

Receptor-Tonus technique: an overview

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ABSTRACT. *Presented is an overview of the neurophysiology and manual methods of the receptor-tonus technique, the original chiropractic method of trigger point therapy, which was developed by Raymond L. Nimmo, D.C. It is theorized that trigger points are maintained through an abnormal neural reflex arc, which involves a facilitated segment of the spinal cord. Various mechanisms of how trigger point activity is reduced by manual pressure methods (ischemic compression) are explored. The manual methods of the technique are described in detail, as well as common mistakes in treatment.*

KEY WORDS: Trigger points — Nimmo technique — Chiropractic — Facilitation — Reflex arc — Myofasciitis

THE SYMBOL OF CHIROPRACTIC TECHNIQUE has been two hands, crossed at the wrist in a “toggle” style of adjustment. This symbol typifies the historic definition of chiropractic: the adjustment of spinal vertebrae to correct misalignments which create disease by reducing nerve “flow” to various parts of the body. Raymond L. Nimmo, D.C., was one of the pioneers of a paradigm shift in chiropractic thought. He stated that the soft tissues of the body could also be the source of irritation to the nervous system, not just the spinal vertebrae. He also questioned the existence of nerve “pressure” by spinal misalignments, preferring to explain that pain and disease are caused by excessive neural stimuli from “noxious generative points” [1].

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Nimmo stressed repeatedly that chiropractic was a neurologic science, and not restricted to spinal corrective methods. His definition of chiropractic was simple, yet incredibly comprehensive: “A healing science and art which is concerned with locating and eliminating noxious foci in the human body which interfere with the normal functional integrity of the nervous system.”

In the early 1950s Nimmo discovered “noxious generative points,” which were almost simultaneously being explored by Janet Travell, M.D., who called them “myofascial trigger points” [2]. This discovery was important because myofascial structures can be the source of severe pain, which can also cause referred pain by radiating to distant sites.

Nimmo was one of the first chiropractic thinkers to attempt to dispute the “bone out of place” theory of spinal subluxation. Nimmo theorized that spinal misalignments were only manifestations of muscular imbalance, and that spinal joints were “fixed” or hypomobile, rather than misaligned. In other words, the spinal joint hypomobility was the result of hypertonic muscles, which prevented the joints from moving freely within their normal ranges of motion. Therefore, it seemed logical to treat the primary muscular dysfunction, rather than the secondary misaligned or hypomobile joint.

Travell has become the leading authority on myofascial trigger points (TP) in the medical community. Her major methods of treatment for TP are direct injection of anesthetics into the TP, and stretch/spray technique for stretching the contracted muscles containing the TP [2]. Nimmo, on the other hand, preferred to treat TP by manual methods only. The difference in application of Nimmo’s method lies in its firm grounding in neurophysiology, especially the facilitated reflex arc which sustains trigger point activity.

There are, then, major differences in application and philosophy of TP treatment. The medical approach views TP as diseased muscle tissue, which, if injected, massaged, and stretched enough, will return

to normal tonicity. The chiropractic approach, as taught by Nimmo, is to view TP as abnormal reflex arcs or segmental neuropathies, involving both the hypertonic muscle fibers and the central nervous system. Since muscles cannot be isolated from the nerves which control tonus, nor from the bones and joints whose movements they control, all chiropractic methods treat dysfunction of the neuromusculoskeletal system. Nimmo technique focuses on this interrelationship of muscle tonus and the central nervous system.

TP AS ABNORMAL NEURAL CIRCUITS

Trigger points could not exist if it were not for a malfunction of the reflex arc. Let us review the physiology of the reflex arc to show how TP develop and become self-perpetuating sources of noxious neural stimuli.

The normal reflex arc consists of weak afferent stimuli from the muscle receptors which synapse in the internuncial pool of the cord. From there, they follow a direct pathway back to the muscle via a motor efferent nerve altering the tonus of that muscle as needed. When a muscle is irritated from trauma or chronic contraction, there is a release of histamine, serotonin, bradykinin, and other irritants which sensitize the afferent (receptor) nerve endings. Increased neural input is sent to the spinal cord. The afferent signal synapses in the internuncial pool of the cord, where its intensity and duration can be amplified causing an even stronger and more sustained motor output.

Nimmo stated that the soft tissues of the body could be a source of irritation to the nervous system.

The increased afferent stimuli will cause an increased motor efferent response, increasing muscle tonus and starting the process of facilitation. This becomes a vicious cycle of increased input/increased output, continuing until appropriate therapy breaks the cycle; hence the name "Receptor-Tonus technique." The high levels of afferent stimuli from the TP can "spill over" in the cord's internuncial pool, causing referred pain and secondary/satellite TPs at other spinal levels. Visceral or autonomic phenomena are also known to occur through this mechanism, referred to as the somato-visceral reflex (Figs. 1 and 2).

FACILITATION VS. COMPRESSION

In neurophysiology it is well known that a nerve impulse can either increase or decrease in its activity. If a nerve is compressed by extruded disc material or

an osteophytic spur, there is degeneration of the nerve and decreased nerve activity. The result of compression is anesthesia, muscular atrophy, and sympathetic atonia.

On the other hand, if a nerve is irritated and excited, increased neural activity reflexes through the cord, causing increased sensitivity to pain and increased muscle tonus at the segmentally related muscles. This becomes a self-perpetuating cycle of pain/hypertonus/pain called facilitation. Nerve irritation and the related facilitation are usually caused by noxious biochemical compounds such as hyaluronic acid, bradykinin, and serotonin.

The Nimmo technique is designed to interrupt the facilitation cycle allowing the body to return to a state of normal muscle tonus, which relieves the body of a source of excessive and harmful neural stimulation.

MANUAL NIMMO TECHNIQUE

Early in the development of the Nimmo technique, many types of manual stimulation were used. Travell had advocated using as much manual pressure as the patient could bear, and certainly enough to reproduce the referred pain pattern. Then, she suggested, one should hold the pressure for up to 2 minutes, or until the referred pain subsided [2].

Nimmo's method deviated considerably from this approach. He recommended that one should apply manual pressure for only 5-7 seconds on the involved TP, and then release the pressure quickly. Enough pressure should be used to reproduce the patient's referred pain, but not so much that the patient would tense the affected muscle. Using this method, Nimmo was able to achieve dramatic relief of his patient's symptoms [1].

Receptor-Tonus technique requires that the chiropractor be extremely perceptive to the patient's muscle tonus. A high degree of sensory and palpatory acuity is necessary to perform the technique properly. The ultimate success of manual pressure lies in not using too much, or too little pressure to effect a change in the muscle's tonus. The pressure is used as a means to affect a neurologic process, not to mechanically "press out" fluids or noxious metabolic wastes as in massage therapy.

Nimmo was one of the first chiropractors to dispute the "bone out of place" theory.

Nimmo envisioned his technique as a method of inhibiting the facilitated reflex arc, thereby breaking the pathological cycle of increased muscle tonus/ increased efferent motor output/ increased muscle

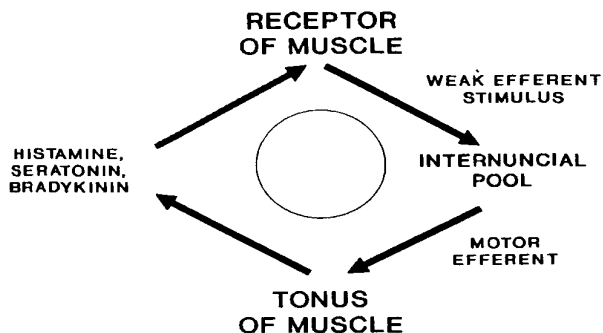


Fig. 1. The self-prepetuating TP cycle.

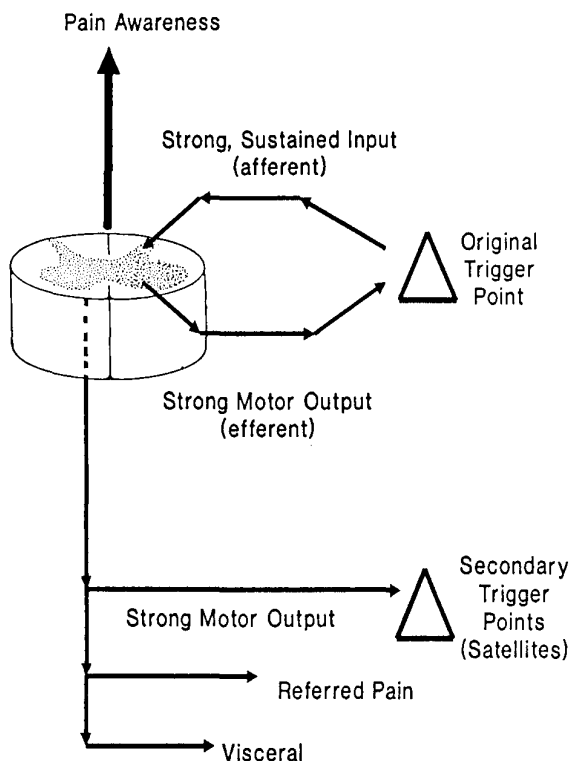


Fig. 2. Aberrant reflex pathways.

tonus. The pressure on the TP causes a temporary increase in the afferent input to the spinal cord, increasing neural output via the reflex arc. When the pressure is abruptly released, the excess input is removed, temporarily decreasing the motor impulse. Once the intensity of the motor impulse has dropped slightly, the cycle has been broken, even if momentarily. Nimmo felt that by repeating this process two or three times, one could disrupt the facilitated reflex arc and promote a "release" of the hypertonic muscle.

Another factor which interrupts this cycle is the reflex vasodilation that occurs after ischemic compression of the TP. This neurovascular reflex reaction with its accompanying "dermal red response," causes an immediate rush of blood flow through the muscle and flushes out any chemotoxins, further reducing the focus of irritation [3].

A depletion of neurotransmitters at the synaptic junction has also been theorized as an additional therapeutic mechanism. Sustained pressure on a TP causes an increased volley of action potentials through the axons, and, when held long enough, will temporarily fatigue the nerve. In turn, this will break the abnormal reflex circuit, and release the affected muscle from its hypertonic state.

COMMON MISTAKES IN TREATMENT

It is very tempting to the novice Nimmo practitioner to overtreat his/her patient or to be overly aggressive in the use of pressure. Also, many practitioners feel that these methods are a form of "massage," falling into the realm of physiotherapy. Some even have their chiropractic assistants perform these treatments. The amount of pressure used is subjective, and has to be adapted to the needs of the individual patient. Skillful palpation by the doctor, not an assistant, is required to perform this technique properly since the Nimmo technique is a complex psycho-motor skill, analogous to spinal manipulation. The doctor must be acutely sensitive to the palpatory feedback from the patient's muscle tone. When the practitioner senses a "release" in muscle tension, he must know enough to stop and let the nervous system reset itself.

The usual method is to press on a TP for 5-7 seconds and release, treat another TP, then press on the original TP again, reassessing for a change in muscle tone. This process should require two or three sweeps over a single TP before the muscle releases. Pressing too hard, more than three times, or for longer than 10 seconds will actually be irritating to the TP, and will likely cause spasm or increased facilitation. Also, treatment sessions should not be scheduled too frequently. Nimmo found that daily treatments are too much for the patient to handle. He felt that it was important to give the body time to respond to pressure therapy by resetting itself and rebalancing its efferent-afferent control. Also, since mechanical bruising may occur after deep pressure therapy, the muscles tend to be sore for a day or two. Consequently, it is best to allow the patient sufficient time to recover. Obviously, patients with collagen vascular disease, cortisone or anticoagulant therapy, and the elderly, require a much lighter force to prevent severe bruising.

CONCLUSION

Trigger point therapy has been used on a haphazard basis within the chiropractic profession for decades. A specific technique was developed by Raymond Nimmo, D.C., to correct these myofascial dysfunctions. The technique was named "Receptor-Tonus" because Nimmo wanted to emphasize that a muscle cannot be treated or a joint adjusted without affecting the nervous system. The degree of muscle tonus is

constantly modified by the CNS via the receptor-cord-tonus reflex arc, and manual pressure on TP will alter this circuit. The reticular activating system (RAS) is also constantly modifying muscular tonus, which may explain the relationship between emotional and muscular "stress" [4].

Receptor-Tonus technique was one of the first "reflex" techniques in chiropractic. It does not require any forceful thrusting on spinal joints, because it describes spinal fixations of misalignments as secondary consequences of muscular imbalances. The method allows the chiropractor to view the patient as composed of countless neuromuscular "circuits" that may malfunction, rather than bones that "go out."

The ultimate success of manual pressure lies in not using too much or too little pressure.

Raymond Nimmo was one of the first chiropractors to shift from the standard "bone out of place" principle, to our modern "fixation" theory of motion dysfunction. Receptor-Tonus technique is the original chiropractic trigger point therapy method that has been used for years. The technique releases myofascial TP, thereby eliminating the CNS of irritation and undesirable neuropathy. Once the hypertonic muscles no longer restrict joint motion, these "muscular fixations" will be corrected. Used in this way, the technique can become the primary technique for some

doctors, especially those who choose not to perform thrusting manipulations.

The doctor must be acutely sensitive to the palpatory feedback from the patients muscle tone.

Receptor-Tonus technique should be considered for treating those patients in whom forceful manipulations are contraindicated, such as those with osteoporosis, dislocations or fractures, severe sprains, acute whiplash, severe discs, etc.

Trigger point physiology and neurology, as well as the documented myofascial referred pain patterns, should be thoroughly studied before the doctor attempts to use this therapy. Manual TP methods require sophisticated sensory-motor skills, similar to those needed for osseous manipulation. Receptor-Tonus technique, like any other specialized chiropractic technique, must be practiced and perfected. Attending some "hands-on" seminars in this technique, with those proficient in the method, is essential. [1]

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