

## LOW BACK PAIN

The low back is commonly considered to include all the structures that make up the posterior aspect of the abdomen between the tenth thoracic vertebrae (T10) and the distal extent of the sacrum (S5). The most important structures include the vertebrae themselves, the kidneys, muscles in the area, blood vessels, lymphatics, and the nerves that pass from the lumbar spine and then through the area (primarily the sciatic nerve). The major muscles include the psoas major, quadratus lumborum, some of the multifidus muscles, the spinalis dorsi, longissimus dorsi, iliocostalis dorsi, latissimus dorsi, and portions of the iliocostalis lumborum.

Pain occurring in the dorsal area of the human body between the mid thoracic area and the sacrum is defined as *low back pain*. Pain in the area of the gluteus maximus and gluteus medius muscles that radiate across the sacral region is also commonly referred to as *low back pain*, though erroneously. The distribution of *low back pain* varies from patient to patient, ranging from diffuse pain over the entire region to an isolated unilateral "pinpoint" locus of pain.



**An area of high skin resistance associated with an inflamed zone occurring unilaterally over the T12 to S4 nerve roots**

*Low back pain* is often associated with fever, fatigue, disease or injury. Diseases that cause *low back pain* include ankylosing spondylitis, osteoporosis, tumors of the spine, and diseases of the lungs, kidneys, and abdominal organs. Disease or injury to the intervertebral discs may cause *low back pain* when impingement on nervous tissue occurs. Pressure on peripheral nerves in the area of the piriformis muscle may create *low back pain* similar to that associated with lumbar disc disease. In some cases, localized viral infection of peripheral nerve roots (shingles, for example) in the lower thoracic or lumbosacral areas may be responsible for *low back pain*.

Muscular fatigue, mechanical stress, and external trauma to muscular or connective tissue may also cause *low back pain*. Muscular imbalance between the muscles supporting the lower spine may be responsible for some cases of *low back pain*.

Pressure on the lower thoracic or lumbar interspinous ligaments may imitate the stereotypic referred pain patterns of one or more trigger point formations and may be responsible for *low back pain*. In many cases, trigger point formations may be the primary cause of *low back pain*, but the most common source is soft tissue inflammation resulting from muscle strain.

The presence of soft tissue inflammation may be established through differential skin resistance (DSR) survey, including inflammation associated with trigger point formations or extrafusal muscle spasm.

### **Treatment**

Treatment will depend on establishing the sources of pain.

### **Application:**

- Place a negative electrode over the inflamed zone and a positive over an associated area. Preset an electrical stimulation unit to deliver a visible contraction, at 7 Hz. Stimulate for 10 minutes.
- Then, set the unit to deliver a medium frequency current, with a duty cycle of 10-seconds on and 10-seconds off, sufficient to produce a near tetanic contraction of the involved muscles. Stimulate for 10 minutes.
- Manipulate the soft tissues in and around the inflamed zone to eliminate any adhesions that may be present.
- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.5 W/cm<sup>2</sup>. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes.

### **Trigger Points**

The second most common source of *low back pain* is referred pain from trigger points. Other sources of low back pain include soft tissue inflammation of the paraspinal regions from T12 to S4 (usually occurring unilaterally), extrafusal muscle strain and spasm, osteoarthritis associated calcific deposits, the Piriformis Syndrome, tonic neuromuscular imbalance, and discogenic disease.

The following trigger point formations may, singly or in combination, refer pain into the low back area: Latissimus dorsi (abnormal), Multifidus (S4), Longissimus thoracis (L1), Longissimus thoracis (T10-T11), Multifidus (L2-L3), Multifidus (S1-S2), Iliocostalis lumborum (L1), Iliocostalis thoracis (T11), Caudal (lower) rectus abdominis, Gluteus minimus, and gluteus-medius.