

# THE USE OF TRANSCUTANEOUS ELECTRIC NERVE BLOCK ON TRAUMATIZED MUSCLES

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## Zusammenfassung

Es wird über eine Kombination von elektrischer Nervenblockade (JENKNER) und Trigger-Punkt Behandlung (TRAVEL and SIMONS) berichtet. Nach Stellen einer Diagnose - was wichtig ist - wird die Anode über einen Triggerpunkt angelegt, nicht über einen Nerv. Wenn die Diagnose korrekt war, verschwinden die Schmerzen oder werden gemildert. Der Autor benutzt diese Technik seit 1983 in zwei Industriebetrieben für akute und chronische Schmerzzustände mit gutem Erfolg. Drei Fälle werden stellvertretend berichtet.

## Schlüsselwörter

Elektrische Nervenblockade, Triggerpunkt, Anode, akuter Schmerz, chronischer Schmerz.

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## Summary

A combination of electric nerve block (according to JENKNER) and trigger point therapy (TRAVEL and SIMONS) is reported. After establishing a diagnosis - which is essential - anodal electrodes are placed not on the skin over the nerves, but over trigger points. If the diagnosis was correct, pain subsides or diminishes. The author has been using this technique since 1983 in two industrial settings for acute and chronic pain syndromes rather effectively. Three cases are reported as examples.

## Key words

Electric nerve block, trigger point, anode, acute pain, chronic pain.

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## Résumé

Voici un rapport sur une combinaison du blocage électrique des nerfs et de la thérapie par "trigger points" (TRAVEL et SIMONS). Après d'arriver à une diagnose, ce qui importe, une anode est placée sur un trigger point, mais pas sur un nerf. Si la diagnose était correcte, les douleurs se perdent ou se diminuent. L'auteur fait usage de cette technique depuis 1983 dans deux institutions industrielles pour des douleurs aiguës et chroniques avec bon succès. Trois cas sont présentées.

## Mots clés

Blocage électrique, trigger points, anode, douleurs aiguës, douleurs chroniques.

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Electrotherapy has been used in one form or another and with varying degrees of success for pain control for hundreds of years. Trial and error was the usual method of determining what type of electrical wave form was to be used. Electrotherapy to muscle is frequently designed to stimulate movement of the muscle for strengthening, development, and regeneration. This presentation suggests the use of electric nerve block wave forms normally used for pain control to be used in trigger points of traumatized muscles (after Travell and Simons), thus causing a relaxation of the taut bands of muscle fibers.

In the past, there was a reluctance of much of the medical profession to even try electrotherapy. This is still very true today. In 1759, The Reverend and Doctor John Wesley appealed to his colleagues to try it. In part, he asked that they "would condemn they know not what: that they would hear the cause, before they pass sentence: that they would not pre-emptorily pronounce against electricity, while they know little or nothing about it. Rather let every candid man take a little pains to understand the question before he determines it." Now we say, "Try it! You might like it!"

It is always necessary to establish a working diagnosis prior to treatment. It may be difficult in some cases to differentiate among the various "soft tissue" ailments in an injured area. Is it cutaneous, muscle, tendon, ligament, bursa, fascia, nerve, or joint? Anything but a mechanical cause for the pain may possibly be helped by the electric nerve block method of treatment.

Today there are hundreds of pain clinics and many different kinds of T.E.N.S. units available in the USA and abroad. Although they are effective in varying degrees for various illnesses, the mode of action remains a mystery. We still do not know exactly what the electric wave impulse does, but it might help to see where this action takes place.

In a series of pictures of the soleus muscle of a rat, the motor end plate in the muscle is shown with a single nerve fiber going to each one. This is enlarged 100x. Enlargements for 150x demonstrate a single nerve fiber entering a motor end plate and branching into as many as 4 or 5 branches. Then with an electron microscope, enlargements of 20,000x show the synaptic vesicles containing acetylcholine transmitter which is released into the primary cleft space and is split by acetylcholinesterase that is present in the post-synaptic membrane. The field is wide open for work in this area for someone to tell us what effect, if any, the electric wave form might have at this synapse.

Dr. Jenkner's work has already been discussed. The criteria of his electric impulses for proper results are worthy of repeating:

1. A galvanic (DC) current is used.
2. Low frequency impulses of about 35 cps of DC are used.
3. A single impulse of very short duration with intermittent pauses.

There is a duration of 100-200 microseconds.

There is a monophasic square wave of 7 pulses per group, and 5 groups per second.

There is a variable voltage and current creating a trapezoidal group.

4. Electrodes usually at a 1:10 ratio in size, the smaller electrode over the anodal, positive fields. This concentrates the electrical force and the larger, cathodal electrode dissipates the electrical forces.
5. The duration of treatment is usually 20 minutes with these excellent "carry-over" effect impulses.

I would suggest that Dr. Jenkner's T.E.N.S. be applied to traumatized muscles. The "Bible" on the subject, MYOFASCIAL PAIN AND DYSFUNCTION-THE TRIGGER POINT MANUAL by Travell and Simons, 1983, beautifully describes the location of muscle trigger points and should be used as a guide.

Briefly, I am using a combination of the two treatments: application of Dr. Jenkner's electrical nerve block wave forms and applying them to the trigger points of pain in traumatized muscles. I have used this method since 1983 in two industrial settings where acute and chronic pain sources are present. The usual result is one of lessening or curing the painful condition.

As an example of a few cases of traumatized muscle, let us look at the application of the electrodes to treat a few muscles.

Levator Scapulae Muscle gives a stiff neck and limits the rotation of the head. The head is held rigid and to look to the side, one turns the entire body and/or the eyes. The scapula is elevated. This muscle is very commonly involved. The smaller anodal electrode is placed over the muscle trigger point and the larger cathodal electrode is placed on the chest on the same side.

Supraspinatus Muscle mimics a subdeltoid bursitis. Pain refers to the deep deltoid area and down the arm to the elbow and forearm. It abducts the arm and is injured by carrying heavy objects, such as a heavy suitcase, or by lifting heavy objects over head. An injury frequently also involves the trapezius, deltoid, and infraspinatus muscles. Placement of electrodes is similar to Levator Scapulae Muscle.

Scalene Muscles (3) are called "The Entrappers" and are located deep in the lateral neck and first and second ribs. They are frequently overlooked. They can radiate pain anteriorly, laterally, or posteriorly. Frequently the pain is radiated to the shoulder and arm. The anodal electrode is placed over the trigger point and the cathode is placed at the base of the neck posteriorly on the side involved.

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