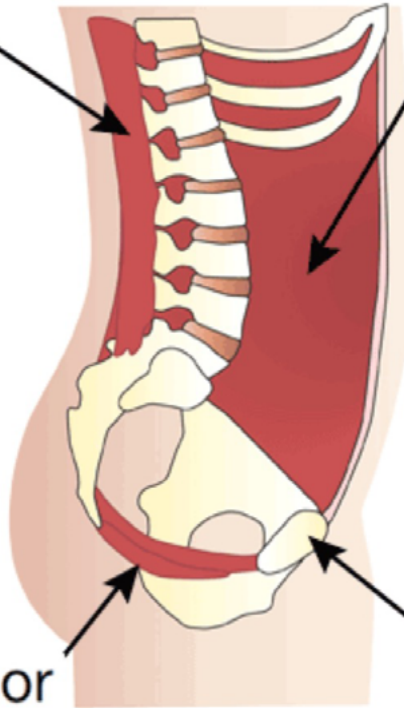


NielAsher.

Advanced Trigger Point Techniques

Multifidus

Transversus
Abdominis



Pelvic Floor
Muscles

Pubic
Bone

TRIGGER POINT THERAPY COURSE

Lower Back Pain

NAT Pro Series:

Lower Back Pain Trigger Point Therapy Course

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Welcome

60% – 90% of adults experience back pain at some point in their lives and it is rated second to respiratory illness as a reason for symptom-related visits to family doctors. Low back pain is the number one cause and cost of work related disability (\$26.3 Billion in 2008). A significant cause of lost work and productivity, (it is the second most common cause of missed work) back pain causes significant levels of anxiety, pain and discomfort and has been linked to psychological depression.

Even though more than 90% of cases can be effectively managed with conservative measures there is a plethora of conflicting advice and therapies and patients are often left confused, in pain and compelled to seek help.

Whatever the underlying cause the body always attempts to protect us. Trigger points are part of our ‘protect and defend’ mechanism. Any change in spinal mechanics over time can manifest as areas of tight muscles or tender spots (“trigger points”). Trigger points can develop in muscles for a number of reasons. When present they cause the host muscle to be shorter, tighter and tenser they also add to the cycle of increased input to the peripheral and central nervous system.

This course is designed to help you understand the most common causes of low back pain, and to offer you a clear hands-on pathway for its treatment and management. We passionately believe that an understanding of trigger points and how to use them will give you extra valuable tools for treatment. Weaving trigger points into your massage or soft tissue routines can have truly profound effects. Combine this with self-help, stretching and advice on lifestyle modification and you should be able to help the majority of those in pain.

At the end of this course you will find a reflective learning exam. This is not a “pass or fail” test but a mechanism to see that you have understood the information and can apply it for the good of your patients. We are excited to share this information with you and don’t forget that if you have any questions we are here to support you.

Video Material

This course is accompanied by video footage to aid your understanding and ability to treat patients with lower back pain. We recommend you view the video material first and then refer back to it after you have read the course. The video material can be found by clicking on this link or by copying and pasting the following link into your browser:

<http://www.nielasher.com/pages/trigger-points-lower-back>

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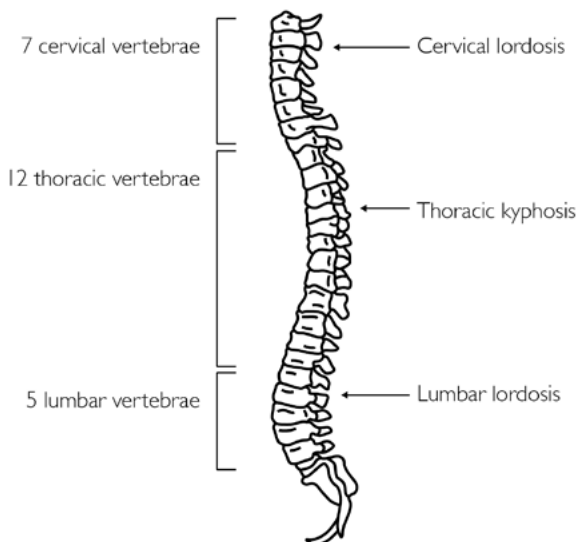
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References

What causes Low Back Pain (LBP)?

It has been suggested that low back pain is an inevitable result of walking upright (Harari)¹. As the force of gravity acts upon the skeleton and its muscular and ligamentous armature it is distributed via the fascia into three dimensions. Myers (2013)² talks of an internal cohesion-compression of the body where it is both collapsing in on itself and pushing out from itself in a constant state of equilibrium, a concept called 'tensegrity'. Tensegrity is seen nowhere better than in the spine; if the spine were a straight, rigid stick it wouldn't be able to compensate for the multiple forces acting upon it. Therefore it is specifically arranged in a series of curves (cervical and lumbar lordosis and thoracic kyphosis). Along with the spinal discs, these curves are essential for shock absorption and are maintained by an interblend of muscles and ligaments that fire up in cyclical sequences.



Even though all of the spinal vertebrae are designed to move, the spine also demonstrates specialization in its movement patterns, allowing us to exploit our three dimensions. The direction of movement is mainly determined by the orientation of the spinal “facet joints”: forward and backwards movements (flexion and extension) from the low back, sideways from the neck (side bending) and rotation from the thoracic spine (although this is limited by the ribs). It is worth noting here that these facets themselves can be the source of lower back pain. The other important movement is a type of nodding backwards and forwards which is translated through the sacroiliac joints (nutation and counter-nutation).

Layered on top of the vertebrae are a series of ligaments that are strong and specialized to resist directional forces. They again can be a source of pain and may even develop “trigger points” (see later). On top of the ligaments is a complex but beautiful system of muscles; moving from deep to superficial will give us vital insight into spinal mechanics. The deepest spinal muscles are used to make minute adjustments in vertebral orientation (rotatores, interspinalis and intertransversalis). The next group we meet is the multifidus; its fibers are large and strong, bridging several vertebrae at once and helping to maintain posture. The next layer of muscles connects the vertebrae to another from one to six segments upwards. This is the erector spinae and it is divided into three columns. Moving outwards from the center it forms a “wing like” structure - spinalis, longissimus and iliocostalis. The erector spinae don’t really keep the spine erect (that’s the job of the psoas and the multifidus) but they do extend the spine from a flexed position. Side-bending is mainly performed by the quadratus lumborum muscles. Arranged over these muscles we have broader, flatter and more superficial muscles such as the latissimus dorsi.

Added to this hardware is the software that the brain uses to co-ordinate and sequence movement. All of the above structures feed information to the brain in a constant stream affording it orientation (proprioception), as well as force and direction (velocity). The brain responds by organizing

movement sequences hierarchically in functional units. These functional units mainly consist of a prime mover (agonist), an opposing muscle force (antagonist) and other muscles that either fix the local joint (fixators) or help the prime mover (synergists).

86% of low back pain is mechanical and may come from any one of the above structures (bones, discs, facet joints, ligaments and or muscles). 14% of low back pain however may come from a more sinister origin so it's vitally important to understand which tissues are causing the symptoms.

Epidemiology - who gets low back pain?

- 60% - 90% of adults experience back pain at some point in their life.
- Incidence with age (peak 35 - 55)
- 90% resolve in 6 weeks
- 7% become chronic
- M/F equally affected
- 85% never given precise pathological or anatomical diagnosis
- 5th leading reason for medical office visits
- 2nd to respiratory illness as reason for symptom-related MD visits

Which muscles are implicated in low back pain?

- Deep spinal mm (small) - multifidus
- Lumbar erector spinae
- Gluteus medius
- Hamstrings
- Rectus abdominis
- Q/L
- Iliopsoas
- Piriformis (pseudosciatica)

- Levator Ani
- Soleus

Muscles overview

The body tends to shut down around pain to avoid further noxious stimuli. Part of the way it does this is by using trigger points (see “Trigger Points on Demand”). Depending on how long the symptoms have been there we see certain “classic” trigger points in LBP.

For example - The erector spinae, multifidus, iliopsoas, quadratus lumborum, piriformis, rectus abdominus and hamstring muscles manifest trigger points in patients with disc problems. And the gluteus medius muscle ‘switches-off’ around sacro-iliac problems and develop trigger points.

Here are the key muscles:

Multifidus

The multifidus muscle has a deeper and more superficial arrangement; it is intimately involved with most types of LBP and often manifests trigger points. Because the muscles are so deep you need to use firm pressure to work on these trigger points.

Erector Spinae

Interestingly and contrary to what some of us have been taught the erector spinae don’t hold the spine erect! Most fibers are electrically silent during postural work (Kippers 1984)⁵. This muscle group is designed to activate during extension from flexion, i.e. standing upright from bending forward. The erector spinae has three divisions each of which may manifest a trigger point. According to Simons, Travell, and Simons,

individual pain patterns of several trigger points that refer pain to the Lumbosacral region may blend into each other.

Piriformis

The piriformis takes its origin from the lower part of the sacrum but it also often gets involved with the protective patterns. It has been suggested that when the piriformis muscle gets tight, it can compress the sciatic nerve, or even the blood vessels to the nerve, (vaso nervorum) which can lead to (pseudo) sciatica. Remember that 17% of people have a sciatic nerve that runs through the piriformis muscle.

Rectus Abdominus

The rectus is an antagonist to the multifidus muscle and may either get involved with LBP due to reciprocal inhibition or it may be a source of LBP itself. It is also interesting to note that trigger points in the lower rectus may also cause diarrhea and symptoms mimicking diverticulosis or gynecological disease.

We have often found that treating trigger points in the rectus adds the finishing touch in some patients, or it can also be the reason why the lower back trigger points don't stay released.

Iliopsoas

Mechanically, the iliopsoas has an intimate relationship with maintaining the lumbar spinal lordosis and is often involved in mechanical LBP, but that is not the whole story. In her book *The Vital Psoas*, Jo Ann Staugaard-Jones also describes the physical, emotional and spiritual aspects of the iliopsoas. Staugaard-Jones talks of the iliopsoas as two distinct muscles: the psoas major (one of the deepest core muscles) and the iliacus.

The psoas, she maintains, is the only muscle that connects the upper body to the lower (spine to legs) and integrates deeply with the nerve and energy systems: “It is enervated by the lumbar nerve complex (lower back) and when released, helps energize subtle body systems!”

Glutes, Piriformis and Hamstrings

Along with the tight glutes and piriformis the lower back muscles tend to form a triangle of tight, spastic and fatigued tissues. Postural changes also cause tension in the hamstring muscles, which also often manifests trigger points and can ache after exercise.

Hamstrings

We often find trigger points in the hamstring muscles associated with LBP. Sometimes this is a cause-and-effect relationship, from a trapped nerve (radiculopathy) in the spine (sciatica); in these cases not all of the information/trophic input reaches the muscle fibers and the muscles may become tight and full of trigger points. The corollary is also true; sometimes a tight hamstring will have a negative mechanical effect on the lower back.

Quadratus Lumborum (Q/L)

The myofascial pain maps for the Q/L tend to radiate into the pelvis even though the trigger points are higher in the spine. Taut bands in the quadratus lumborum muscle can contribute to scoliosis. The Q/L is often involved in any disc pathology literally bending the patient to one side (especially in the morning).

Levator Ani – Sacral Pain

The levator ani muscle consists of the pubococcygeus and the iliococcygeus muscles. Together with the coccygeus muscle, these

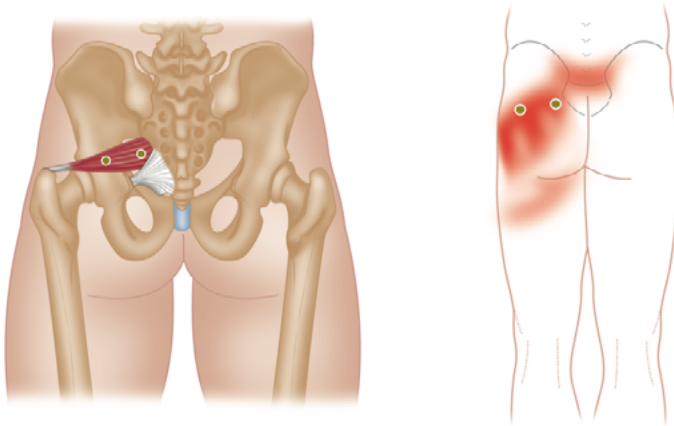
muscles form the pelvic diaphragm (the muscular floor of the pelvis). Trigger points in the levator ani muscle have been implicated in low back pain syndromes.

Soleus – Sacral Pain

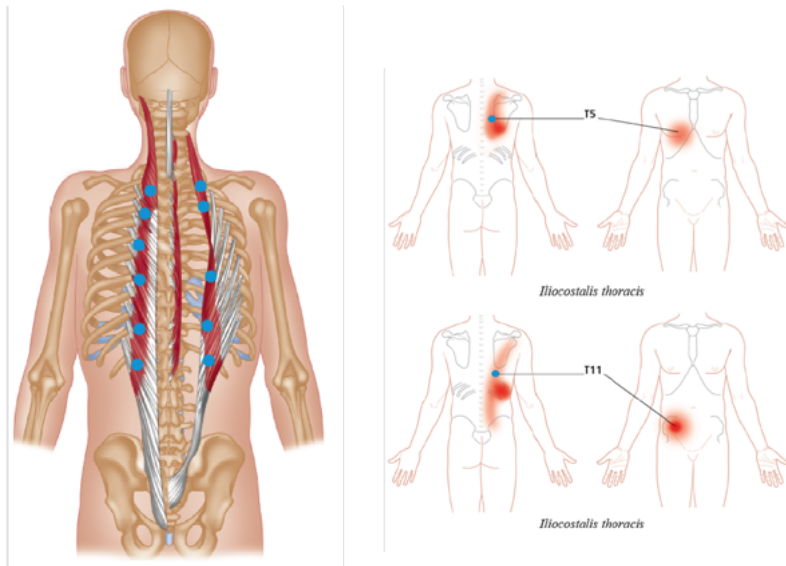
The soleus is a “classic” example of a trigger point whose myofascial pain map is remote from the origin. The soleus is deep in the calf, yet in some cases a trigger point in the soleus can refer pain to the coccyx area. We have seen this personally and it is fascinating how treating this trigger point relieves the low back pain.

(The image on the right details the trigger point and pain map)

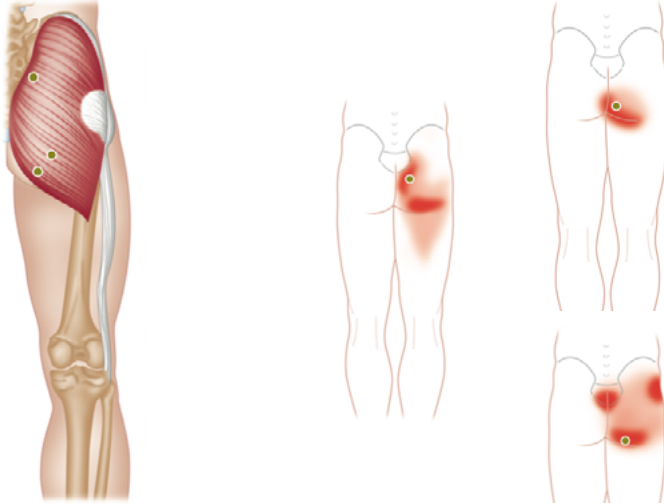
PRIFORMIS



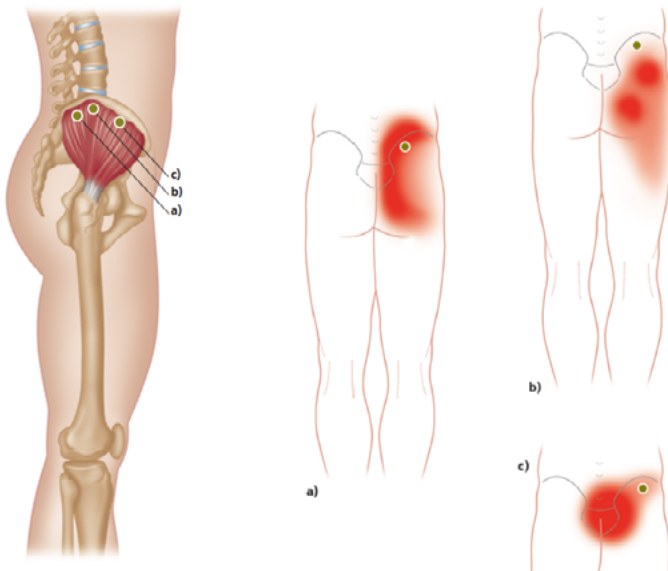
LUMBAR ERECTOR SPINAE



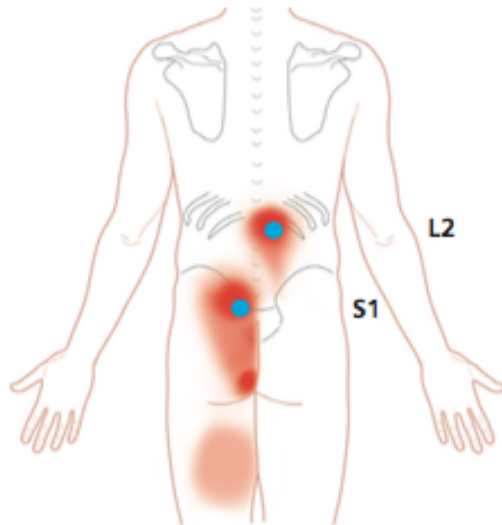
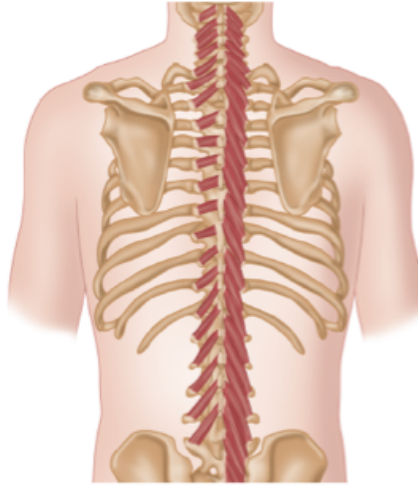
GLUTEUS MAXIMUS



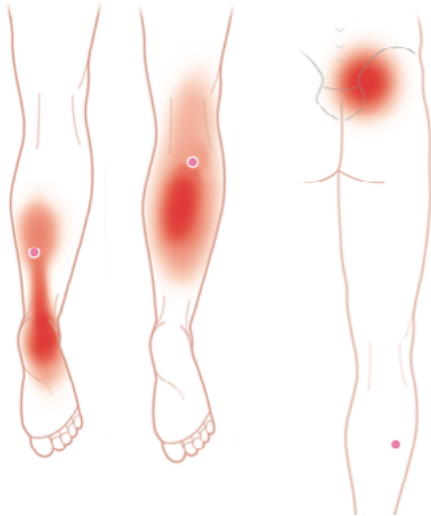
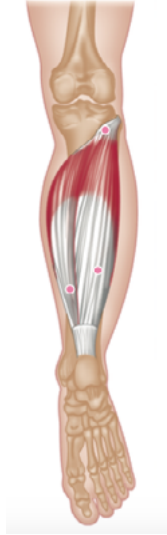
GLUTEUS MEDIUS



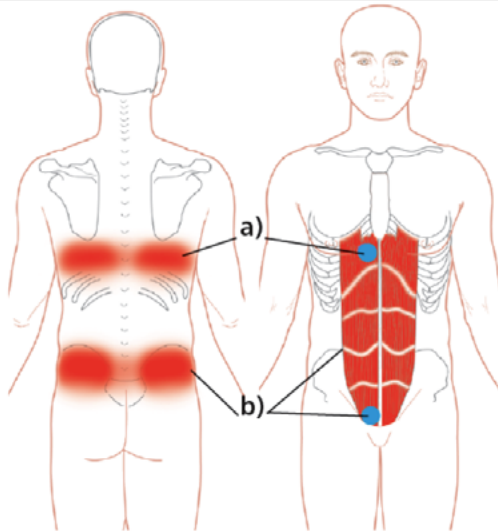
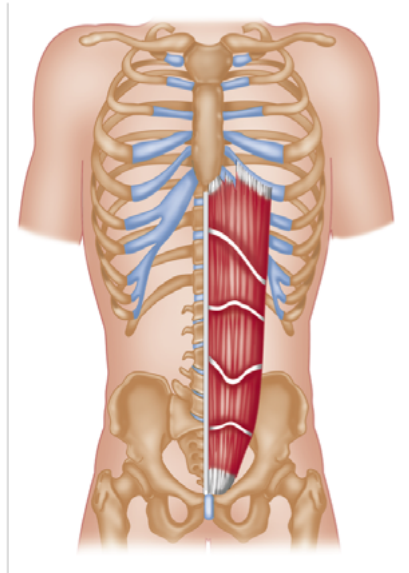
MULTIFIDUS



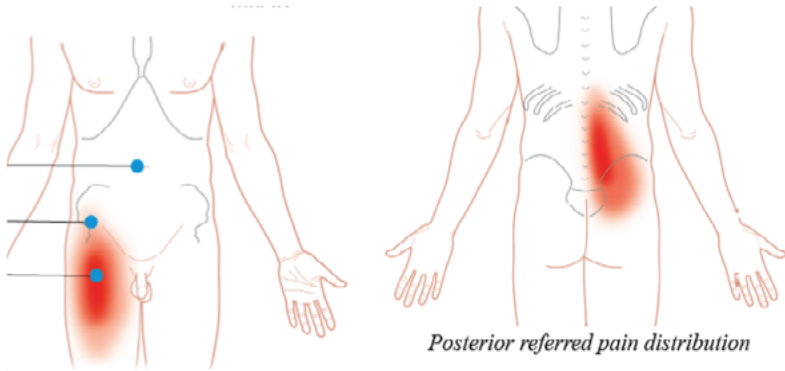
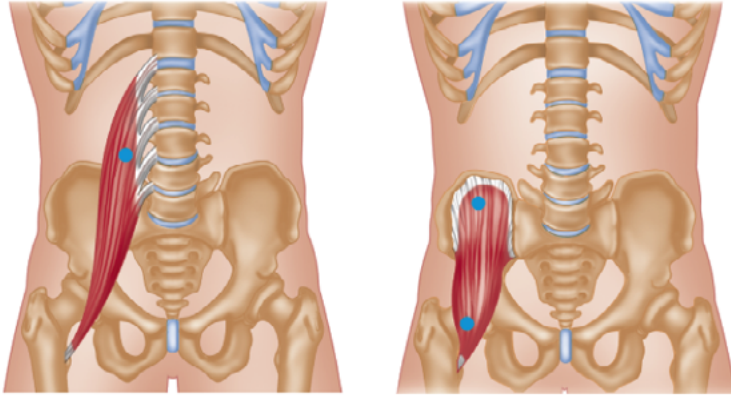
SOLEUS



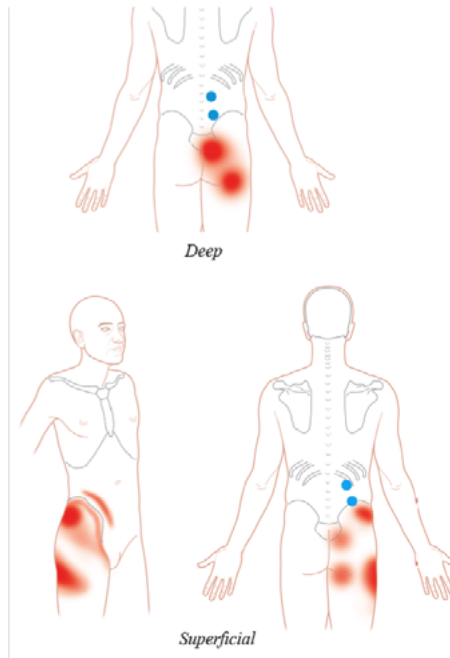
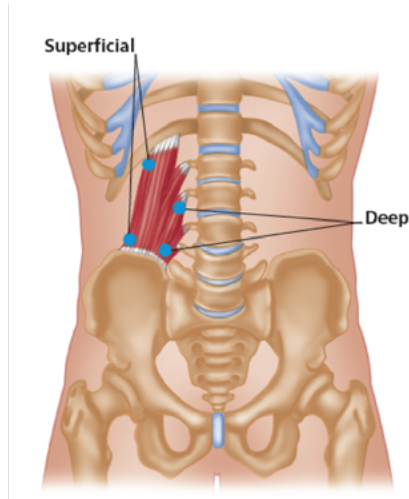
RECTUS ABDOMINIS



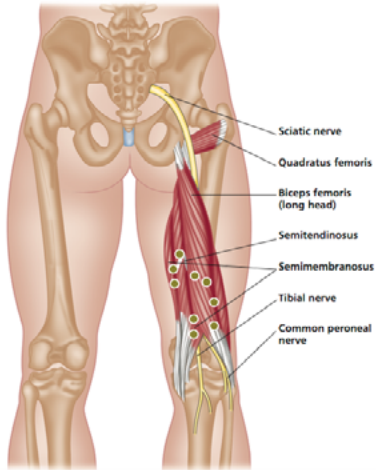
ILIOPSOAS



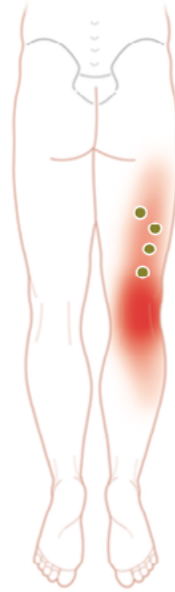
QUADRATUS LUMBORUM



HAMSTRINGS

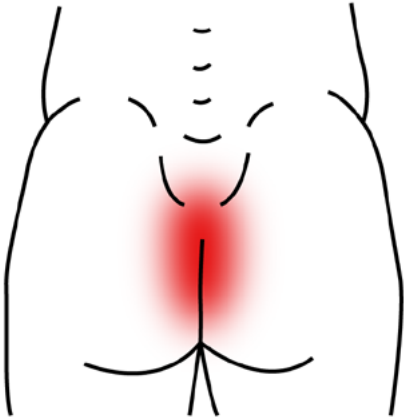
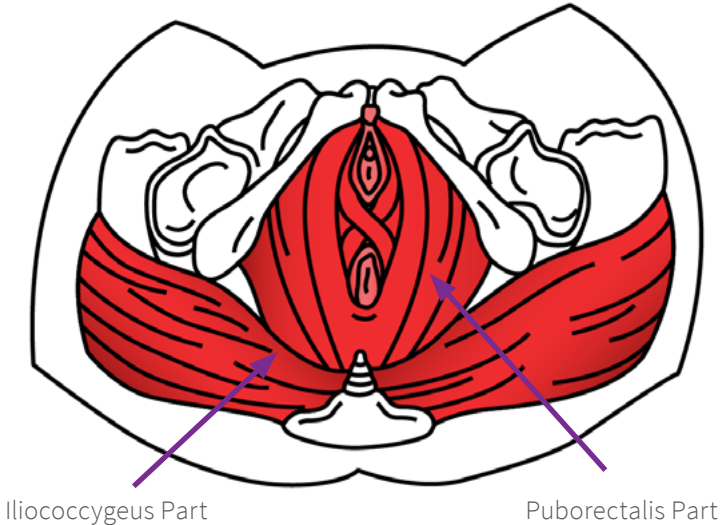


*Semimembranosus/
Semitendinosus*



*Biceps femoris
(short and long heads)*

LEVATOR ANI



Natural History

Most episodes of LBP are self-limited, however; episodes become more frequent with age. LBP is most commonly due to repeated stress on the lumbar spine over many years (“degeneration”), although an acute injury may cause the initiation of pain. Mechanical back pain may also result from trauma, posture, occupation, overuse and/or degeneration. As a rule morning pain would suggest some type of inflammatory process; if the pain gets worse for activity or as the day goes on, this might indicate a muscular issue.

There is also a large body of research linking low back pain to emotional or psychological states (such as depression) and also to lifestyle issues such as lack of exercise, poor core stability and smoking. Most acute mechanical episodes last less than six weeks so if the pain hasn’t remitted after six weeks you should consider another underlying issue. The most likely issues are a disc injury, facet issue, underlying pathology (see later) or most commonly, “trigger points”.

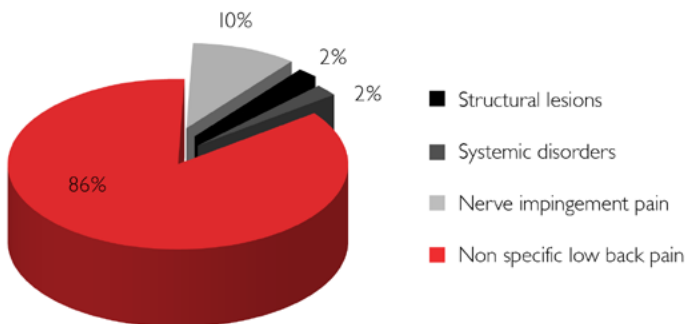
Trigger points and low back pain

Trigger points may develop in (spinal) muscles for a number of reasons; overload, under-load (poor conditioning), trauma or even as part of the body’s protect and defense mechanism. If untreated, trigger points may lead to a vicious cycle of lowered pain threshold (sensitization) and prolonged mechanical pain. Trigger points can often be “left-over” from previous untreated or poorly managed episodes of back pain. They can also build up over time to form larger clusters. That’s why it’s important to understand what trigger points are and how to address them.

Diagnosis

When we are making a diagnosis we are making a “best guess” or a working hypothesis as to what is causing LBP. We can improve our guesswork with a thorough examination, good case history and appropriate investigations.

The good news is that 86% of LBP is non-specific; that means it probably involves the discs, joints, ligaments and almost certainly, the muscles. Here is a chart breaking down the percentages for back pain as it presents to healthcare practitioners (Gordon Waddell (2004)³



As you can see, 86% of LBP is “non-specific”. Most healthcare systems will not spend money on investigations for non-specific LBP. The good news is that this group of patients can be most improved by trigger point techniques. To get a more complete picture however, we need to peer more deeply into that remaining 14%.

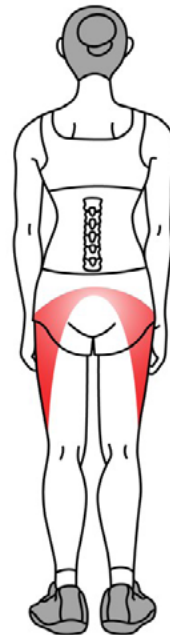
14%

If the pain persists for more than six weeks, is constantly intense, or is getting worse, it is definitely worth further investigation. Here are the major types of Specific LBP. Of the 14%, 10% is nerve impingement pain, which may be from discopathy, piriformis syndrome, post surgical scarring and/or radiculopathy. A further 2% is from collagen disorders, spondylarthropathy (joint pathologies) or haematological (blood related) disorders. The final 2% is from secondary (metastasis) or primary cancers, osteomyelitis and or vertebral fractures.

Two basic types of LBP

Simple LBP (85%)

Typically the patient is aged between 20-55. Pain is felt in the lumbosacral, buttock area or front/back of the thighs; it is a “mechanical” type of pain. Mechanical pain tends to change with physical activity and/or throughout the day. General well-being is normal and the patient is otherwise healthy. Simple LBP is highly associated with trigger points. In fact Dr. Bob Gerwin from the John Hopkins School of Medicine asserts that “up to 95% of mechanical LBP is trigger point related.”



Radiculopathic LBP (5%-10%)

The vast majority of radiculopathic pain is from an injured or diseased disc (discopathic). Other structures such as osteophytes (extra bone growth) or spinal anomalies may also produce radiculopathic pain.

The pain is usually unilateral (one sided) and radiates into the leg. Characteristically, the leg pain is worse than the back pain. There may be numbness and or “pins and needles.” On examination, there may be signs of nerve irritation such as positive sciatic or femoral nerve stretch signs (SLRT, etc.). If severe or chronic, there may also be motor, sensory or autonomic skin (trophic) changes. Pain is usually limited to one nerve root.

Other (5%) - E.g. Cauda Equina Syndrome (CES)

This is a potentially serious complication associated with LBP. CES often presents suddenly as 24/7 pain and numbness around the pelvic floor and anus (saddle anesthesia). It is also associated with the inability to control the flow of urine, the patient can pee, but usually it all comes out all at once without control. CES is a **SURGICAL EMERGENCY**.

Symptoms

Pain

The pain itself is one of three varieties.

Nociceptive back pain

We have a plethora of sensory terminals woven throughout our tissues that relay pain and sensation to the brain; these are known as nociceptors. Nociceptive pain may result from any noxious stimulation of structures in the lumbar spine but it tends to be associated with more serious issues such as the pain from cancer or systemic disease.

Somatic referred pain

Noxious stimulation of structures in the lumbar spine can produce referred pain but so can stimulation coming from organs or other structures. Somatic referred pain is pain felt in the spine but from a non-spinal origin. We see this for example in patients with kidney stones. Here acute LBP is felt; yet the origin is the kidneys. Needless to say, this type of pain needs more thorough investigation.

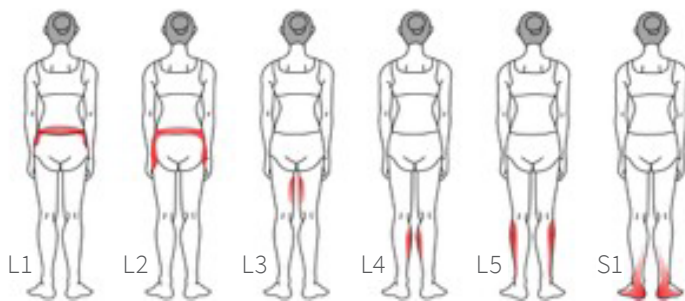
Numbness

Numbness usually indicates pressure on a nerve or its nerve root (radicle)

Radiculopathic pain

Radiculopathy is a neurological state in which conduction is blocked along a spinal nerve or its roots. Here the pain is evoked by ectopic discharges emanating from a dorsal root or its ganglion. This type of pain is distributed in a specific pattern on the skin (dermatome). Understanding these dermatomes is fairly straightforward and helps indicate the vertebral area or structure causing the pain. Look at these dermatomes, for low back pain.

You will see: they are labeled from L1 to S1 – this is the spinal level where the blockage may occur.



History, Examination and Testing - S.O.A.P

SUBJECTIVE	<i>Onset of Pain Palliative, Provocative factors Quality of the pain Radiation and localisation Severity, Stimulating/ Relieving Timing</i>
OBJECTIVE	<i>Appearance, Asymmetry Range of Motion Touch, Tissue Texture Neurological</i>
ASSESSMENT	<i>DDx, Diagnostic Tests Discussion</i>
PLAN	<i>Diagnostic Therapeutic drug therapy manual therapy intervention</i>