frequency allows a decrease of amplitude as a function of time, in a number of muscles that have been shown to be representative of the subjective perception of fatigue.

The electrical activity is normally within 10% of amplitude or time beneath the curve between two normal contralateral muscles, which are activated through the same range of motion and against the same resistance.

The activity can be tested through a number of repetitions, in order to determine a number of phenomena. These are: Passage from one activity to the next, response time to slow motion, time to complete activity, time from initiation to the end of activity, time to complete activity, and fatigue phenomena, sometimes associated with the median frequency parameter (MF).

Sella sEMG Protocols

Classes & Cases in SEMG Assessment & Biofeedback

These 12-hours of hands-on practice provide real-time supervision and mentoring on the BFE Sella software and act as tutorial/supervision sessions for professionals and students that are new to SEMG assessment. Practitioners and graduate students learn how to interpret the electrophysiological SEMG sessions recorded with Dr. Sella's clinical protocols software. Expert opinions from professionals and researchers answer key questions. Other information prepared by the session participants and delivered in an interactive framework provides helpful training and instruction.

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BioGraph Infiniti Software T7900



BioGraph Infiniti Software is the core of all current and future Thought Technology Biofeedback and Psychophysiology products. It provides a multimedia rich graphical experience, while capturing and analyzing raw data. It includes all the features and functions required to run our specialized application Suites and offers the ability to customize your own screens and suites using the Developer Tool . **BioGraph Infiniti version 5.1.4** is designed to provide full compatibility with the latest Windows 7 operating system.

FlexComp Infiniti T7555M



FlexComp Infiniti™ is a total monitoring and biofeedback system with a wide range of applications in psychology, psychiatry, clinical research, physical therapy, primary care, and sports medicine. Compact and easy-to-use in tethered and un-tethered situations, using fiber optic (for real time monitoring), Compact Flash (for remote data storage) or Tele-Infiniti Telemetry with 300 foot range, FlexComp Infiniti™ offers a tremendous range of capabilities and the power to deliver instantaneous analysis of complex data. When combined with BioGraph Infiniti software FlexComp Infiniti™ provides flexible, high-speed processing of high-resolution data and allows clinicians to choose from a full range of user-defined screen configurations for specific applications or client profiles, using mouse or keyboard controls.

MyoTrac Infiniti™



The dual channel MyoTrac Infiniti SEMG (Surface Electromyography) system allows you to measure requires only a USB port, and can be used with any IBM-compatible laptop or desktop PC. It can capture SEMG data in real time by connecting directly to the PC USB cable, to provide real-time, computerized biofeedback and data acquisition for clinical observation and biofeedback for the rehabilitation clinic. The system includes BioGraph Infiniti Software and the Rehab suite from Thought Technology.

Muscle Measurements from up to 10 muscle placements at once

From 4-10 EMG MyoScan™ Sensors T9503M are required for the Sella software, depending on the specific body region being assessed. EMG MyoScan is a pre-amplified surface electromyography sensor used with all FlexComp-Infiniti channels for RAW sEMG. Compatible with Triode electrodes or extender cables for wider placement of electrodes. Range of 0 – 2000 μ V. The Sella software provides one standard data recording screen that is used with a different protocol or “script” for each body region. Each script follows the same logic but since there are a different number of movements for each body region there is a need to have different number of steps in the protocol to record the SEMG data for each movement. Its very simple to place the sensors following the pictures in Dr. Sella’s Muscles in Motion.



Disposable Triode Electrodes 100 to the box

(A) T3402M - Triode™ electrode, with standard 2cm spacing of silver silver chloride electrodes, backed with nickel plated brass snaps to prevent corrosion when connected to pre-amplifiers for extended periods.

(B) T3425 - UniGel electrodes, pre gelled single electrodes, or sensitive placements on dry skin. It can be used in place of T3404 single strip electrodes.