

The *Elegance* of Dermoneuromodulation

Touch rooted in modern neuroscience

Massage therapy emphasizes the power and practice of touch. Most of what we do involves skin-to-skin contact. In that simplicity, we interact with our clients' deepest complexity. From moment to moment, their bodies give us palpable feedback. If we listen and respond well, the results of a massage can be extraordinary. Dermoneuromodulation is one way practitioners are making that happen.

By Jason Erickson



Dermoneuromodulation (DNM) is a gentle method of interacting with clients to help them resolve pain, regain function, and feel better. It was developed by Diane Jacobs, a Canadian physiotherapist specializing in pain science and the treatment of painful conditions. During her 40 years of practice, Jacobs became interested in Ronald Melzack, who developed the original Gate Control theory of pain along with Patrick Wall, and who later developed the NeuroMatrix model of pain. In 2007, Jacobs conducted a cadaver study that demonstrated how peripheral cutaneous nerves divide into rami, which spread outward into the underside of skin. This inspired her to develop a new conceptual approach to manual therapy for clients in pain: *dermo* (skin); *neuro* (nervous system); *modulation* (change); which equals *dermoneuromodulation*, or touching the skin to interact with the nervous system and effect change.

DNM is a pain-free technique that places little physical demand on the client or the therapist. In practice, it may be blended into relaxation massages and therapeutic sessions, or combined with specific modalities such as Active Isolated Stretching, myofascial release, orthopedic massage, strain-counterstrain technique, and others. The basic hands-on skills of DNM are similar to many forms of massage, but the underlying concepts are rooted in modern neuroscience.

A SHIFT IN PERSPECTIVE

For massage therapists, learning DNM is a paradigm change that emphasizes clinical reasoning based on neuroscience.

It is important to understand that pain and tight muscles are not evils to be banished, but are instead protective responses produced by the nervous system. Of these protective responses,

the motor aspects are flinching and muscle tightness (“bracing”), and the sensory experience is pain or other discomfort. These may persist long after any injury or danger has passed. If we make the nervous system happy, however, it may abandon these protective responses.

Anatomically, the nervous system includes central components (brain, nerve roots, and spinal cord) and peripheral components (deep and cutaneous nerves). During embryological development, the

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brain, nerves, and skin all arise from the same ectodermic tissue. It might be said that the skin is the exposed portion of the brain; if the brain is a computer, then the skin is a keyboard.

As nerves proceed from the spinal cord to the skin, they pass through many tissue layers. These layers move and shift, and may be negatively impacted by both internal and external stimuli. The nerves pass through small, contiguous gaps, or tunnels, through these tissue layers. The points where nerves pass from one layer into another are subject to shearing forces that may impinge nerves and cause localized ischemia and nociception, which may lead to pain, increased muscle tension, and other protective responses. When this occurs, it is referred to as nerve compression syndrome, or tunnel syndrome. Myofascial

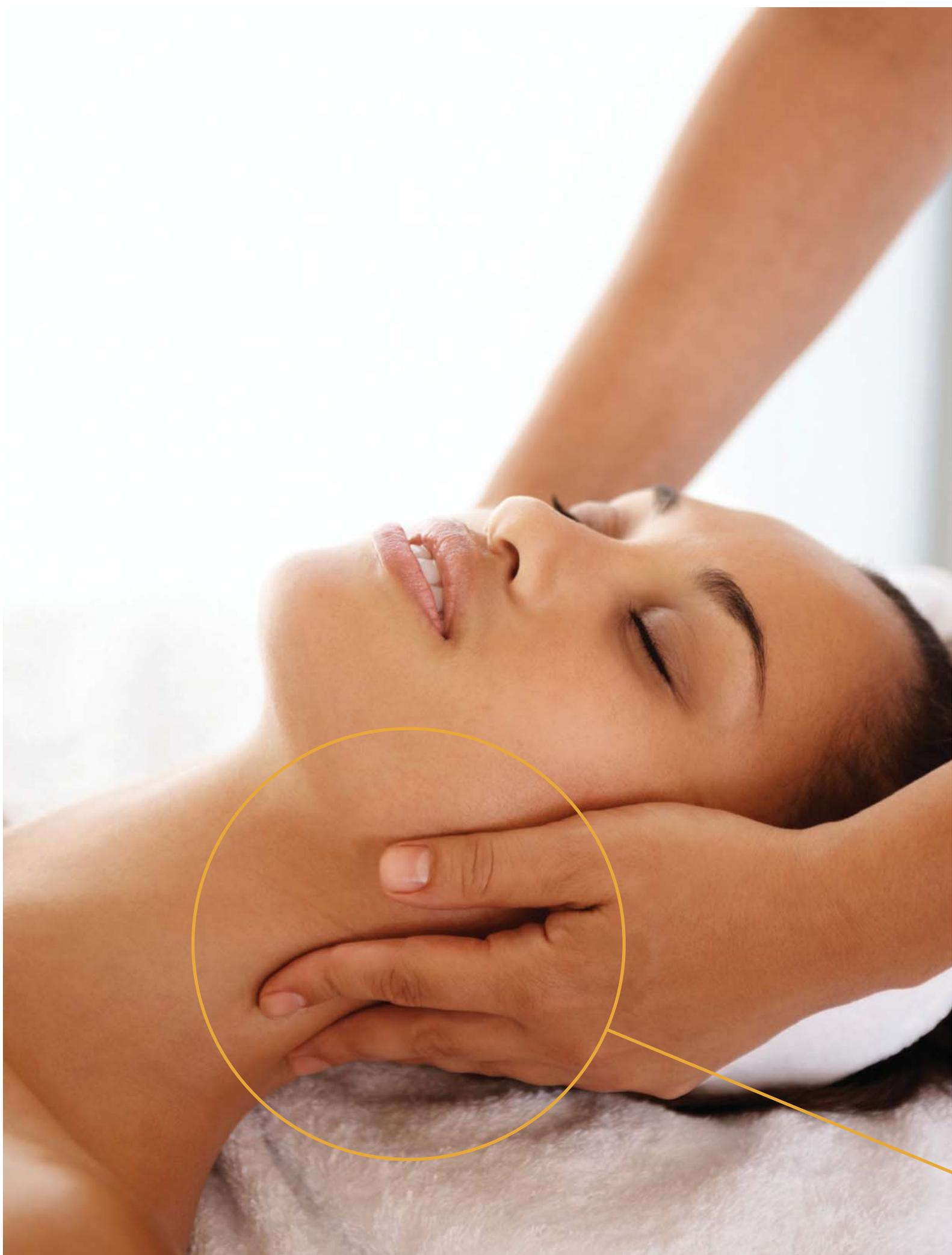
pain can often more correctly be attributed to tunnel syndromes.

Moving nerves (neurodynamics) helps restore nerve health and well-being. Since tunnel syndromes often involve cutaneous nerves (found throughout the skin and subcutis), it would seem that moving nerves attached to the skin could resolve most musculoskeletal pain, i.e., by moving skin into areas where the nerves are embedded. This is done without pressure sufficient to damage or deform the underlying muscle, fascia, or other soft tissues. DNM uses body positioning and/or skin stretching to resolve discomfort from tunnel syndromes, and DNM practitioners may also use some form of athletic taping to assist clients between treatment sessions.

HOW DOES IT WORK?

The skin is full of innervation, much of it right at the skin’s surface. Hilton law states: “The nerve supplying a joint supplies also the muscles that move the joint and the skin covering the articular insertion of those muscles.”¹ Noting this, it would make sense then that whatever we do to skin affects motor output indirectly (reflexively).

Mechanoreceptors adapt at different speeds and in different ways. Fast adaptors fire when they detect movement, then shut off until new movement stimulates them again, similar to a motion detector light. Slow adaptors remain turned on, transducing information and firing action potentials into the spinal cord the whole time a stimulus is operating, regardless of whether it moves or doesn’t, like a bathroom scale.



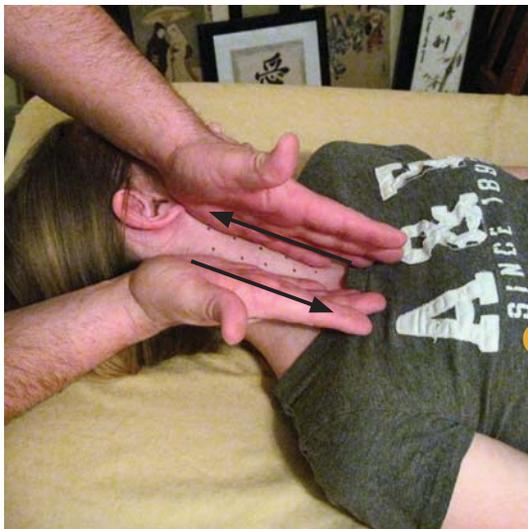
KEY IDEA

Give the skin's mechanoreceptor system as much slow, gentle, and continuous stimulation as possible without adding any more nociceptive input.

BASICS OF SKIN STRETCH

When we stretch the skin, we shift multiple tissue layers and the nerves embedded within them, and nerve compression may be relieved. Slow-firing mechanoreceptors, such as Ruffini corpuscles, respond to the sustained pressure of slow skin stretching. Their input to the brain may trigger a positive response: descending modulation of pain and excess muscular contraction.

Skin can be stretched in a variety of ways to provide relief. Here are some examples of DNM applied to resolving pain and tightness in common problem areas.



Anterior Neck

The anterior neck area is frequently involved in varied conditions such as headaches, jaw pain, torticollis, vertigo, whiplash, and many more. This example focuses on providing some relief to the superficial cervical plexus, a complex network of cutaneous nerves that determine whether the muscles will be relaxed or tight, and whether the area feels

good, painful, or otherwise.

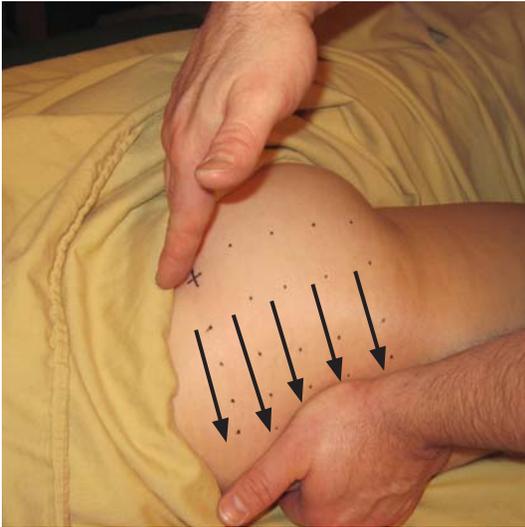
1. With the client supine, gently palpate the anterior neck, particularly along the sternocleidomastoid (SCM). The tissues may feel firm, ropey, tense, or otherwise irritated. The client may report pain or other discomfort. Choose a side to address.
2. Slowly and gently turn the client's head slightly away from the side you will work on. A few degrees may be enough. The client should not be in any discomfort because of the positioning.

3. Locate the SCM and lightly place the edge of each hand on either side of it. Gently let the skin of your hands sink in until you feel your skin slightly “adhere” to the client's.
4. Slowly and incrementally shift your hands in opposite directions along either side of the SCM, stopping when you feel a slight resistance, then continuing as it subsides. The hand on the lateral border of the SCM should move caudally toward the clavicle, while the hand on the medial border of the SCM should move cephally toward the ear.
5. Continue for about 2 minutes. Feel for softening of the anterior neck/SCM; the client may report changes in sensations. If the tissues are slow to respond, continue for another 1–2 minutes. When finished on one side, you may switch sides and repeat this procedure.

Posterior Pelvis

The posterior pelvis/gluteal area is frequently involved in gluteal pain, impaired gait, low-back pain, sciatica, and other conditions. This example focuses on providing relief to the cluneal nerves—long, lateral branches of dorsal rami extending downward from the lumbar spine that spread over the iliac crests and wrap around the buttocks down to the greater trochanter.

1. With the client prone, find a tender spot near the iliac crest to one side of the sacrum. Use one hand to continue monitoring this spot. The monitoring hand marks the place and feels for changes in the tissues. Stop pressing into the tender point.
2. Place your other hand near the greater trochanter with your palm open. Let your skin gently sink into the client's until you feel it gently adhere.



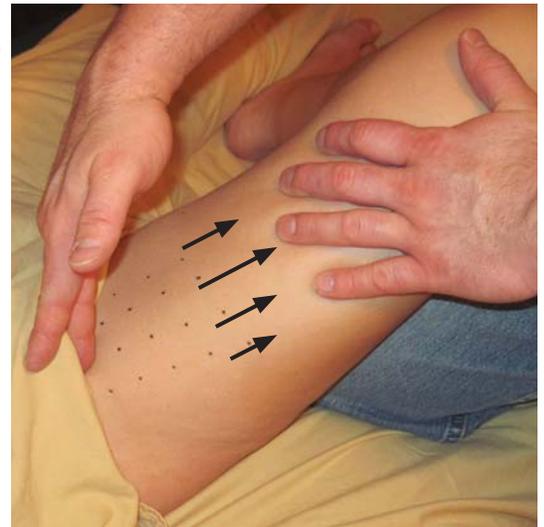
3. With your arm straight, gently and slowly lean into the back of the client's trochanter. If the client's skin shifts laterally, go with it, pausing when you sense resistance. This does not require deep pressure, but it does require good body mechanics.
4. Use your monitoring hand to feel for softening at the tender point; pressing into it should result in little to no pain for the client. Stop pressing as you stretch the skin. Go slow and give the client's nervous system time to respond. If you hold a position for 20–30 seconds and don't feel change, try a different direction of skin stretch and/or a different client position.
5. When you feel a softening at the tender point, maintain your position and slowly release after a few minutes. Upon retesting the tender point, most or all of the pain should be gone. Additional tender points in the gluteal area may be addressed similarly.

Anterior Pelvis

The anterior pelvis/iliopsoas area is often involved in groin pain, back pain, quadriceps tightness, knee pain, and other issues. This complex area is home to the superficial and cutaneous inguinal nerves, including the lateral cutaneous nerve of the thigh, branches of the femoral nerve, the genito-femoral nerve, and the ilioinguinal nerve. These wrap around the sides and front of the lower abdomen and anterior pelvis, around the thigh, and into the pelvic floor. This example focuses on providing relief to the femoral nerve.

1. This version is best done with the client supine and a large bolster propping the client's knee(s) up. However, it can be done with the client's knee bent and the foot on the table. Shown here, the client's knee is also laterally rotated to rest on the therapist's knee.
2. Palpate just below and medial to the anterior superior iliac spine. You may find a large, tender "cord." Use one hand to monitor this tender point.
3. Place your other hand on the client's skin at the front of the thigh, a few inches distal to your monitoring hand, with your palm open. Give your skin time to sink into the client's and stick.
4. Gently traction the client's anterior thigh skin away from the monitoring hand, generally toward the knee. Pause when you feel resistance.

5. When you feel the tender point soften, use the monitoring hand to verify that the tenderness is mostly or completely gone. Stop pressing into the tender point; hold the skin stretch for a few minutes.
6. Slowly release the skin and retest the tender point; it should be softer and less painful. You can work additional tender points both lateral and medial to this in a similar manner.



The Basic Process

1. Find a tender point.
2. Slowly draw the skin away from the tender point.
3. Use multiple stretch vectors as necessary.

Where to Learn

A Dermoneuromodulation seminar will be held in Eagan, Minnesota, July 26–28, 2013.

For seminar details and more information, visit

www.dnmseminar.info or contact jasoneseminars@gmail.com.



Jason Erickson and Diane Jacobs

Meet the Founder

Diane Jacobs lives and works in Weyburn, Saskatchewan, in her own practice, Sensible Solutions Physiotherapy. She maintains an active online life writing, studying, and moderating at www.somasimple.com, and administering a pain and neuroscience Facebook page for manual therapists. In 2008, she helped found the Pain Science Division of the Canadian Physiotherapy Association and remains the executive communication liaison. She can be found on Facebook, on her blog (www.humanantigravitiesuit.blogspot.com), and at her home page (www.sensiblesolutionsphysiotherapy.com).

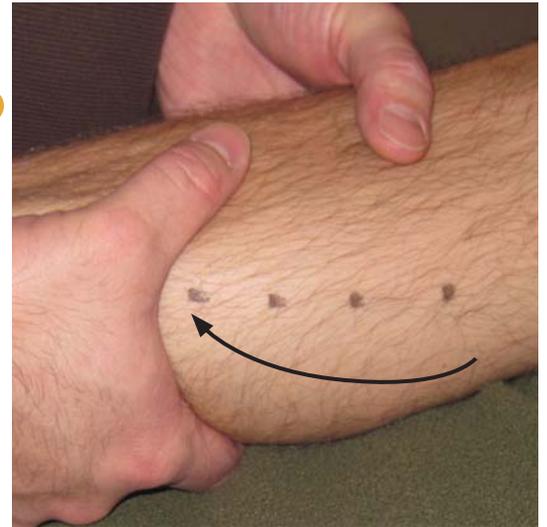
Arms and Legs

There are many situations that may arise with a client's arms and legs. This example is a simple approach that can be tried for various types of arm and leg pain, not including fresh injuries.

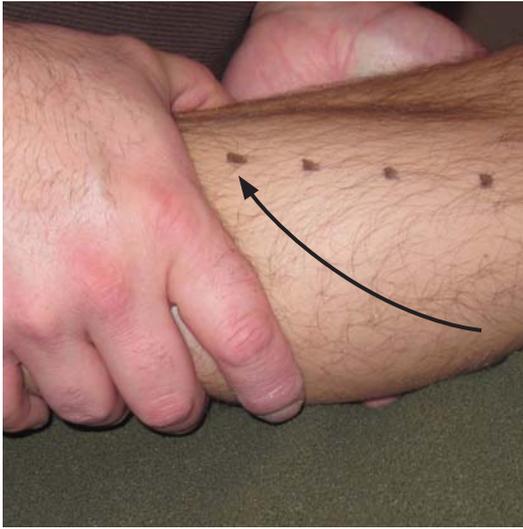
1. Locate a tender point somewhere on the limb. Use one hand to monitor this point without pressing in.
2. With the other hand, gently grasp the skin on the opposite side of the limb, near or distal to the tender point. Slowly gather the skin with this hand, gently stretching the skin away from the tender point.
3. Feel for a softening at the tender point. Go slowly, and change the position/direction of the skin stretching as needed. When you feel softening, give it a little time and then retest to see if the pain is mostly/completely gone. Continue to hold the skin stretch, but stop pressing in.
4. After a few minutes, slowly release the skin and retest the tender point to verify that the pain is still gone. You may address more tender points in the limb in a similar manner.

DNM for Muscle Cramps

Muscles cramp for many different reasons, but muscles cannot cramp if the nervous system does not initiate the contraction. Because the same nerves that innervate muscles usually have cutaneous branches further away, or cutaneous branches from some other nerve directly above and more superficially, DNM may be used to address muscle cramps. The brain can pinpoint the



location and help correct the situation. Depending on the underlying cause of the cramps, DNM may or may not result in lasting relief; in practice it seems to provide a means of reducing duration and severity of common muscle spasms that are not caused by recent athletic activity (e.g., immediately after a marathon). This example presents a simple method of addressing muscle spasms in the legs.



1. When a leg muscle spasms, place one or both hands on the skin around that part of the leg.
2. Get a soft but secure grip; do not press into the affected muscle(s).
3. Gently twist the skin around that portion of the leg as if sliding it around the spasm.
4. Feel for a rapid decrease in the muscle spasm. If this does not occur within a few seconds, gently twist the skin in the opposite direction around the leg.
5. Feel for a rapid decrease in the muscle spasm. When it seems to have passed, continue holding the skin for another 30–60 seconds.
6. Gently release the skin. Move and stretch the affected area.

The examples provided here are easily incorporated into nearly any massage. Many more DNM applications exist for addressing pain and tension throughout the whole body. Some are performed with clients in a side-lying position; some incorporate bolsters, wedges, or more complex client

positioning. A DNM practitioner may also develop novel applications to fit the needs of the moment, or use therapy tape to increase functional and pain-relieving benefits.

DNM AND MASSAGE

In my practice, DNM has revolutionized the way I work with clients suffering from chronic and/or complex pain problems, sports performance concerns, and chronic tension patterns. Educating my pain clients helps them manage their symptoms. Educating athletes about the basic neurology of their performance concerns is an important step toward improvement. Educating my chronic-tension clients about how their central nervous system may respond well to lighter, targeted work makes it easier for them to understand that it really is possible to experience lasting change and long-term relief.

When clients are new to DNM, I talk to them about the technique during the client intake. When I use DNM during a session (sometimes it is the only method used), clients usually remain aware and responsive, though many mention feeling a deep sense of relaxation. I may have clients verbally confirm the presence of tender points as I palpate, then give feedback once I have begun to stretch their skin. Most are surprised by how quickly pain and tension dissipate. Athletes are pleased when their flexibility and strength improve. Clients for whom traditional massage is contraindicated

are happy to find a method that is safe and effective for them.

However, DNM is not a magic method that miraculously works on everyone. For example, “wind-up pain” (in which spinal nerve roots become increasingly sensitive to stimuli) may contraindicate DNM (and most other methods of massage or manual therapies). DNM is not very effective for fibromyalgia, nor does it significantly reduce the pain of acute new injuries requiring medical treatment, such as tears or fractures. DNM may reduce the pain associated with conditions like arthritis and tendinitis, but those clients may also need other forms of therapy to achieve maximum results.

DNM is a great fit for massage therapists who wish to improve their understanding of pain and tension patterns and conditions. Spa-oriented massage therapists may find that DNM is a profoundly relaxing addition to their skill set, particularly for challenging clients. For those who specialize in orthopedic, sports, or other massage niche markets, DNM provides a powerful means of leveraging knowledge into real results, even with stubborn cases that previously failed to respond. **m&b**

Note

1. Anne E. Jacobs et al., eds., *Stedman's Medical Dictionary for the Health Professions and Nursing*, 5th ed. (Baltimore: Lippincott Williams & Wilkins, 2005), 673.

- 6 Jason Erickson has practiced dermoneuromodulation since 2010. He is a certified massage therapist, personal trainer, corrective exercise specialist, and an advanced Active Isolated Stretching practitioner. Erickson co-owns Keep In Touch Massage (www.keepintouchmassage.net) in Eagan, Minnesota. He can be reached at jasoneseminars@gmail.com.