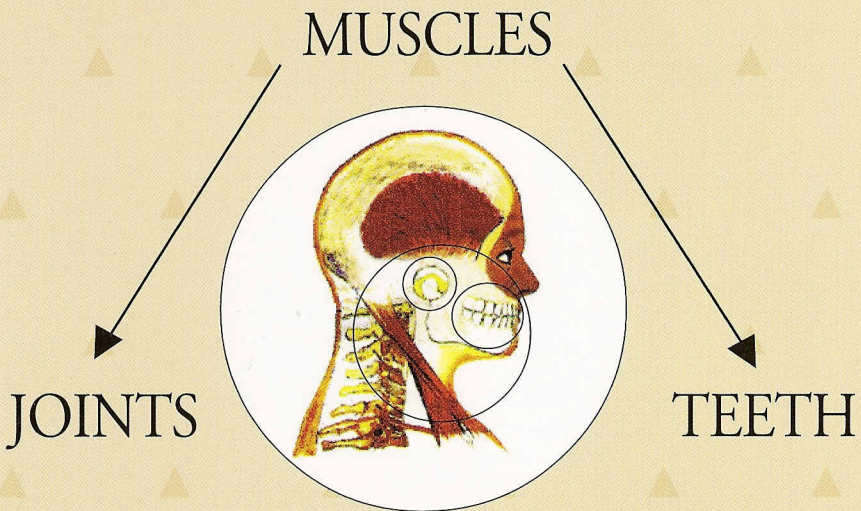


# Frequently Asked Questions About Neuromuscular Dentistry



*Muscles + Joints + Teeth =  
Neuromuscular Dentistry*

“Having first experienced the benefits of NMD myself with relief of my intractable long term pain, has made me a true believer! The amount of relief we are able to provide our patients with NMD is amazing and gratifying.”

BETH SNYDER, DMD, Doylestown, Pennsylvania

## WHAT Is Neuromuscular Dentistry?

Neuromuscular Dentistry is the science of dentistry that embodies accepted scientific principles of patho-physiology, anatomy, form and function. NMD objectively evaluates the complex relationship between teeth, temporomandibular joints and the masticatory muscles in order to achieve an occlusion that is based on the optimal relationship between the mandible and the skull – Neuromuscular Occlusion. The goal of the Neuromuscular Dentist is to relax the muscles controlling jaw position to establish a true physiological rest position upon which treatment considerations are based.

In summary, NMD is the science of occlusion encompassing not only the teeth, but the objective evaluation of the status and function of the jaw muscles and joints – before, during and after treatment – to achieve the optimal result.

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## WHY Is Neuromuscular Dentistry Important and Is There Scientific Support for its Efficacy ?

Occlusion is the foundation of dentistry. It is of key importance in the success of every major dental procedure. Occlusion is affected by a triad of factors – the teeth, the muscles and the temporomandibular joints. Traditional dentistry has focused on the teeth – what might be called “one-dimensional” dentistry. Neuromuscular Dentistry (NMD) is a term that has been applied to the additional consideration of the “second & third dimensions” – muscles and TM joints.

The limited time in the dental curriculum makes it difficult enough for schools to prepare dentists to deal with the teeth. Muscles and joints typically get a cursory once-over. As dentists go into practice, it is not uncommon to hear them say that they have done procedures “by the book” and yet have less than satisfactory results. Or, that a case is so complex they refer the case out rather than treat it themselves.

Neuromuscular Dentists commonly report that taking muscle and joint status into consideration aids them in optimizing treatment, minimizing the times that they are “surprised” by less than ideal outcomes, and gives them the added insight needed to treat complex cases. There is a significant body of literature published over the past 35 years that supports the efficacy of neuromuscular dental principles.

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## HOW Can NMD Benefit My Patients and My Practice?

Here's what leading clinicians have to say about Neuromuscular Dentistry and Myotronics instrumentation:

“Whatever I have done for Neuromuscular Dentistry in the past 24 years, I have done with a full heart and a sincere belief that this is how dentistry should be practiced.”

*BARRY COOPER, DDS*

*Clinical Associate Professor, Department of Oral Biology and Pathology  
School of Medicine, State University of New York, Stonybrook*

“Since incorporating Neuromuscular Dentistry and Myotronics instrumentation into my practice, my entire perspective of my diagnostic and clinical skills has changed. I now have the ability to measure, record, analyze, and store physiologic data and anatomic function to better provide predictable comprehensive dentistry.”

*JOSEPH M. BARTON, DMD, Jacksonville, Florida*

## WHAT Is TENS (Transcutaneous Electrical Neural Stimulation)?

Neuromuscular Dentistry begins with the true relaxation of the muscles through the use of TENS. TENS is a widely used term, but as used in Neuromuscular Dentistry it is more properly called ultra-low frequency electrical muscle stimulation. This safe, battery operated device delivers a mild electrical stimulus to the muscles via neural pathways. The stimulus induces involuntary contraction of the muscles controlled by the facial (7th) and masticatory (5th) cranial nerves.

### References:

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## WHY Use TENS?

Muscles of the face and neck are often “programmed” (propriocepted) to control head and mandibular posture in a way that accommodates occlusion, even though that particular occlusion may be less than ideal. The Neuromuscular Dentist wants to relax these often tense muscles to find their true resting state and establish the occlusion at that position. It is extremely difficult to voluntarily overcome this proprioception, so “TENS” is used. A secondary use of low frequency stimulation is to achieve drug-free pain relief of pain of muscular origin.

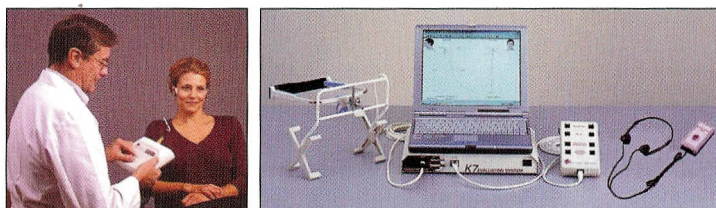
## WHY Use Myotronics TENS?

Myotronics TENS products, the Clinical Myomonitor and the Home Treatment unit BNS-40, are backed by a history of safe, effective use since 1966. The only fixed-rate device of its kind that provides true bilateral, simultaneous stimulation, the Myotronics products provide stimulus at a fixed rate of once every one and one-half seconds (or 40 times per minute).

The Myomonitor’s “3rd electrode” ensures safe and simultaneous stimulation of masticatory muscles. In addition, the stimulation of the Myomonitor propels the mandible upward from rest position and registers a physiologic occlusal position with ease and accuracy. The Model J5 Myomonitor, with its two sets of leads, offers the ability to stimulate four sites simultaneously. The second lead set is most often used when it has been determined that there are postural influences on the occlusion. Being able to relax both masticatory and cervical/upper thoracic muscles simultaneously saves valuable time for the office and the patient while insuring optimal relaxation for occlusal diagnosis. Fail-safe circuitry and the fixed low frequency rate provides the ultimate in safety.

## WHY Is Evaluation of Physiologic Function Important?

The state of the teeth and the joints very often cause the muscles to accommodate. Evaluation of the hard tissue alone does not provide insight to the true status of the occlusal system. This is why the Neuromuscular Dentist uses objective, scientific documentation methods in the comprehensive evaluation of occlusion. Through the use of jaw tracking, electromyography and joint sound recording, a complete analysis of the function (or dysfunction) of the masticatory system is accomplished.



*The Myomonitor and K7 Evaluation System – Tools for Neuromuscular Dentistry*

## WHAT Is Jaw Tracking?

“Jaw tracking” is one of the modalities used by Neuromuscular Dentists. It is used to precisely identify the relationship of the mandible to the skull and to study mandibular movement dynamically. While a number of devices have been promoted for this purpose, the one that is least cumbersome and does not affect the patient’s function is one that utilizes a tiny magnet affixed to the mandibular incisors. Sensors track the path of the mandible in three dimensions by sensing magnetic field changes – a science developed by Myotronics.

## WHY Is Jaw Tracking Data So Valuable?

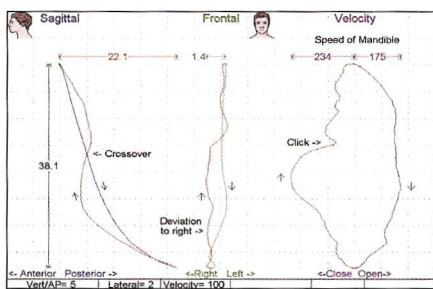
The data produced through jaw tracking has three important roles. First, is to permit the dentist to study mandibular action dynamically by recording and replaying traces representative of the mandibular path of opening and closing. This can reveal, in a highly precise fashion, a number of anomalies otherwise difficult to discern. One example is a sudden slowdown of mandibular velocity, invisible to the eye but often an alert to a clicking joint. Second, the jaw tracking device records the relationship of the mandible to the skull with great precision, information useful in the diagnostic process, and in taking a neuromuscular bite registration. The third application of jaw tracking is to record and verify that patient's closure to centric occlusion is on a neuromuscular (physiologic) trajectory.

### References:

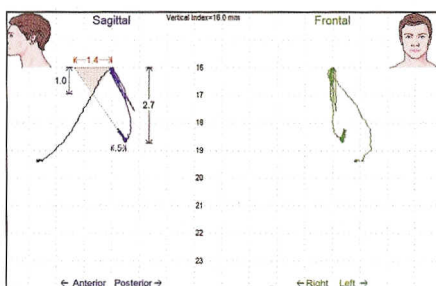
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## WHY Use Myotronics Jaw Tracking?

Myotronics developed this science in 1971 and has led the way in its improvement ever since. The Myotronics patented "sensor array" at four ounces is the lightest available, assuring that the patient will not become tired and that the sensing module does not interfere with mandibular function. The unit is remarkably free of interference from inadvertent patient movement or nearby metal objects. The software makes operation simple and provides powerful capabilities in evaluation and patient education.



Dynamic three-dimensional motion and velocity of the mandible.



*Recording of patient's opening and closing on neuromuscular trajectory and habitual trajectory.*

## WHAT Is Surface Electromyography (SEMG)?

SEMG is the study of muscle status (activity) using surface electrodes, as opposed to invasive needle EMG which only measures a single muscle fiber. SEMG picks up tiny signals coming through the skin that are representative of the average of multiple fibers of a given muscle. The data is obtained through surface electrodes much like EKG electrodes, amplified, and sent to the computer where it is displayed. The Myotronics system permits study of up to eight channels of SEMG simultaneously.

## WHY Use Surface Electromyography?

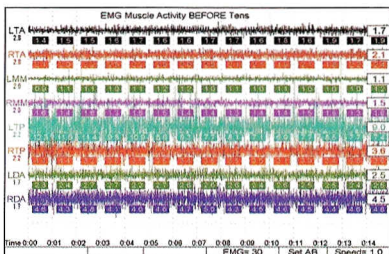
SEMG is the only way that the dentist can accurately measure and record muscle status and function. Palpation is subjective at best, has little consistency from one dentist to another, and provides no objective documentation. SEMG allows the dentist to measure and record objective data concerning muscle status. The information can be invaluable as an aid in occlusal diagnosis and is highly useful in patient education. SEMG also enables studies of muscle function – showing precise timing and activation patterns of various muscle groups. This information is adjunctive to the occlusal diagnosis and is not otherwise available.

### References:

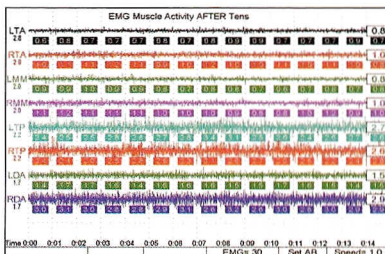
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## WHY Use Myotronics Electromyography?

This is another field that was pioneered by Myotronics with its inception of the first commercial dental SEMG unit in 1981. The Company has led the way since by producing a series of advanced EMG technologies in the dental and medical fields. Accurately processing the minute signals detected through the skin is a technical challenge requiring complex circuits that reject extraneous electrical “noise”. The Myotronics technology has become the “gold standard” in the dental and medical fields. The authors of the definitive clinical SEMG text in the medical field chose the Myotronics SEMG technology in their book *Introduction to Surface Electromyography*. The Myotronics system allows you to record up to eight muscle sites simultaneously, and play them back in a variety of ways for study and patient education.



EMG Muscle Activity Before TENS



EMG Muscle Activity After TENS

## WHAT Is Electrosonography (ESG)?

ESG is most commonly called "sonography" and sometimes "joint vibration analysis". It utilizes computer based vibration sensitive transducer technology that quickly and non-invasively records joint sounds and vibrations originating in the temporomandibular (TM) joints. The patient wears a lightweight headset that positions two sensors over the joints. The technician instructs the patient to open and close, and in just a few minutes valuable information about joint function is captured for analysis.

## WHY Use Sonography?

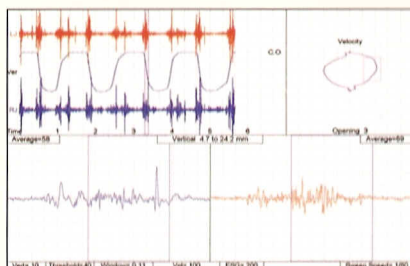
Bone transmission of sound is so rapid that unilateral study of joint sound with a stethoscope may not even discern which side the sound is coming from. Further, sounds studied in this manner are subjective and not documented. Data captured by means of sonography not only record joint sounds from both TM joints simultaneously, the information can be played back at will. The dentist can analyze this recorded information in a number of ways that may yield additional insight regarding joint status and joint function. The test can be used as a very quick assessment of joint status and to document patient response to treatment.

### References:

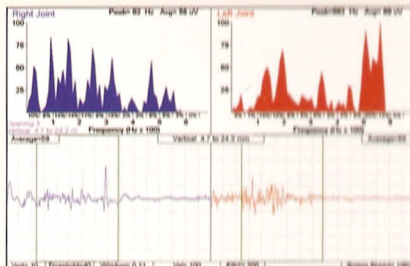
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## WHY Use Myotronics Sonography?

Introduced in 1989, the Myotronics ESG is the only system to incorporate transducers calibrated to a vibration measurement standard. These high quality devices are capable of picking up even small sound vibrations from the tissue overlying the TM joints – diagnostic sounds that less sensitive systems fail to detect.



*Sonography recording displays joint vibration (sound) data to (vertical) open-close position of occurrence.*



*Joint vibration (sound) recording shows amplitude, frequency, duration.*

## HOW Do I Learn More?

To learn more about Neuromuscular Dentistry and about continuing education programs in your area, contact Myotronics at 1-800-426-0316 or visit our website at [www.myotronics.com](http://www.myotronics.com).