The Healthcare Medicine Institute presents

Low Back Pain

a continuing education course

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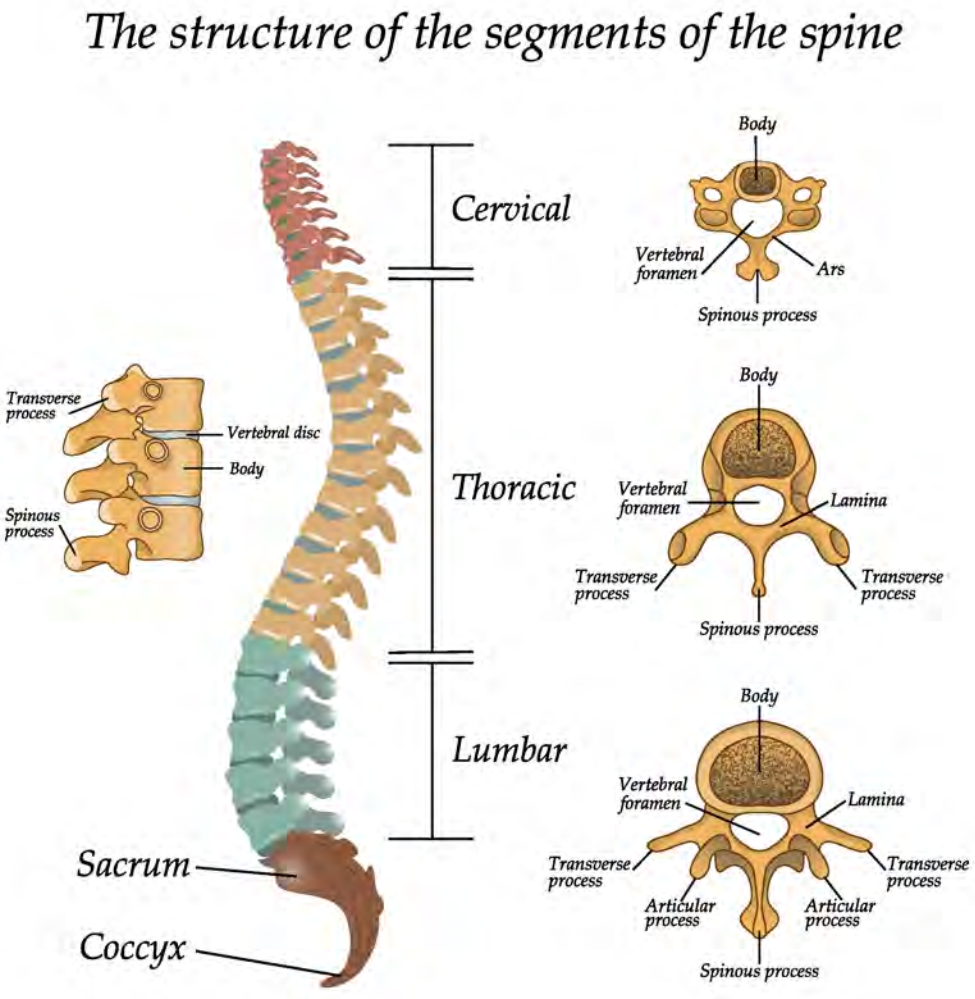
Low Back Pain

This course focuses on acupuncture treatments for musculoskeletal related lower back pain. There are many other causes of lower back pain including kidney stones, fibroids, digestive disorders, tumors, or infections. Although damp-heat and toxins (especially affecting the kidneys and bladder) cause lower back pain, this course primarily limits its scope to lower back pain and sciatica due to invasion of external cold and dampness, kidney qi deficiency, qi and blood stasis, and biomechanical causes including sprains and contusions.

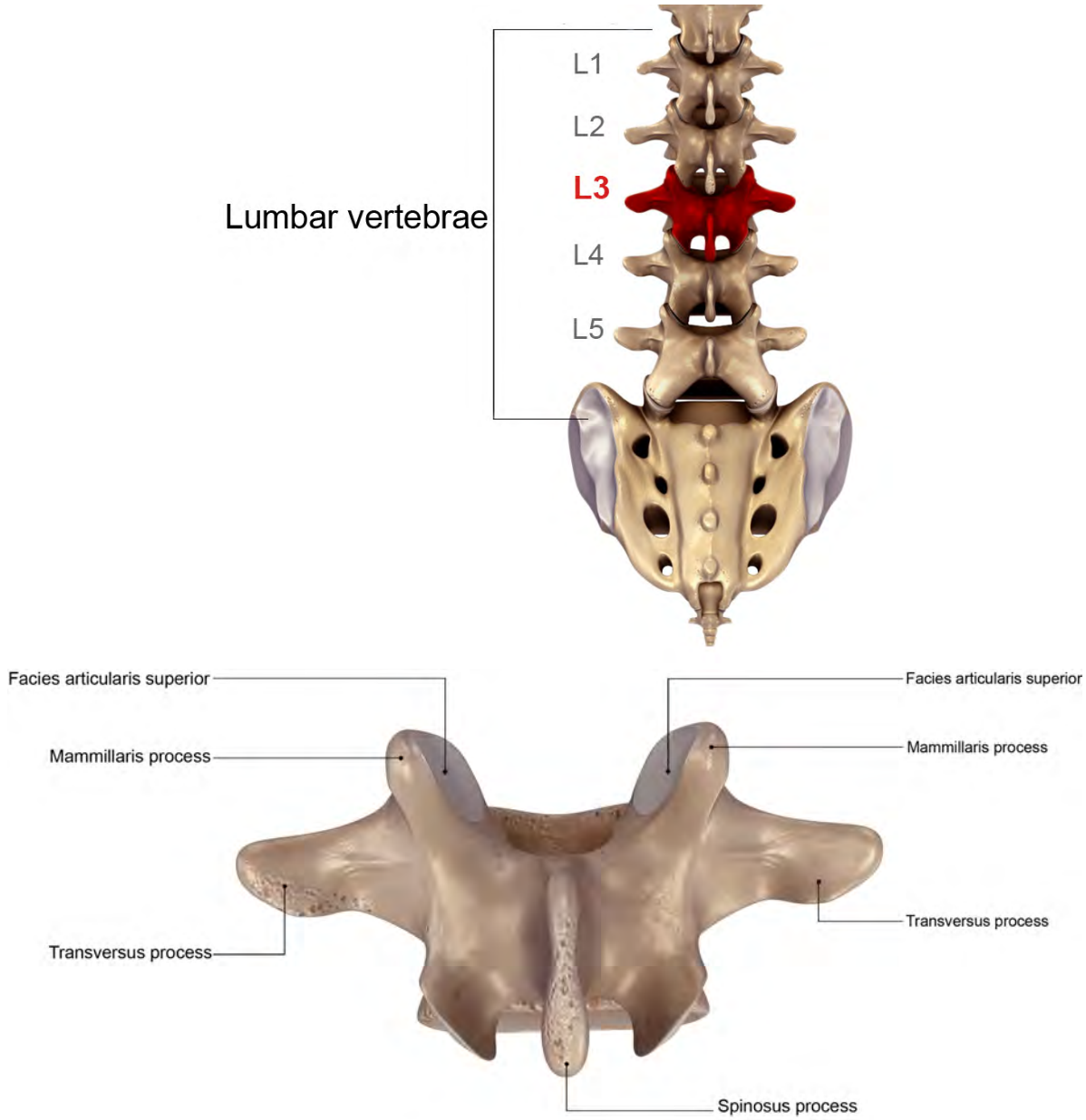


Biomechanics

The following are common biomechanical causes of lower back pain:

- Inactivity, overactivity
- Poor posture
- Trauma
- Vertebral fixation or subluxation
- Spondylitis (inflammation of the vertebra)
- Muscle or tendon strain or sprain
- Osteoarthritis
- Spinal stenosis – narrowing of the spinal canal and degenerative spine disease (including herniated discs, which may be the cause of the spinal stenosis)
- Disc disease
- Spondylolisthesis – one vertebral body slips forward over another. Spondylolysis (a bony defect or fracture within the pars interarticularis) is often the cause.
- Compression fractures: this is common in patients with osteoporosis or from acute trauma.
- Congenital spinal disorders or abnormal curvature of the spine – scoliosis is a common condition resulting in back pain.
- Facet syndrome
- IVF encroachment – The intervertebral foramen provide an opening for sensory nerve roots, motor nerve roots, and blood vessels to pass through. Narrowing or obstructions in the foramen may lead to compression on the nerves and subsequent pain. This is intervertebral foraminal encroachment (IVF).
- Lumbar radiculopathy is irritation or injury to a nerve root in the lower back. This causes pain, numbness, or weakness along the course of the nerve. Lumbar nerve roots exit from the lower back spinal region and travel downwards through the legs.
- Sciatica

- SI (sacroiliac) joint dysfunction
- Piriformis muscle syndrome
- Iliacus muscle syndrome
- Hypertonicity and muscle spasms



Lumbar vertebrae L3: Posterior view

Definitions

The following are common terms pertaining to lower back pain and associated conditions.

Sciatica

Sciatic Nerve

The Mayo Clinic website defines sciatica as the following[1]:

> Sciatica refers to pain that radiates along the path of the sciatic nerve, which branches from your lower back through your hips and buttocks and down each leg. Typically, sciatica affects only one side of your body.

1. mayoclinic.org/diseases-conditions/sciatica/basics/definition/con-20026478. 8-16-2016.

> Sciatica most commonly occurs when a herniated disk, bone spur on the spine or narrowing of the spine (spinal stenosis) compresses part of the nerve. This causes inflammation, pain and often some numbness in the affected leg.

Koes et al. note that lumbosacral radicular syndrome, nerve root pain, and nerve root entrapment are often used synonymously with the word sciatica.[2] True sciatica involves radiating symptoms specific to the course of the sciatic nerve. Lumbar radiculopathy may involve radiating pain, numbness, loss of reflexes, and weakness that does not follow the course of the sciatic nerve but instead follows a different pathway, including the course of different dermatomes (an area of the skin supplied by nerves from a single spinal root). Koes et al. also note the following:

> In about 90% of cases sciatica is caused by a herniated disc with nerve root compression, but lumbar stenoses and (less often) tumours are possible causes. The diagnosis of sciatica and its management varies considerably within and between countries—for example, the surgery rates for lumbar discectomy vary widely between countries. A recent publication confirmed this large variation in disc surgery, even within countries. This may in part be caused by a paucity of evidence on the value of diagnostic and therapeutic interventions and a lack of clear clinical guidelines or reflect differences in healthcare and insurance systems.[3]

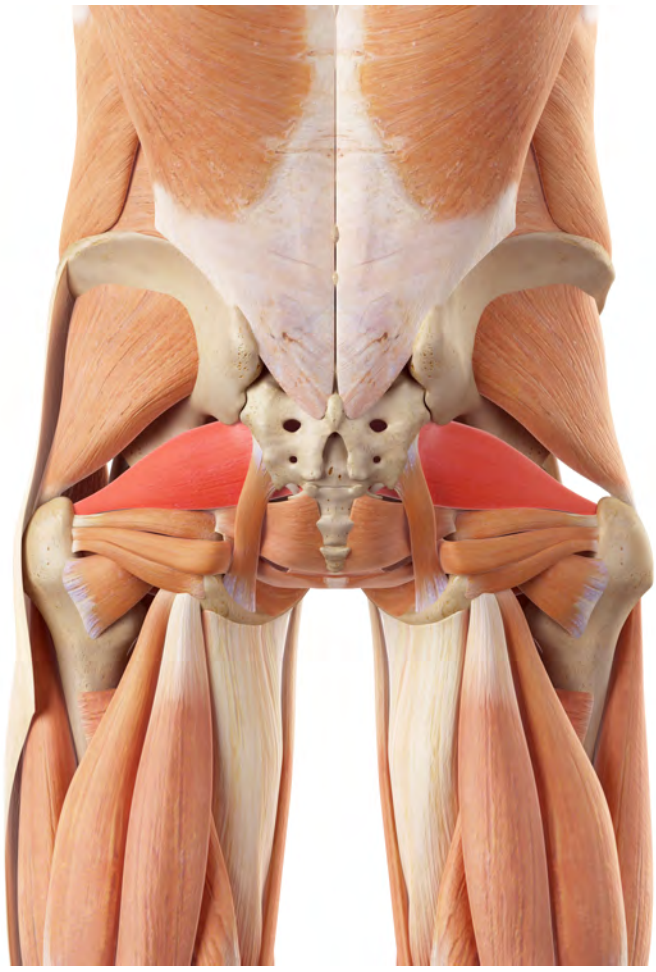
Piriformis Syndrome

According to the National Institute of Neurological Disorders and Stroke (a division of the National Institutes of Health):

> Piriformis syndrome is a rare neuromuscular disorder that occurs when the piriformis muscle compresses or irritates the

2. Koes BW, Van Tulder MW, Peul WC. Diagnosis and treatment of sciatica. British Medical Journal. 2007 Jun 23;7607:1313.
3. Ibid.

sciatic nerve-the largest nerve in the body. The piriformis muscle is a narrow muscle located in the buttocks. Compression of the sciatic nerve causes pain-frequently described as tingling or numbness-in the buttocks and along the nerve, often down to the leg. The pain may worsen as a result of sitting for a long period of time, climbing stairs, walking, or running.[4]



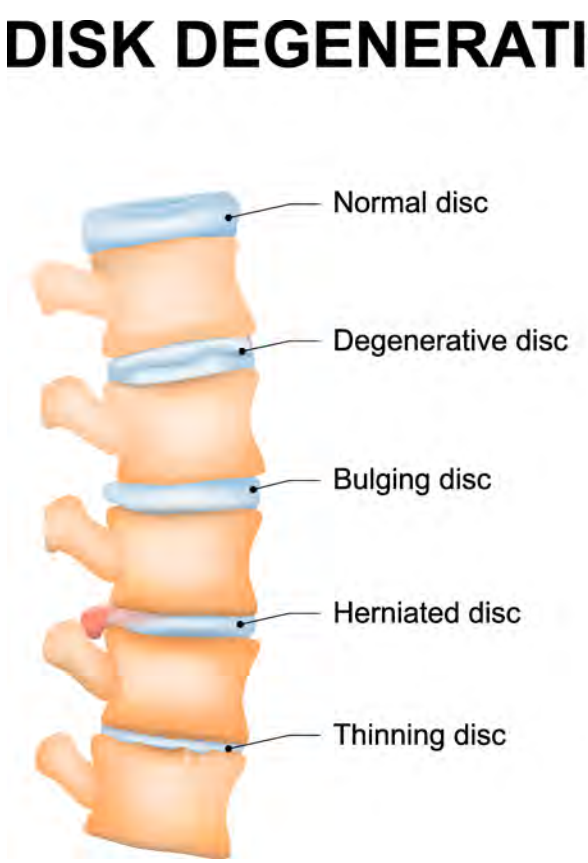
Piriformis Muscles (in red)

4. ninds.nih.gov/Disorders/All-Disorders/Piriformis-Syndrome-Information-Page. 4-20-2017.

Disc (Disk)

The US National Libary or Medicine notes:

> Your backbone, or spine, is made up of 26 bones called vertebrae. In between them are soft disks filled with a jelly-like substance. These disks cushion the vertebrae and keep them in place. As you age, the disks break down or degenerate. As they do, they lose their cushioning ability. This can lead to pain if the back is stressed.
>
> A herniated disk is a disk that ruptures. This allows the jelly-like center of the disk to leak, irritating the nearby nerves. This can cause sciatica or back pain.[5]



5. medlineplus.gov/herniateddisk.html. 4-20-2017.

Protrusion

Disc protrusions are differentiated from extrusions. If a disc has a protruding bulge with no leakage of material from its center (nucleus pulposus) through the disc's outer wall (annulus fibrosus), this is a protrusion. In this scenario, the inner disc fluid presses against the outer disc wall and the disc bulges beyond its normal perimeter.

Extrusion

If the soft, jelly-like material in intervertebral disc's center leaks through a tear in the disc's outer wall (annulus fibrosus), this is an extrusion. This is often termed a herniated disc.

Sequestration

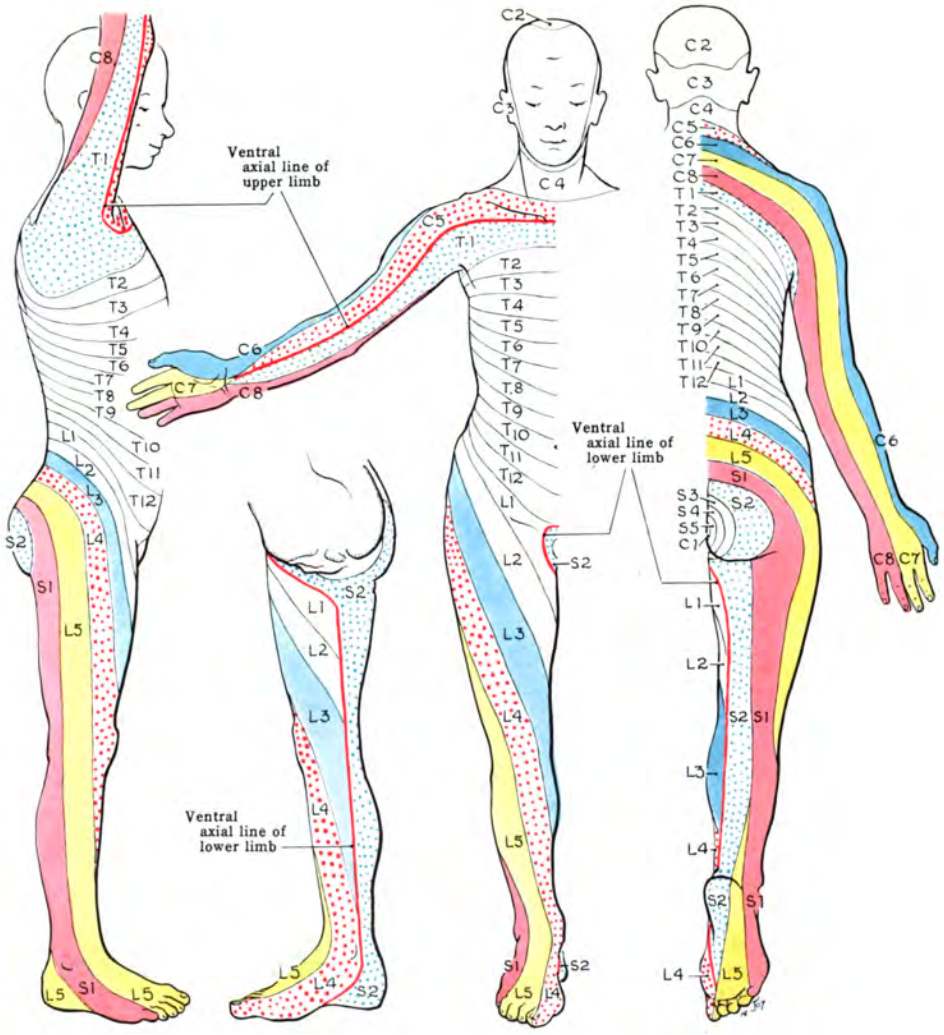
If the inner material from the nucleus pulposus leaks and then separates from the disc entirely, this is a disc sequestration. It is possible for sequestered disc material to be resorbed by the body through the blood stream.

Healthy lumbar spine anatomy segment

Discogenic Pain

A protruding disc bulge, extruded disc material, or sequestered material may exert pressure on local spinal nerves thereby causing pain, numbness, tingling, or weakness. This course covers acupuncture protocols that focus on qi and blood regulating acupoints for the purposes of enhancing and engaging the healing process.

Dermatome

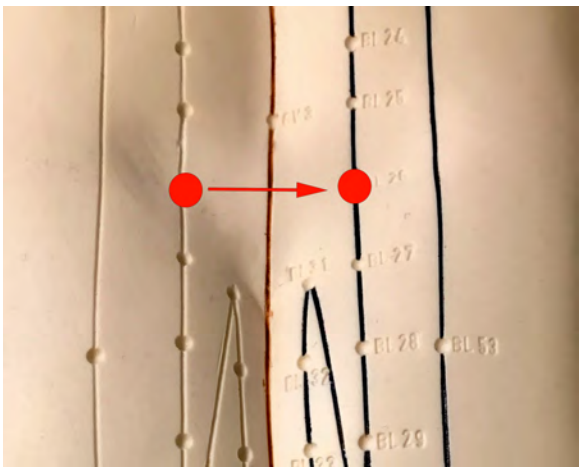


Dermatomes

A dermatome is the area of skin supplied with afferent nerve fibers by a single posterior spinal root. A dermatome is the area of skin supplied by cutaneous branches of a single cranial or spinal nerve. Pain along the course of a dermatome often indicates the source of the pain at the lumbar spine. In this way, a pathway of distal pain allows us to determine which spinal levels are affected.

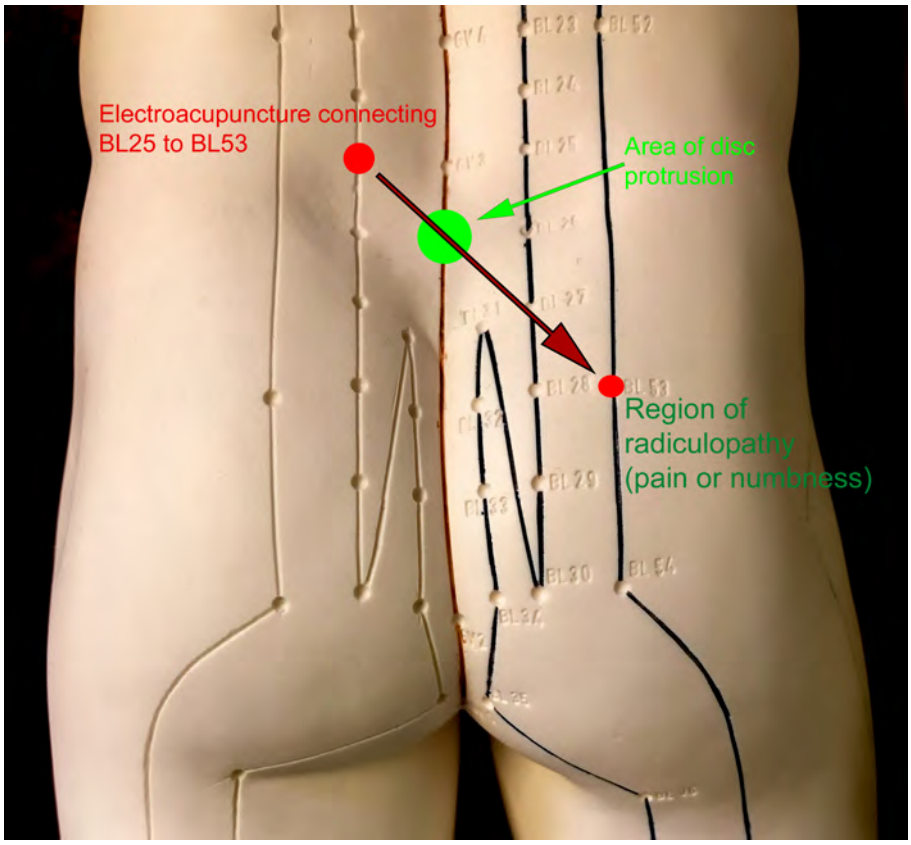
Strategies

Treatment strategies may be formed based on symptomatic presentations of specific dermatomes. Selection of Huatuojiaji acupoints or electroacupuncture across lower back Bladder Foot-Taiyang channel acupoints at the spinal level associated with distal radiculopathy may alleviate both local nerve root inflammation at the spinal region and its associated distal pain, numbness, or weakness along the course of the dermatome. For example, the L5 dermatome travels from the L5 region and runs downward to the lateral aspect of the lower leg before entering the foot dorsus and toes. For the treatment of radiculopathy at the lateral aspect of the lower leg, try needling Huatuojiaji acupoints at L5 or running electroacupuncture across BL26 (Guanyuanshu) bilaterally, which is located 1.5 cun lateral to the lower border of the spinous process of L5 on the left and right sides of the body. Here, the pain at the lateral aspect of the lower leg indicates possible L5 involvement because this part of the lower leg is along the L5 dermatome.



BL26 – BL26 electroacupuncture, across L5 region

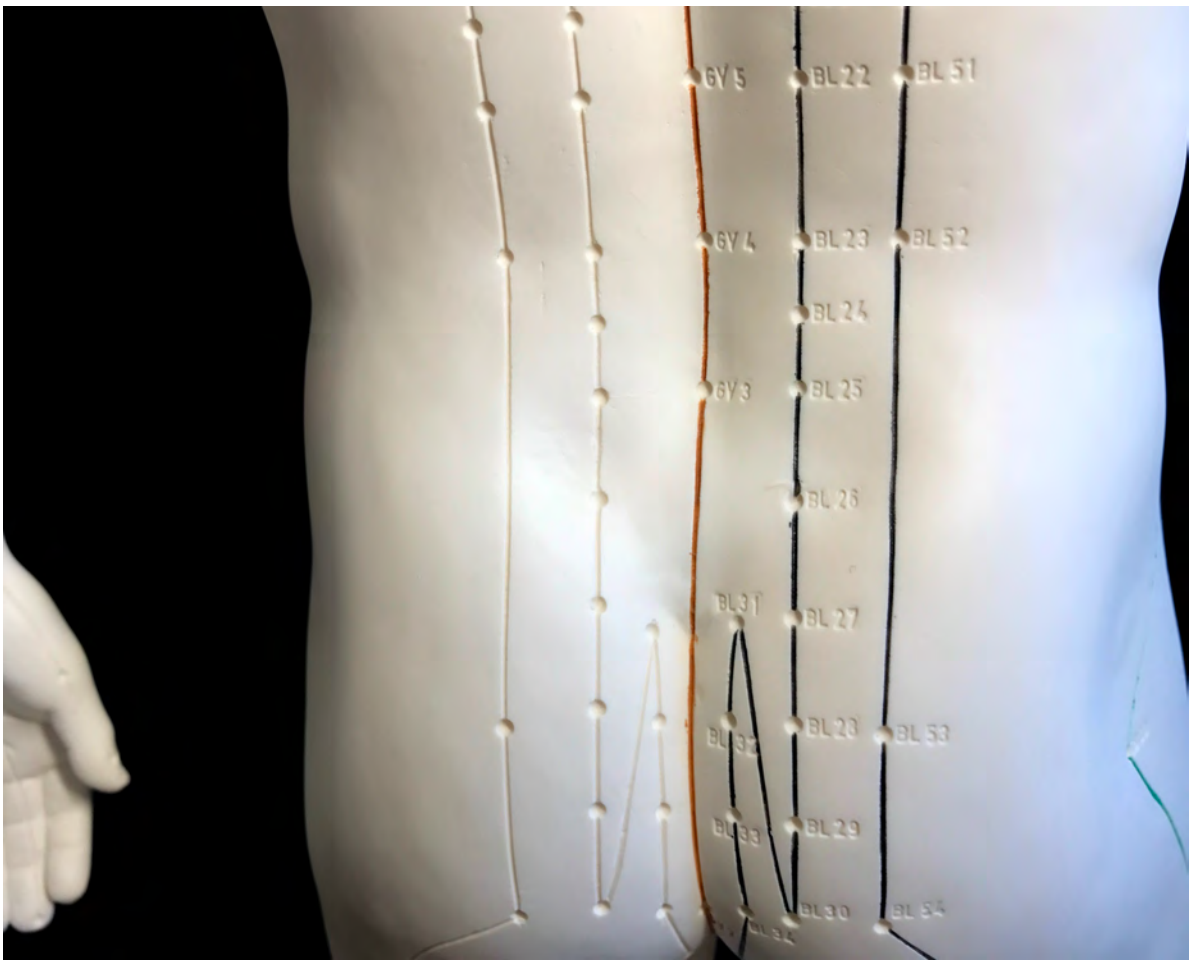
Another approach is to apply electroacupuncture from a lumbar Bladder channel acupoint on the opposite side of the radiculopathy, passing the current through the affected region at the spine, and having the other electrode positioned distally on the affected side. For example, BL25 (Dachangshu) on the left side may be connected via electroacupuncture to right side BL53 (Baohuang), BL60 (Kunlun), KD3 (Taixi), or GB30 (Huantiao) for radiculopathy presenting on the right side. By identifying the spinal level that is the source of discomfort, acupuncture strategies may be applied directly to that region. In this example, BL25 is 1.5 cun lateral to L4. Radicular discomfort perceived at BL53 (the buttocks region), BL60 (the ankle region), KD3 (the ankle region), or GB30 (the hip and buttocks regions) may be due to IVF encroachment at L4 or L5. Running electroacupuncture current from BL25 to the distal area where discomfort is perceived treats both the source region of nerve irritation at the spinal level and the distal area where the symptom is present.



BL25 – BL53 electroacupuncture, current passes through L5 region

General Principles

Lower back pain may be categorized as either acute or chronic. As a general rule, acute lower back pain is an excess condition and chronic lower back pain involves deficiency. In an acute sprain, the Governing (DU/GV) and Bladder (Foot-Taiyang/BL) channels are obstructed, thereby leading to pain. For acute lower back pain, the treatment principle is to clear obstructions and regulate the affected channels of the back (especially GV and Bladder).



Lower back acupoints

According to Traditional Chinese Medicine, the lower back is the "dwelling of the kidneys." Chronic lower back pain usually involves deficiency of the Kidney (Foot-Shaoyin, KD) channel and blockages in the associated yang channel, the Bladder channel, which traverses the lower back and legs. **Kidney qi deficiency combined with qi and blood stasis in the Bladder channel results in lower back pain**. Acute and subacute attacks of wind, cold, or dampness may cause or exacerbate lower back pain. The muscle channels local to the lower back are usually affected in both acute and chronic lower back pain.

Diagnostic Patterns

According to Traditional Chinese Medicine (TCM) principles, lower back pain may be due to the following conditions listed below. The acupoints listed with each pattern are general guidelines. Later in the course, we take a close look at several specific acupoints.

Cold-Dampness

Exposure to a cold or damp environment contributes to this condition. Care must be taken to avoid unwanted exposure including extended periods in the rain, swimming in cold water, or exposure to wind after sweating. The cold contracts and the dampness heavily obstructs thereby leading to channel blockage and consequent pain. Inactivity and excess lying down exacerbates the condition.

Cold-dampness blocking qi and blood circulation causes lower back pain, tingling, or numbness that may radiate to the buttocks, lower limbs, groin, or lower abdomen. Indications include a heavy sensation, stiffness, range on motion impingement, and a cold sensation on the lower back.

The Du (Governing Vessel), Bladder Foot-Taiyang, or Gallbladder Foot-Shaoyang channels are affected. Dampness tends to linger and therefore the pain may become chronic. Pain is exacerbated by cold

and damp exposure, which increases qi and blood stasis, and is relieved by warmth. Light exercise or walking may help to warm and dispel dampness thereby relieving pain. Unilateral dull aching and weakness of the lower back and legs indicates excess cold and dampness whereas a bilateral presentation of symptoms may indicate kidney qi deficiency.

Tongue: pale with a greasy, white coating
Pulse: thin, wiry, slow, deep, or moderate

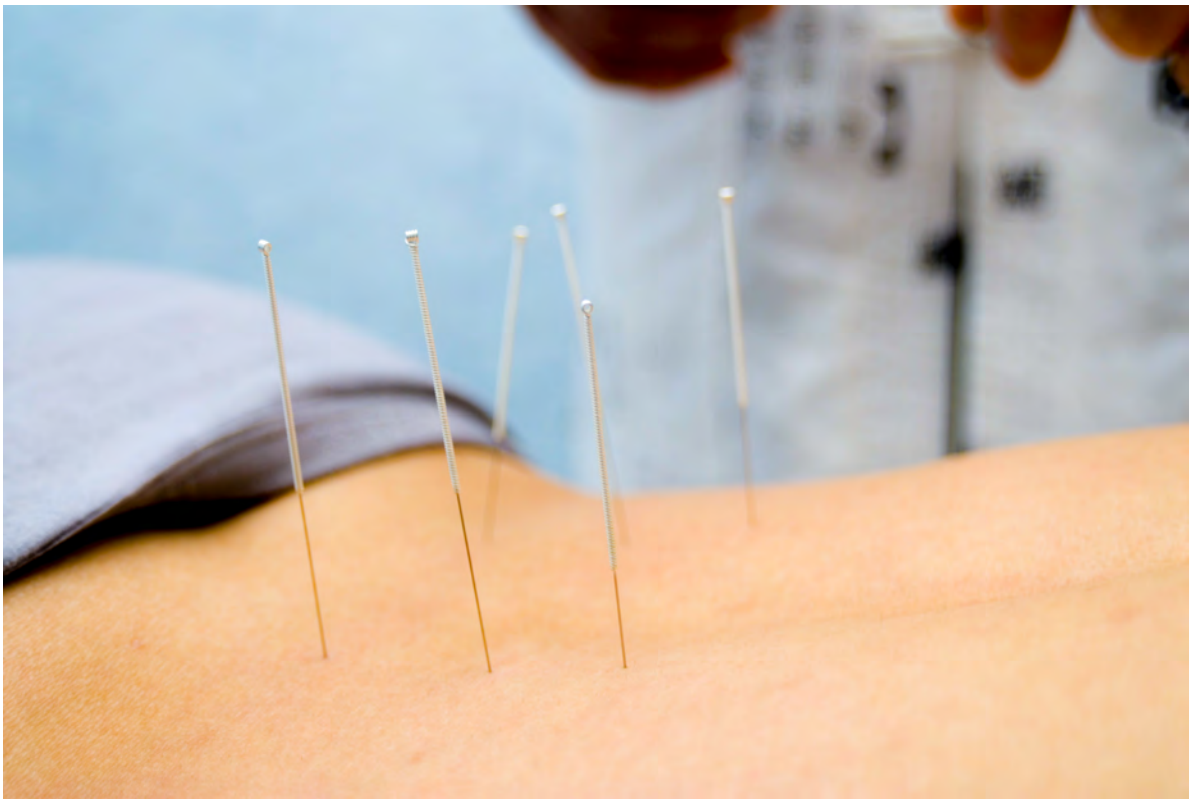
Treatment Principle
Dispel cold and dampness, warm the channels, invigorate qi and blood

Acupuncture Points
Moxibustion as a standalone therapy or attached to the needles is appropriate to dispel cold and dampness.

- BL23 (Shenshu) — Kidney back shu point
- BL25 (Dachangshu) — Large intestine back shu point
- BL26 (Guanyuanshu) — Gate of origin back shu point
  This point is located 1.5 cun lateral to the lower border of the spinous process of the 5th lumbar vertebrae. A great local point for lower back pain, electroacupuncture is often run across the back from one BL26 acupoint to the other for the treatment of disc disorders and other spinal conditions resulting in nerve impingement or inflammation. This point is especially useful given the commonality of L5/S1 disc protrusions.
- BL40 (Weizhong) — Command point of the back
- BL60 (Kunlun)
  This is a jing-river, fire, and Ma Dan-yang Heavenly Start point acupoint indicated for the treatment of lower back pain, headaches, stiff neck, ankle and heel pain, and difficulty with labor and delivery.
- GV3 (Yaoguanshu) — This point is translated as the lumbar yang gate. Its location on the midline at the depression below the

spinous process of the 4th lumbar vertebrae makes it a useful point for the treatment of lower back pain.

- M-BW-24 (Yaoyan)
  Translated as lumbar eyes, this acupuncture point is located in the depression approximately 3.5 cun lateral to the lower border of L4, where DU3 (Yaoyangguan) is located. Yaoyan is located below the level of the iliac crest and is slightly more than one handbreadth lateral to the spine. The lumbar eyes refer to the hollows that are visible on many patients at this point.
- Huatuojiaji (M-BW-35)
  Translated as Hua Tou's paravertebral points, these points are located 0.5–1.0 cun lateral to the depression below the 12 thoracic and 5 lumbar vertebrae. Choose points at the affected levels.



Bladder channel acupoints of the lower back

Qi and Blood Stasis

Any trauma, including sprains and strains, may injure the channels and cause qi and blood stasis. This includes acute trauma or chronic conditions, including poor posture. Pain is often focal, severe, and there may be radiculopathy (compression of a nerve root with associated radiating pain, numbness, or weakness). Pain may be aggravated by pressure at the site of qi or blood stasis; however, comorbid deficiency syndromes are relieved by pressure.

Tongue: dark or purple
Pulse: wiry

Treatment Principle
Invigorate qi and blood

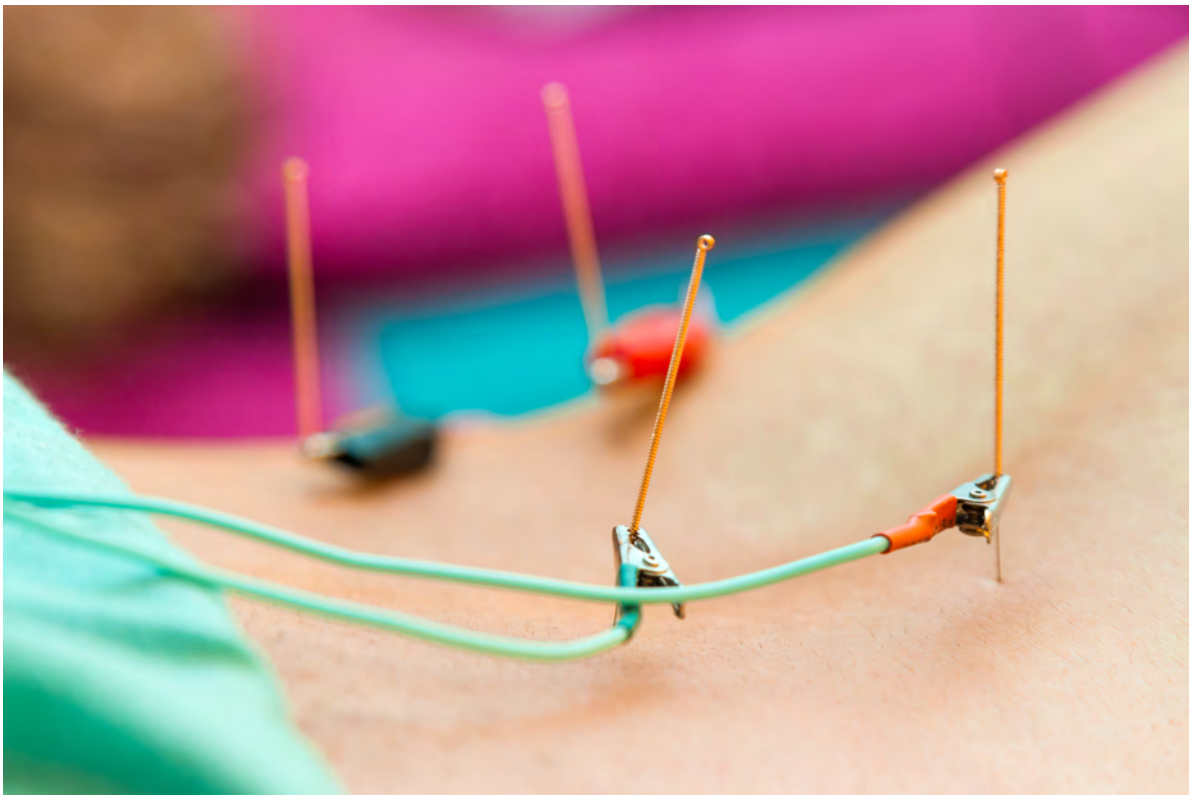
Acupuncture Points

- Huatuojiaji — at affected regions
- BL23 (Shenshu)
- BL25 (Dachangshu)
- BL26 (Guanyuanshu)
- DU (Governing) channel points — at affected regions
- Shiqizhuixia — especially for L5/S1 related conditions:
  This acupoint is located on the midline of the back in the depression below the spinous process of the 5th lumbar vertebrae.
- SI3 (Houxi)
  When a loose fist is made, the point is on the ulnar side, proximal to the 5th metacarpophalangeal joint, at the end of the transverse crease and the junction of the red and white skin. SI3 is a shu-strea, wood, and mother point. It is a confluent point of the Governing (Du) channel and is paired with BL62, which is a confluent point of the Yangqiao channel. SI3 relaxes the muscle channels, opens the Governing channel, and clears the spirit. It is indicated for the treatment of lower back pain, neck, should, and elbow pain. Other indications include tinnitus, deafness, malaria, night sweats, febrile diseases, and intercostal neuralgia.

- BL31 (Shangliao)
  This point is located at the first sacral foramen. It is indicated for the treatment of lower back pain, irregular menstruation, and difficulty with urination and defecation.
- Yaotongxue — for acute lower back pain and motor impairment
- BL53 (Baohuang), GB30 (Huantiao) — especially for pain radiating to the buttocks

Horizontal and Vertical Electroacupuncture

Electroacupuncture to Bladder channel points may be applied across the lower back horizontally or, alternatively, through the paraspinal musculature vertically. For example, connect BL26 on one side to BL26 on the opposite side for L5 related back or discogenic pain. Alternately, connect BL23 to BL26 ipsilaterally (both alligator clip leads on only one side of the body).



Ipsilateral electroacupuncture connection of Bladder channel points

Kidney Qi Deficiency

Overstrain, excessive sexual activity, sequelae of acute lower back pain and dysfunction, chronic disease, congenital conditions, and aging may lead to kidney deficiency and subsequent pain.

The Systematic Classic of Acupuncture & Moxibustion (Jia Yi Ying), written by Huang-fu Mi in the Jin Dynasty, notes that **the lumbar region is the dwelling place of the kidneys. The kidneys rule the bones, produce marrow, and store jing-essence.** Kidney deficiency results in the bones lacking marrow and subsequent lower back pain and weakness of the knees results. Kidney qi deficiency related lower back pain worsens throughout the day as the body becomes fatigued. The condition improves with rest. Overstain and stress exacerbate this type of lower back pain. **Teeth are the extremities of the kidneys** and there fore there may be loosening of teeth. **The kidneys flourish in the hair** and therefore there may be hair loss.

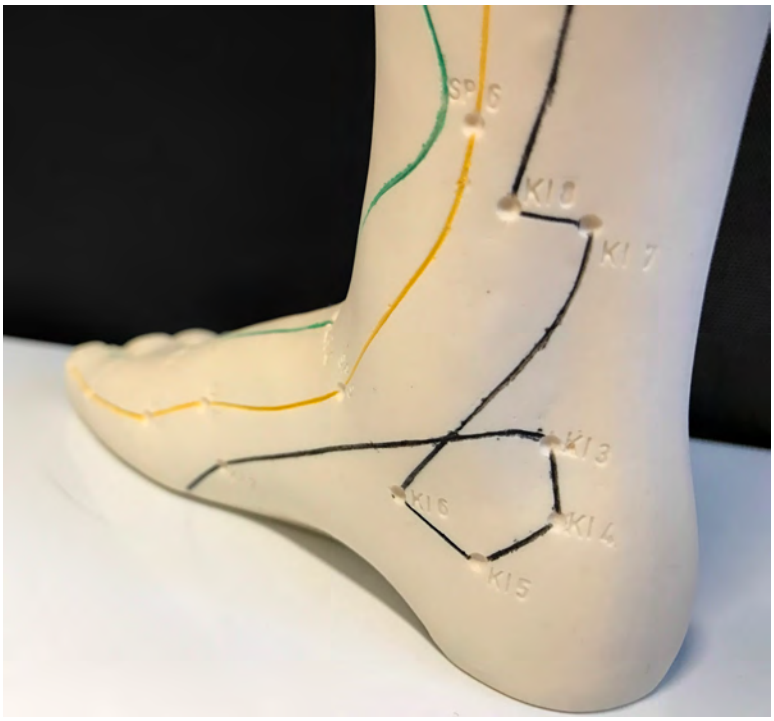
Tongue: pale
Pulse: deep, weak

Treatment Principle
Tonify Kidney Qi

Acupuncture Points

- BL23 (Shenshu)
  As a Beishu (Back Shu) point of the kidneys, this point tonifies kidney qi and benefits the lower back and spine.
- BL40 (Weizhong)
  This acupoint is especially useful when there is weakness of the knees. Located at the center of the back of the knee on the poplateal fossa, BL40 is one of the four command points and is indicated for the treatment, as such, for the treatment of lumbar region pain. It is also a Ma Dan-yang Heavenly Star point, which indicates this acupoint for the treatment of lumbar pain and dysfunction.

- GV4 (Mingmen)
  This acupoint nourishes yuan-source qi, strengthens the kidneys, and benefits the lumbar vertebrae.
- Yaoyan (M-BW-24)
  Translated as lumbar eyes, this acupuncture point is located in the depression approximately 3.5 cun lateral to the lower border of L4, where DU3 (Yaoyangguan) is located. Yaoyan is located below the level of the iliac crest and is slightly more than one handbreadth lateral to the spine. The lumbar eyes refer to the hollows that are visible on many patients at this point.
- KD3 (Taixi)
  KD3 is a shu-stream, earth, and source point. It benefits the kidneys, cools the heat, and strengthens the lower back and knees. Manual acupuncture may be applied to elicit deqi radiating to the lower back from this point that is located between the medial malleolus and the tendocalcaneous. Electroacupuncture may be applied bilaterally to this point bilaterally.



KD3 (noted as KI3 in the image)

Damp-Heat

Exposure to external damp and heat and internal pathologies may result in back pain. Chronic cold-dampness affecting the channels of the lower back may lead to damp-heat. There is pain in the lower back, hips, and buttocks with a heat sensation, redness, and swelling. Pain is exacerbated in warm temperatures. There may be dark yellow urine.

Tongue: yellow, greasy coating
Pulse: slippery, rapid

Treatment Principle

Clear heat and dampness from the lower jiao (burner)

Acupuncture Points

BL40 (Weizhong)

BL28 (Pangguangshu)

SP9 (Yinlingquan)

LI11 (Quchi)

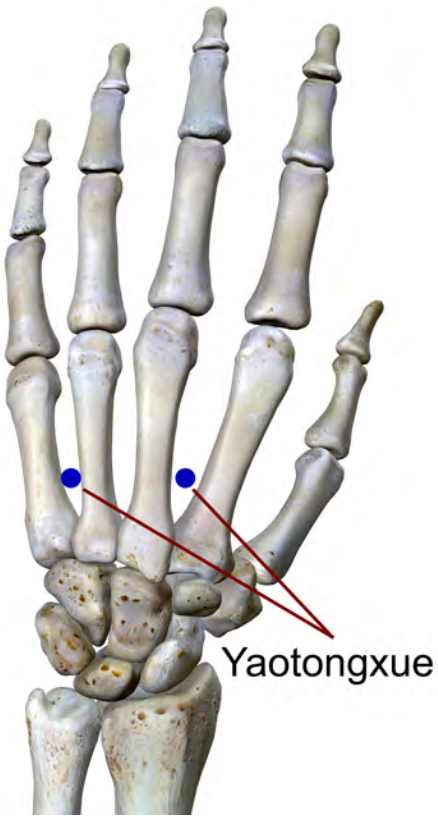
Standard lower back acupoints

Acupuncture Highlights

The following section focuses on many useful acupuncture points used for the treatment of lower back pain and associated radiculopathies. More acupoints are covered in the research section that follows this acupoint highlight section.

Yaotongxue

Acute lower back pain is a common condition that may be treated by a variety of approaches with acupuncture. A time honored favorite is the use of Yaotongxue, translated as lumbar pain point. Alternately, this point is referred to as Yaotongdian, translated as lumbar pain spot. Numerically, N-UE-19a is assigned to the Yaotongxue point between the second and third metacarpal bones and N-UE-19c is assigned to the Yaotongxue point between the fourth and fifth metacarpal bones.



There is an additional Yaotong (lower back pain) point, N-UE-19b. It may be used to treat lower back pain and pain resulting from injury to the chest or extremities. It is located between the third and fourth metacarpal bones. The Yaotongxue points between the second and third and the fourth and fifth metacarpal bones are more common in clinical practice. Here, the focus is on the use of points (N-UE-19a, N-UE-19c) as a paired set.

Location

Yaotongxue (N-UE-19a, N-UE-19c) is a paired set points located on the dorsum of the hand. Both points are midway between the transverse crease of the wrist and the metacarpophalangeal joint. One point is located between the second and third metacarpal bones and may be referred to as Yaotong #1. The other is located between the fourth and fifth metacarpal bones and may be referred to as Yaotong #3. Yaotongxue points are in the depressions distal to the base of the metacarpals.

Indications

Yaotongxue points are indicated for the treatment of acute lumbar sprain. Yaotong #1 is indicated for pain due to injury to the head, lower back, and extremities. Yaotong #3 is indicated for pain due to injury to the lower back and extremities.

Clinical Notes

Needling Yaotongxue invigorates the qi and blood in the lumbar region. Needling may be applied perpendicularly or obliquely (45º) towards the direction of the wrist. Oblique insertion is the preferred method. Depth of insertion is 0.5” – 1.5”.

Perhaps one of the best ways to determine whether or not Yaotongxue will benefit the patient is through palpation using a stainless steel ball-shaped tip probe. Press the round head of the probe into the Yaotongxue points on both hands with moderate, steady pressure. If

probing one of the points evokes an unusually painful response, it is active and may yield the best results. If no point evokes a sensitive response, needling Yaotongxue may or may not achieve clinical results.

Round Tip Probe

Yaotongxue is often applied with the patient in the seated position. The seated position is the preferred position because patients are often asked twist, turn, bend, or rub the affected region during the needling process. Application of Yaotongxue strongly invigorates and disperses qi. Combined with the qi required to remain upright in the seated position, the patient may not have enough qi to remain conscious. Patients with constitutional deficiencies, who have not eaten or slept, or that have overworked their bodies may not be appropriate for this procedure.

Take precautions to ensure that the patient does not faint, especially when the patient is in a seated or standing position. Ask the patient during the procedure, “Are you faint, dizzy, weak, or feeling sweaty?” Make sure the patient does not experience lightheadedness and does not turn pale. Look for signs of closed pores or sweating. There are four Yaotongxue points. It may be preferential to choose only one point at a time or a limited number of Yaotongxue points to avoid unnecessary pain or fainting. If a patient is resting in a supine position, Yaotongxue is less likely to cause fainting.

Needling Yaotongxue is often uncomfortable and sudden sensations of pain may be evoked when unblocking qi stagnation during needle manipulation techniques. Twirling, lifting, and thrusting are applied in a fishing method to find areas of qi congestion. The acupuncturist may feel tightness, blockages, or impenetrability in different spots through

the needle. Releasing these congestions at Yaotongxue often releases the lower back pain. However, this process is often painful. Sedating and dispersing needling techniques are employed.

Appropriateness is always important. Determine whether or not your patient can handle this procedure. Ask the patient prior to needling whether or not an uncomfortable procedure is acceptable. A comforting bedside manner is especially important. It is advisable to check-in with the patient during the procedure to determine whether or not to continue.

Yaotongxue is often remarkable in its ability to completely eliminate acute lower back pain. However, its fast therapeutic effective action may not have the lasting results associated with other procedures, including local electroacupuncture to the lower back. In the clinic, it is common for practitioners to administer one procedure and then follow-up with the Yaotongxue procedure. This may enhance the immediate effects of Yaotongxue needling while providing long lasting clinical results.

Hua Tuo

Huatuojiaji

Spinal column pain and many other forms of vertebral related pain are successfully alleviated with the application of Huatuojiaji (M-BW-35, Jiaji) acupoints, especially from L2 to L5. Care must be given to avoid aggravating the lower back condition; therefore, position the patient carefully.

Prone

The prone position may require wedges, often referred to as adult pelvic sacral blocks, to be placed under the ASIS and pelvic regions to provide support. The blocks may be made of padded solid structures or foam. Folded towels placed beneath the patient may provide added support.

Side

Another method is to have the patient relax in a side posture with pillows between the knees, under the head, and between the arms. The angle of the patient's back must be slightly towards the direction they are facing to avoid rolling backwards. If the patient has mobility issues, it may be necessary to pull the sheet beneath the patient towards you while standing at the patient's back to cause their back to gently slide into the proper angle.

Clinical Notes

Huatuojiaji points are located 0.5 to 1 cun lateral to the depressions below the spinous processes of the thoracic and lumbar vertebrae. Needling guidelines vary and include perpendicular, oblique, and transverse threading techniques. For perpendicular-oblique insertion, the needle slightly points towards the spine at 70º and is often needled between 0.5 – 1.5 inches in depth to relive pain. Normal stimulation methods to obtain deqi are applied to these points.

Electroacupuncture may be applied to Jiaji acupoints; however, the patient may feel increased pain later in the day due to the powerful nature of the invigorating function. Often, Huatuojiaji (Jiaji) acupoints are applied with manual stimulation and local Bladder (Foot-Taiyang) channel points are added. The Bladder channel acupoints receive

electroacupuncture stimulation instead of the Huatuojiaji points. This may provide a greater 'spreading out of qi' effect and prevent discomfort later in the day.

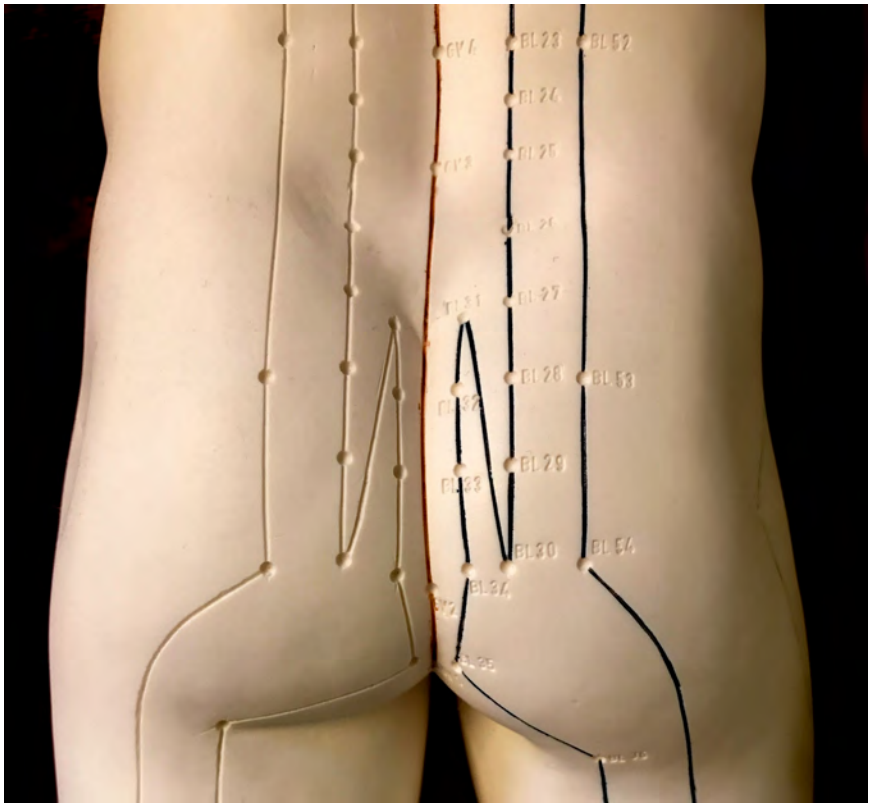
BL22–26

The following acupoints are located 1.5 cun lateral to the lower border of the spinous process of L1, L2, L3, L4, and L5 respectively:

- BL22 (Sanjiao Shu)
- BL23 (Kidney Shu)
- BL24 (Sea of Qi Shu)
- BL25 (Large Intestine Shu)
- BL26 (Gate of Origin Shu)

The above acupoints are often treated with moxibustion or electroacupuncture stimulation. Electroacupuncture may be run across the midline or ipsilaterally (vertically). Although crossing the midline is forbidden in the area of the heart, crossing the midline is permissible in this region.

Electroacupuncture Device (ITO ES-160)



BL30 (Baihuanshu, White Ring Shu)

This acupoint, translated as white ring shu, is located 1.5 cun lateral to the midline, at the level of the 4th sacral foramen. This acupoint treats lower back, coccyx, and hip pain. It is particularly useful for the treatment of leukorrhea, seminal emission, and cake lin (white turbid urine).

BL31–34 (Baliao, Eight Crevices)

The following points are known together as Baliao and are located at the 1st, 2nd, 3rd, and 4th sacral foramen respectively:

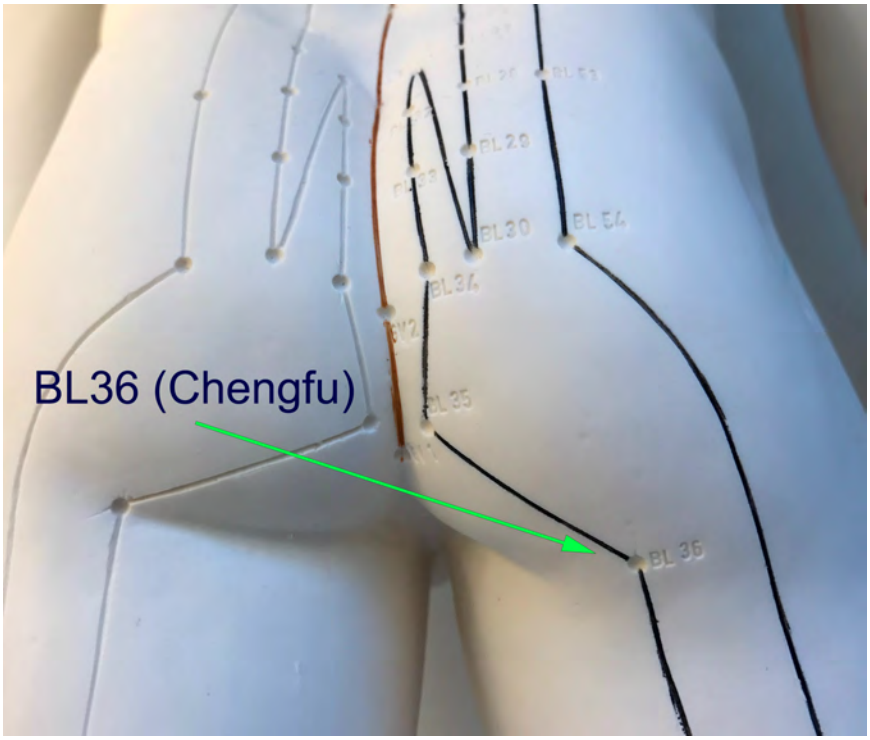
- BL31 (Shangliao)
- BL32 (Ciliao)
- BL33 (Zhongliao)

- BL34 (Xialiao)

Baliao acupoints are effective for the relief of lower back, sciatica, lumbar radiculopathy, sacrum pain and are also useful for the treatment of urinary disorders, difficult defecation, dysmenorrhea, leukorrhea, and irregular menstruation. BL32 is particularly useful for the treatment of lower back pain during labor and lower back pain radiating to the genitals. BL33 and BL34 are particularly effective for the treatment of coccyx pain.

BL36 (Chengfu, Hold and Support)

Translated as hold and support, BL36 is useful for the treatment of lower back pain radiating to the buttocks and for sciatica that is exacerbated by sitting. This point is located directly below the buttocks, in the middle of the transverse gluteal fold. The point is located in a depression below the buttocks that is between the hamstring muscles. There are times when patients have highly localized pain at this point and needling this point often provides rapid relief.

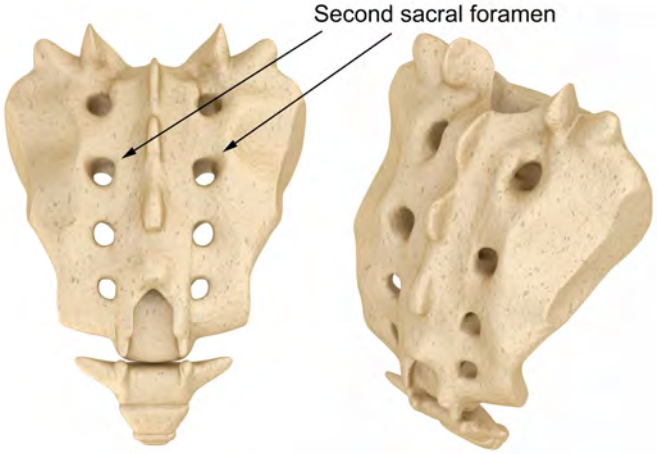


BL40 (Weizhong)

This acupoint is located at the midpoint of the transverse crease of the popliteal fossa, between the tendons biceps femoris and semitendinosus. The point is most easily located with the knee slightly flexed. BL40 is one of the four command points and is indicated for the treatment for the treatment of lumbar region pain. BL40 is the command point of the upper and lower back. It is also a Ma Dan-yang Heavenly Star point, which indicates this acupoint for the treatment of lumbar pain and dysfunction. This acupoint is also the lower he-sea point of the Bladder channel. This point is especially useful for patients with both knee and lower back disorders. BL40 is also renown for its effectiveness in the treatment of skin disorders, especially skin disorders due to heat in the blood.

BL53

Baohuang (BL53) is translated as bladder's vitals. This point is 3 cun lateral to the midline (GV channel) and is level with the 2nd sacral foramen (palpate to find the 2nd sacral foramen). An alternate method to locate this acupoint is to firmly press on the lateral edge of the buttocks and locate the point halfway between the midline and the lateral edge of the buttocks (level with the 2nd sacral foramen). This acupoint benefits urinary system, the lumbar region, and is effective for the treatment of lower back pain, sciatica, and associated radiculopathies.



Triple Acupuncture

Triple acupuncture is often applied to BL53, Yaoyan, or GB30 to enhance manual acupuncture effectiveness. The first needle is inserted to a moderate depth at the acupoint location. The second and third needle are inserted approximately 1 cun laterally and medially to the acupoint and angled slightly toward the acupoint. The second and third needle are inserted more deeply than the first needle, which was applied directly to the acupoint site. The moderate depth at the acupoint provides peaceful stimulation and the greater depth at the medial and lateral areas provides a stronger, supportive stimulation.

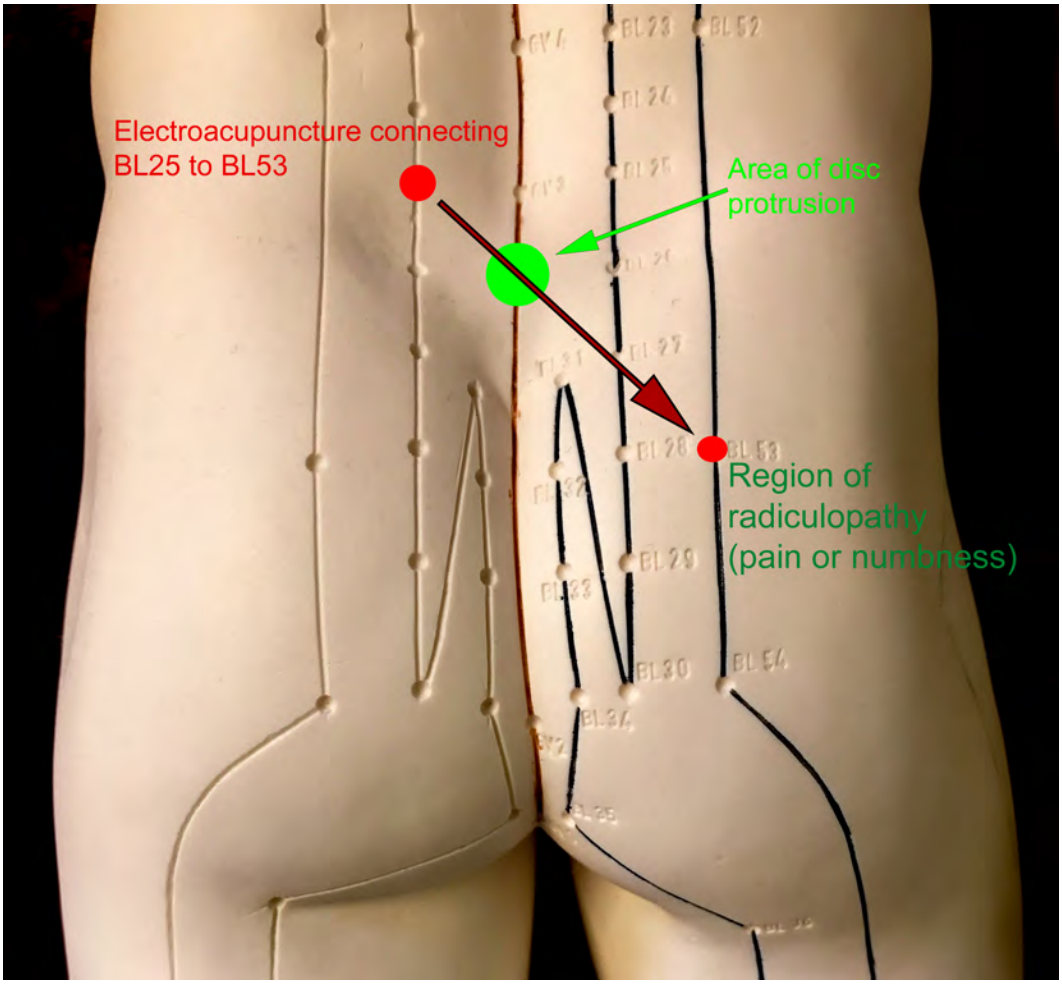
Crossing Midline Electroacupuncture

For patients with lumbar disc protrusions causing radiculopathy (distally radiating pain, weakness, numbness), electroacupuncture may be applied through the disc region to the area of perceived pain or numbness. For example, if a disc protrusion at L5/S1 causes radiating pain to the right buttocks region, apply one electroacupuncture alligator clip to the left BL25 acupoint and another to the right BL53, GB30, or Yaoyan acupoint. If the radiculopathy radiates even further (e.g., to the right side legs or feet), one may choose to connect electroacupuncture between the left BL25 acupoint and the right sided BL60 (Kunlun) or KD3 (Taixi) acupoint.

Most research suggests that electroacupuncture intensity levels may be set to patient tolerance levels. As for specific frequency settings, research conclusions vary. The research section towards the latter part of this course lists specific settings for specific acupuncture point prescriptions. A review published in *Anesthesiology - The Journal of the American Society of Anesthesiologists* concludes that electro-acupuncture is more effective at the 2 – 10 Hz setting than the 100 Hz setting for the relief of inflammation and neuropathic pain. The investigators note that electro-acupuncture “blocks pain by activating a variety of bioactive chemicals through peripheral, spinal, and

supraspinal mechanisms."[6] Caution: crossing the midline is not appropriate in areas near the heart. This example covers the lower back region only.

In this example, BL25 was selected because it is level with the lower border of the spinous process of the 4th lumbar vertebra. The disc protrusion is located on the next level down, at the L5 level. As a result, the current from the electroacupuncture passes from the L4 region through the L5 disc region and then to the distal acupoint in the buttocks or leg where the radicular pain or numbness resides. The following illustration shows how the current passes through the disc region:



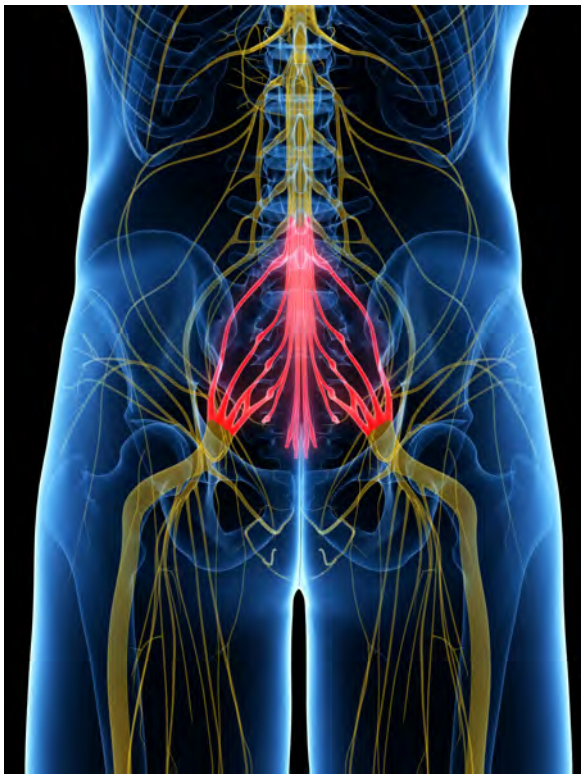
Example of L5/S1 region receiving electroacupuncture stimulation

6. Zhang, Ruixin, Ph.D.; Lixing Lao, Ph.D.; Ke Ren, Ph.D.; and Brian M. Berman, MD. "Mechanisms of Acupuncture–Electroacupuncture on Persistent Pain." Anesthesiology 120, no. 2 (2014): 482-503.

GB30 (Huantiao, Jumping Circle)

Huantiao (GB30) is the meeting point of the gallbladder and bladder channels. GB30 is also a Ma Da-yang Heavenly Star acupoint. This point is located 1/3 the distance between the greater trochanter and the sacral hiatus. The point is located with the patient lying on the side with the thigh flexed. Note: GV2 (Yaoshu, Lumbar Shu) is located at the sacral hiatus and is effective for the treatment of sacrum and lumbar pain. GB30 is useful for the treatment of hemiplegia and also lower back, hip, knee, and leg pain. Lower back pain related radiculopathy and sciatica are appropriate presentations for the implementation of an acupuncture point prescription using this acupoint.

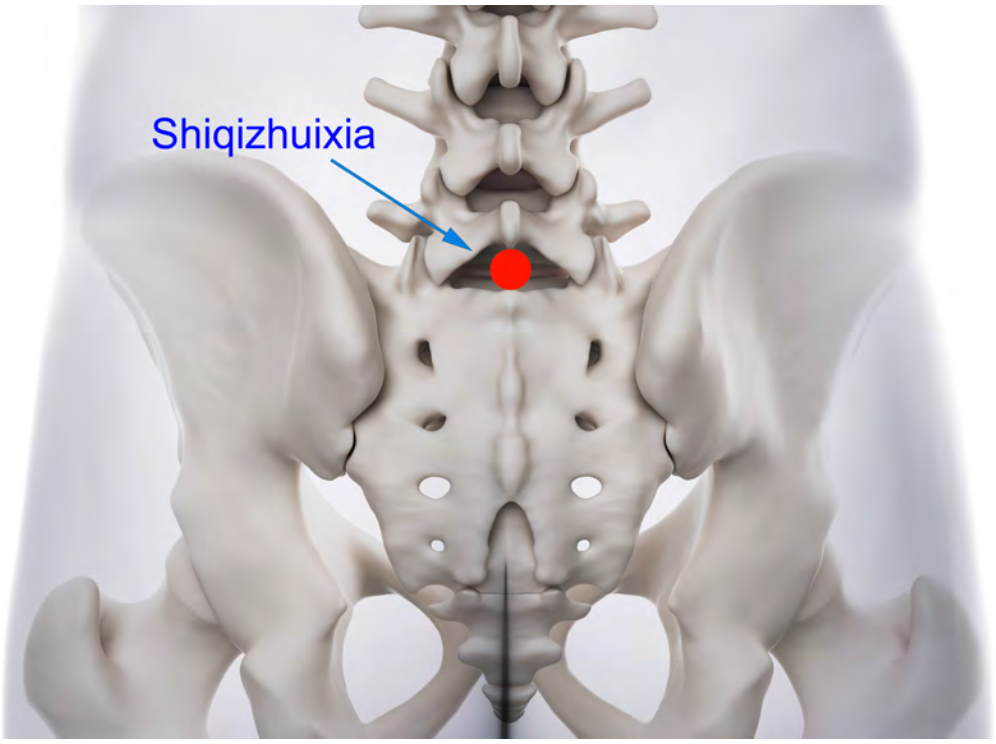
Sciatic nerve (in red)



Sacral plexus (in red)

Shiqizhuixia
(Below the 17th Vertebra, M-BW-25)

Shiqizhuixia is located on the midline of the back, in the depression below the spinous process of the fifth lumbar vertebra. This is an excellent and common choice for the treatment of lower back pain, particularly when there is a problem with the L5/S1 disc or IVF encroachment at L5/S1. This acupoint is also useful for the treatment of irregular menstruation, dysmenorrhea, and paralysis of the lower extremities. This acupoint combines well with BL26, BL31, BL32, BL40, BL53, and Huatuojiaji acupoints in acupuncture point prescriptions for the treatment of lower back pain and associated radiculopathy.



SI3 (Houxi, Back Stream)

When a loose fist is made, this acupoint is on the ulnar side, proximal to the 5th metacarpophalangeal joint, at the end of a transverse crease of the hand and at the junction of the red and white skin. At the ulnar border of the hand, this acupoint is located in the depression proximal to the head of the 5th metacarpal bone. This point is most easily located and needled when the patient forms a loose fist.

SI3 is a shu-stream, wood, and mother point. It is the confluent point of the Governing channel. This confluent point is paired with BL62 (which is the confluent point of the Yangqiao channel, also known as the Yang Heel channel). The confluent points are combined for the treatment of neck, shoulder, back, and inner canthus disorders. SI3 relaxes the muscle channels, opens the Governing channel, clears the spirit, and benefits the sensory orifices. SI3 is indicated for the treatment of stiff neck, headaches (especially occipital headaches), tinnitus, deafness, mania, malaria, lower back pain and sprain, knee pain, hemiplegia, night sweating, febrile diseases, tidal fever, finger spasms, shoulder pain, elbow pain, and intercostal neuralgia. SI3 has many special applications, including combining it with HT6 (Yinxi) for the treatment of night sweating.

For treatment of the lower back, SI3 has a special relationship to the Governing vessel as its confluent point. The Governing vessels runs run along the spinal column. SI3 is a Hand-Taiyang channel acupoint and is related to the Bladder Foot-Taiyang channel, which also runs through the lower back. The Governing channel and Taiyang channel relationships make SI3 an important distal acupoint for the alleviation of lower back pain.

KD3 (Taixi, Supreme Stream)

This acupoint is located between the tip of the medial malleolus and the Achilles tendon, level with the prominence of the medial malleolus. KD3 is a shu stream, earth, and yuan-source point. KD3 benefits the

kidneys, cools yin deficiency heat, and strengthens the lower back, lumbar spine, and knees. Traditional indications include irregular menstruation, spermatorrhea, enuresis, toothache, sore throat, tinnitus, deafness, emphysema, asthma, sore throat, and excessive thirst.

KD3 is especially effective for the alleviation of lumbar pain due to kidney deficiency. This makes KD3 particularly useful for the type of lower back pain that worsens throughout the day, chronic lower back pain, and in the elderly. Approaches to implementation include manual needling of KD3 to elicit a deqi response extending from the acupoint to the lower back or the application of electroacupuncture to KD3 (one electrical lead on each KD3 acupoint).

A powerful acupoint, KD3 is innervated by the medial crural cutaneous nerve on the course of the tibial nerve and the posterior tibial artery and vein run through KD3. Needling KD3 may elicit a strong deqi sensation, even when using moderate or peaceful needling techniques. It may be advisable to let patients know, in advance of needling, that an electric shooting sensation may occur and that this is a healthy response.

Yaoyan

This extra point is translated as lumbar eyes. It is located in the depression approximately 3.5 cun later to the lower border of L4. It is level with GV3 (Yaoyangguan). The depressions that are slightly over one handbreadth lateral to the spine (below the iliac crest) are the lumbar eyes. This point is effective for the treatment of both acute and chronic lower back pain.

Research

Acupuncture For Low Back Pain

Qi-guiding acupuncture relieves disc herniation pain and a special intensive silver acupuncture needle protocol relieves chronic lower back myofascial pain.

Researchers find acupuncture effective for the treatment of lower back pain disorders. In a protocolized study from the Shanghai Jiaotong University Sixth People's Hospital, researchers determined that a special type of manual acupuncture therapy, known as qi-guiding acupuncture, produces significant positive patient outcomes for lumbar intervertebral disc herniation patients. In related research from Xinping Hospital of Traditional Chinese Medicine, investigators find acupuncture combined with moxibustion effective for the alleviation of lower back pain due to lumbodorsal myofascial pain syndrome. A special application of silver acupuncture needles produced superior patient outcomes. Let's start with a look at the Shanghai Jiaotang University research and then we'll see how the silver needle protocol boosts treatment efficacy for the treatment of lower back pain.

Acupuncture is effective for the treatment of lumbar intervertebral disc herniations. Wu et al. (Shanghai Jiaotong University Sixth People's Hospital) investigated the treatment results of qi-guiding acupuncture with meridian differentiated acupoint selections and determined that it produces significant positive treatment outcomes for lumbar intervertebral disc herniation patients. Wu et al. also find electroacupuncture with meridian differentiated acupoint selections effective; however, qi-guiding acupuncture had a slightly higher rate of producing positive patient outcomes. Qi-guiding acupuncture had an 87.5% total treatment effective rate and electroacupuncture achieved an 86.6% total treatment effective rate. Qi-guiding acupuncture also had better outcomes for increases in nerve conduction velocity. The results

are definitive given the large sample size of 549 patients with lumbar disc herniations evaluated in this study.

Lumbar disc herniation patients experience lower back pain and radiculopathy (radiating pain and numbness) as a result of anulus fibrosis damage, IVF encroachment, and other issues associated with disc damage (Hu et al.). Acupuncture, as one of the most common non-surgical treatment methods for lumbar disc herniation, has a high treatment effective rate and no significant adverse effects (Cheng).

Qi-guiding acupuncture was first documented in ancient literature, including *The Systematic Classic of Acupuncture & Moxibustion* by Huang-fu Mi. In qi-guiding acupuncture, needle entry and removal is controlled and slow. To direct qi upward, the acupuncture needle is oriented upward; similarly, to direct qi downward, the needle is pointed downward. Subsequently, the needle is frequently rotated, lifted, and thrust to regulate the flow of qi in the body. Additional manipulation techniques may be intermittently applied. In modern use, qi-guiding acupuncture repairs ultramicroscopic structures of damaged nerve roots and accelerates other aspects of nerve repair, thereby increasing nerve conduction.

In this study, lumbar disc herniation patients receiving qi-guiding acupuncture achieved an 87.5% total treatment effective rate. Patients receiving electroacupuncture achieved an 86.6% total treatment effective rate. Both qi-guiding acupuncture and electroacupuncture significantly increased nerve conduction velocity. Qi-guiding acupuncture had a slightly greater improvement in common peroneal nerve conduction velocity and superficial fibular nerve conduction velocity. Common peroneal nerve conduction velocity increased from 38.26 (± 12.8) to 44.75 (± 5.24) after the application of qi-guiding acupuncture, and increased from 39.11 (± 3.64) to 39.86 (± 10.95) after electroacupuncture. Superficial fibular nerve conduction velocity increased from 41.63 (± 4.37) to 42.55 (± 6.43) after the application of qi-guiding acupuncture, and increased from 40.71 (± 9.56) to 40.43 (± 4.01) after electroacupuncture.

A total of 549 patients with lumbar disc herniations were treated and evaluated in this study. These patients were diagnosed with lumbar disc herniations between December 2012 and March 2014. They were randomly divided into a treatment group and a control group, with 280 patients in the treatment group and 269 patients in the control group. The treatment group underwent qi-guiding acupuncture therapy, while the control group received electroacupuncture. Acupoint selection for both groups was based on meridian differentiation. Identical acupoints were selected for both patient groups.

For Taiyang meridian lumbago and leg pain (scelalgia):

- **Shenshu (BL23)**
- **Dachangshu (BL25)**
- **Zhibian (BL54)**
- **Huantiao (GB30)**
- **Juliao (GB29)**
- **Yinmen (BL37)**
- **Weizhong (BL40)**
- **Chengshan (BL57)**
- **Kunlun (BL60)**

For Yangming meridian lumbago and leg pain:

- **Shenshu (BL23)**
- **Dachangshu (BL25)**
- **Qichong (ST30)**
- **Biguan (ST31)**
- **Futu (ST32)**
- **Tiaokou (ST38)**
- **Zusanli (ST36)**

For Shaoyang meridian lumbago and leg pain:

- **Shenshu (BL23)**
- **Dachangshu (BL25)**
- **Huantiao (GB30)**

- **Fengshi (GB31)**
- **Yanglingquan (GB34)**

For qi-guiding acupuncture, the following protocol was administered. Upon disinfection with 75% ethanol, a 0.30 mm x 40 mm filiform acupuncture needle was inserted into each selected acupoint. Huantiao and Juliao were needle to a depth of 2.5 inches. The remaining acupoints were needled to a depth of 1.2 inches. When a deqi sensation was achieved for all acupoints, qi-guiding needling with the Xie (reducing) manipulation technique was applied to Weizhong, Tiaokou, and Yanglingquan to transmit the needling sensation upward and toward the hip or waist. The same technique was applied to Huantiao, Juliao, and Biguan, instead transmitting the needle sensation downward and toward the legs. Subsequently, qi-guiding needling with the Bu (tonification) manipulation technique was applied on Dachangshu to transmit the needle sensation toward the lumbosacral area. The same technique was used on Shenshu until a deqi sensation of soreness or swelling was perceived at the lumbar region. A needle retention time of 20 minutes was observed during which the needles were rotated, lifted, and thrusted every 5 minutes to facilitate the flow of qi. One qi-guiding acupuncture session was conducted every other day for a total of 10 treatments.

Electroacupuncture for the control group was administered with the same aforementioned protocol. Before needle retention, the needles were connected to an electroacupuncture device. The device was then set to a continuous wave at 4 Hz with a 2mA current. A 20 minute needle retention time was subsequently observed. One electroacupuncture session was conducted every other day for a total of 10 treatments. The clinical results the Wu et al. study demonstrate that both qi-guiding acupuncture and electroacupuncture, when combined with meridian-differentiated acupoint selection, are suitable and effective therapies for lumbar disc herniation patients. However, qi-guiding acupuncture produces slightly better treatment outcomes in terms of nerve conduction velocity improvements.

In a related study, Wang H.D. (Xinping Hospital of Traditional Chinese Medicine) finds acupuncture combined with moxibustion therapy effective for the treatment of lumbodorsal myofascial pain syndrome. The study also finds that a silver needle protocol produces preferable treatment outcomes to conventional acupuncture. Lumbodorsal myofascial pain syndrome causes chronic lumbago and commonly occurs in young adults. Intensive acupuncture combined with moxibustion using silver needles was famously used by Professor Xuan Zhe Ren, a renowned Chinese orthopedist.

Acupoints were selected based on the degree of soft tissue damage, area of muscular tissue involved, and size of tendon contracture. In this approach, acupoints are 2 cm apart from each other and are mainly located on the lumbosacral region. Results from Wang's study demonstrate that lumbodorsal myofascial pain syndrome patients receiving intensive acupuncture combined with moxibustion using silver needles achieved a 90% total treatment effective rate. Conventional acupuncture with moxibustion achieved an 83.3% total treatment effective rate.

Wang's study involved a total of 60 patients with lumbodorsal myofascial pain syndrome. They were divided into a treatment group and a control group, with 30 patients in each group. The treatment group underwent intensive acupuncture-moxibustion therapy with silver needles. The control group received conventional acupuncture-moxibustion.

Intensive acupuncture-moxibustion with silver needles was applied to the T12 – L4 Jiaji acupoints and the acupoints located at the midpoint between each Jiaji acupoint. In addition, acupoints located 2 cm lateral to the Jiaji acupoints were needled. Finally, moxibustion applied with one Zhuang of 3 cm moxa cigar. One session was conducted daily for a total of 7 days. For conventional acupuncture-moxibustion therapy, the following primary acupoints were selected:

- **Shenshu (BL23)**
- **Mingmen (GV4)**

- **Weizhong (BL40)**
- **Ashi**

Additional acupoints were selected based on individual symptoms. For lumbago with chill-dampness:

- **Yaoyangguan (GV3)**

For lumbago due to exhaustion:

- **Yanglingquan (GB34)**
- **Sanyinjiao (SP6)**

For lumbago with kidney deficiency:

- **Zhishi (BL52)**
- **Taixi (KD3)**

A needle retention time of 30 minutes was observed. Subsequently, moxibustion was applied using either a 4 hole or 6 hole moxa box on the lumbar acupoints. One session was conducted daily for a total of 7 days. The treatment efficacy for each patient was evaluated and categorized into 1 of 3 tiers:

- *Recovery: Complete elimination of symptoms. Physical movement regained completely. No pain points.*
- *Significantly effective: Elimination of symptoms. Physical movement regained. Discomfort reoccurs only under exhaustion or change in weather. No pain or numbness.*
- *Effective: Symptoms relieved. Pain or numbness present.*
- *Not effective: No improvement in symptoms.*

The total treatment effective rate for each patient group was derived as the percentage of patients who achieved at least an effective tier of improvement. The intensive acupuncture-moxibustion with silver needles protocol outperformed conventional acupuncture. However, both approaches produced significant positive patient outcomes.

Both aforementioned studies indicate that acupuncture is effective for the alleviation of lower back pain. These studies highlight the differences in therapeutic effects between various forms of acupuncture. As a result, qi-guiding acupuncture and intensive acupuncture-moxibustion with silver needles are found clinically effective for the relief of lower back pain.

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American College of Physicians

The American College of Physicians formally recommends acupuncture for the treatment of back pain. Published in the prestigious *Annals of Internal Medicine*, clinical guidelines were developed by the American College of Physicians (ACP) to present recommendations based on evidence. Citing quality evidence in modern research, the ACP notes that nonpharmacologic treatment with acupuncture for the treatment of chronic low back pain is recommended. The official grade by the ACP is a “strong recommendation.” [1]

A major goal of the recommendation is for acupuncture and other nonpharmacological therapies to replace drug therapy as a primary source of pain relief. Treatment with opioids is only recommended, with an official “weak recommendation,” when other modalities do not provide adequate relief. A strong recommendation is also made by the American College of Physicians for the treatment of both acute and subacute lower back pain with heat, massage, acupuncture, and spinal manipulation. [2] The recommendations were approved by the ACP Board of Regents and involves evidence based recommendations from doctors at the Penn Health System (Philadelphia, Pennsylvania), Minneapolis Veterans Affairs Medical Center (Minnesota), and the Yale School of Medicine (New Haven, Connecticut).

The American College of Physicians notes that approximately 25% of USA adults have had, at the very minimum, a one day lower back pain episode within the past three months. The socioeconomic impact of lower back pain in the USA was approximately $100 billion in the year 2006 . The costs include medical care and indirect costs due to lost wages and declines in productivity. [3] Recommendations for treatment options, including those for the use of acupuncture, include considerations of positive medical patient outcomes, the total number of back pain episodes, duration between episodes, alleviation of lower back pain, improvement in function of the back, and work disability reductions. Recommendations are for both radicular and nonradicular lower back pain.

The target audience for the American College of Physicians recommendations includes all doctors, other clinicians, and the adult population with lower back pain. The ACP notes, “Moderate-quality evidence showed that acupuncture was associated with moderately lower pain intensity and improved function compared with no acupuncture at the end of treatment .” [4] In agreement, the National Institute of Neurological Disorders and Stroke (National Institutes of Health) notes that acupuncture is an effective treatment modality for the relief of chronic lower back pain. [5]

These findings are consistent with those published in Mayo Clinic proceedings finding that acupuncture is effective for the treatment of lower back pain. The same Mayo Clinic report notes that acupuncture does not cause any significant adverse effects. [6] The Mayo Clinic findings apply to both nociceptive and non-nociceptive pain. Nociceptive back pain includes musculoskeletal inflammation and pain involving nerve cells wherein nociceptors are activated. Nociceptors are afferent neurons in the skin, muscles, joints, and other areas. For example, nerve impingement (often referred to as a “pinched nerve”) produces one type of nociceptive pain.

Non-nociceptive pain does not involve inflammation and is more relevant to pain processing in the central nervous system. One type of non-nociceptive pain condition is fibromyalgia and acupuncture has been confirmed as an effective treatment modality for this condition. The Mayo Clinic proceedings note, “Martin et al. found a significant improvement between electroacupuncture vs sham electroacupuncture. Differences were seen on the Fibromyalgia Impact Questionnaire (FIQ) scores for fatigue and anxiety.” [7]

The Mayo Clinic and American College of Physicians findings are consistent with additional quality research. Memorial Sloan Kettering Cancer Center (New York) and University of York (United Kingdom) researchers note “We have provided the most robust evidence from high-quality trials on acupuncture for chronic pain. The synthesis of high-quality IPD found that acupuncture was more effective than both

usual care and sham acupuncture. Acupuncture is one of the more clinically effective physical therapies for osteoarthritis and is also cost-effective if only high-quality trials are analysed." [8]

Doctors understand the true need for effective pain management. Nonpharmacological solutions are important for a variety of reasons including prevention of addiction, effective relief of pain, and prevention of adverse effects. This is often of heightened concern during pregnancy and for children. As a result, university hospitals integrate acupuncture into usual care settings to improve patient outcomes. For example, pediatric doctors at the UCSF Benioff Children's Hospital San Francisco provide acupuncture to children, including non-needle laser acupuncture. At the University of California hospital, acupuncture is made available for both inpatients and outpatients. Dr. Kim notes that acupuncture reduces nausea up to 70%. She adds that acupuncture is also effective for significant reductions in post-surgical pain and chronic headaches. [9]

Recently, researchers have discovered how acupuncture stops pain and provides other forms of relief for patients. Breakthrough research conducted by University of South Florida (Tampa) and Fujian University of Traditional Chinese Medicine (Fuzhou) researchers documents how acupuncture stops pain. The researchers note, "acupuncture exerts a remarkable analgesic effect on SCI [spinal cord injury] by also inhibiting production of microglial cells through attenuation of p38MAPK and ERK activation." [10]

Microglia are central nervous system immunity cells that secrete proinflammatory and neurotoxic mediators. Acupuncture reduces pain by attenuating this response. The researchers also document that acupuncture provides neuroprotection. The researchers note that acupuncture prevents brain damage in the hippocampus by "preventing microglial activation." The University of South Florida members of the research team were from the Department of Neurosurgery and Brain Repair and the Department of Pharmaceutical Sciences. Funding was provided by the United States Department of Defense, University of

South Florida Neurosurgery and Brain Repair, and the James and Esther King Biomedical Research Foundation.

The aforementioned research reveals an important biochemical mechanism involved in acupuncture's ability to alleviate pain and reduce harmful inflammation. Researchers focus on other mechanisms activated by administration of acupuncture treatments. For example, laboratory investigations reveal how acupuncture regulates blood pressure.

University of California (Irvine) researchers find acupuncture effective for the treatment of high blood pressure. In a controlled laboratory study, University of California researchers have proven that electroacupuncture at acupoint ST36 (Zusanli) promotes enkephalin production, which dampens proinflammatory excitatory responses from the sympathetic nervous system that cause hypertension. Specifically, electroacupuncture regulates preproenkephalin gene expression, a precursor substance that encodes proenkephalin, which then stimulates the production of enkephalin. [11]

The formal recommendation for the use of acupuncture in cases of lower back pain by the American College of Physicians is based on modern research. Mayo Clinic findings and research from the Memorial Sloan Kettering Cancer Center (New York) and the University of York support this recommendation. In response to the needs of patients, doctors have already implemented acupuncture into several hospitals throughout the USA and both inpatient and outpatient acupuncture treatments are available.

Now, modern scientific investigations reveal how acupuncture works. University of South Florida and Fujian University of Traditional Chinese Medicine researchers confirm acupuncture's ability to attenuate microglial activation. University of California researchers have quantified acupuncture's ability to control inflammation by regulating enkephalins. In addition, the NCCAOM (National Certification Commission for Acupuncture and Oriental Medicine) provides professional certification for acupuncturists, which ensures standards of

excellence for licensed acupuncturists. Given the large body of supportive research and the administrative support for providing safe and effective acupuncture to the general public, expect to see greater implementation of acupuncture into usual care settings.

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Lumbar Disc Herniations

Researchers find acupuncture safe and effective for the treatment of lumbar disc herniations across multiple independent clinical trials. A meta-analysis of investigations reveals that Jiaji acupoints yield significant positive patient outcomes when combined with manual and electroacupuncture techniques. Distal and abdominal acupuncture also demonstrated significant positive patient outcomes. This research review covers rare acupuncture points demonstrating clinical efficacy and details a powerful manual acupuncture technique proven effective for relief of lumbar disc herniation symptoms. We'll start with primary research by Song et al. and then take a close look at a meta-analysis by Wang et al., including specific approaches to clinical care proven to deliver excellent results.

Researchers find both electroacupuncture and manual acupuncture effective for the treatment of lumbar disc herniations. Song et al. conducted a clinical trial at the Xixiang People's Hospital in Guangdong, China. Electroacupuncture and manual acupuncture significantly reduced patients' pain levels. Outstanding positive patient outcomes were recorded for the electroacupuncture treatment group. Patients with lumbar disc herniations receiving electroacupuncture had a 91.8% total treatment effective rate. Improvements included pain reductions, increases in range of motion, and improved straight leg lift testing.

A sample size of 123 patients was randomly divided into two groups. In group one, 61 patients received electroacupuncture therapy. In group two, 62 patients received manual acupuncture. For the electroacupuncture patients, the Jiaji acupoints at the specific vertebra corresponding to the herniated lumbar disc, as well as on the two adjacent vertebrae, were selected as the primary acupoints and treated on both sides. Additional secondary acupoints were selected based on individual patient symptoms.

For hip pain, the following acupoints were chosen:

- Huantiao (GB30)

- Chengfu (BL36)

For calf pain:

- Weizhong (BL40)
- Chengshan (BL57)

For lateral calf pain, the following acupoint were chosen:

- Yanglingquan (GB34)
- Zusanli (ST36)
- Kunlun (BL60)
- Xuanzhong (GB39)

Treatment commenced with the patient in a prone position. Upon disinfection, a 0.30 x 40 mm disposable needle was pierced perpendicularly into each acupoint until a deqi sensation was reported. Next, an electroacupuncture device was connected to the needles in the Jiaji acupoints. A continuous waveform was selected at an initial 0.8 Hz frequency. The intensity was then gradually increased until both sides of the lumbar muscle were twitching rhythmically at a tolerable rate for the patient. Subsequently, a 30 minute needle retention time was observed. One electroacupuncture session was conducted once per day for 20 consecutive days with a one day break after the 10th day.

For the manual acupuncture patients, the following acupoints were selected according to the affected area:

- Ganshu (BL18)
- Shenshu (BL23)
- Yaoyan (MBW24)
- Huantiao (GB30)
- Zhibian (BL54)
- Chengfu (BL36)
- Weizhong (BL40)
- Weiyang (BL39)
- Yanglingquan (GB34)

- Feiyang (BL58)
- Guangming (GB37)
- Kunlun (BL60)
- Tonggu (BL66)
- Jinggu (BL64)
- Houxi (SI3)

Treatment commenced with the patient in a prone position. Upon disinfection, a 0.30 x 40 mm disposable needle was pierced perpendicularly into each acupoint until a deqi sensation was felt. During the subsequent 30 minute needle retention time, the acupuncture needle was manipulated once every 10 minutes. One acupuncture session was conducted once per day for 20 consecutive days with a one day break after the 10th day. The total treatment efficacy was measured based on the TCM Treatment Efficacy Guidelines issued by the TCM Governing Board. Efficacy was categorized into 1 of 3 possible tiers:

- *Effective: Waist and leg pain ceased. Straightened leg lift of 70° and above. Normal waist and leg activity regained.*
- *Improvement: Waist and leg pain relieved. Improvement in extent of waist movement.*
- *Not effective: No improvement in symptoms.*

The total treatment effective rate was measured as a percentage of patients who achieved at least the “improvement” tier. Electroacupuncture produced a 91.8% total treatment effective rate including pain reductions, increases in range of motion, and improved straight leg lift testing. Song et al. conclude that acupuncture is effective for the treatment of lumbar disc herniations.

The research team prefaced their study with background information. Lumbar disc herniation is a common disease among adults. Pain, numbness, or weakness arises due to damage or compression of the nerve root caused by herniation of the nucleus pulposus. This is the soft inner core of the vertebral disc that helps absorb compression and torsion. A herniation occurs when the soft material from the inner core

escapes through the outer rings of the disc. This stubborn disease is usually characterized by an abrupt onset with a prolonged or repetitive course of symptomatic flare-ups. Main symptoms include leg and lumbar region pain, and also lower limb motor dysfunction. Lower limb paralysis is possible in severe cases.

Song et al. note that acupuncture is a relatively non-invasive treatment for disc herniations that dredges meridians, promotes qi circulation, eliminates blood stasis, and expels wind-dampness. Pain is thereby relieved when blood and qi circulation is restored. In modern terms, acupuncture stimulates parasympathetic tone and downregulates excess sympathetic nervous system activity. Resulting decreases in the inflammatory cascade of endogenous biochemicals results from the regulation of the autonomic nervous system.

Song et al. add that acupuncture regulates nerve activity, facilitates muscles relaxation, mitigates muscular spasms, dilates blood vessels, improves blood circulation, and also reduces both edema and inflammation. The Jiaji acupoints, located on the back beside the Du meridian, are used to treat diseases related to the corresponding affected nerve segments. Electroacupuncture utilizes electrical stimulation to facilitate the regeneration of damaged nerves by improving nerve cell metabolism and nerve cell enzyme activity. The basis of this is that electroacupuncture forms a localized, stable, and subtle electric current that boosts the electrophysiological properties of nerve cells (Sun, 1996).

In a related study, Wang et al. conducted a meta-analysis on the efficaciousness of acupuncture for the treatment of lumbar disc herniations. Without exception, the clinical investigations demonstrate that acupuncture is a safe and effective treatment modality for lumbar disc herniation patients. The following are examples of studies included in the meta-analysis.

Liu et al. investigated the efficacy of conventional acupuncture therapy. Conventional acupuncture treatment was administered by first identifying the vertebrae with lumbar disc herniations. Corresponding

Du meridian acupoints and the two adjacent Jiaji acupoints were needled. The identified acupoints were treated with the Shao Shan Huo (Setting the Mountain on Fire) needling technique. Patients were treated for 10 consecutive days and achieved a 95% total treatment effective rate.

Shao Shan Huo is a powerful tonification needling technique in Traditional Chinese Medicine (TCM). Needles are inserted and stimulated to elicit the arrival of deqi for purposes of reinforcing qi. When applied properly, the patient feels a warm sensation at the needle region. In addition, the skin will be flush red as a result of enhanced micro-circulation of blood.

Initially, the needle is inserted slowly to superficial depth beneath the skin. During the procedure, lifting and thrusting is applied to three levels of depth beneath the skin, starting with the most superficial level at approximately a 0.5 cun depth. This is followed by lifting and thrusting at the middle level at approximately 1.0 cun and the deep level at approximately 1.5 cun. Depth varies according to patient size and acupoint location.

At each of the three depths of insertion, the needle motion combines quick and forceful thrusting with slow and gentle lifting for a total of nine times. Rotation may also be applied with the same techniques. After stimulation at all three levels is complete, the needle is lifted to the superficial level and the procedure is repeated, often three times, to ensure elicitation of a qi sensation producing heat and redness of the skin. The patient may also sweat in the region of the needle or throughout the body as a result of the heat sensation produced by this tonification method. Liu et al. achieved a 95% total treatment effective rate using the Setting the Mountain on Fire technique using the Du and Jiajia (Huatuojiaji) acupuncture points at correlated regions to lumbar disc herniations. Notably, acupuncture was applied for 10 consecutive days.

Deng and Cai's investigation also examined application of the Jiaji acupoints for the treatment of lumbar disc herniations. In a different

approach to needle stimulation, Deng and Cai applied electroacupuncture stimulation to the needles. They achieved significant levels of positive patient outcomes in their clinical trial. In their investigation, patients were treated every other day. Short-term results and a three month follow-up confirm significant clinical improvements.

He et al. had an entirely different approach to acupuncture therapy for the treatment of lumbar disc herniations. Their approach focused on abdominal acupuncture and anterior acupoints. The clinical investigation yielded significant positive patient outcomes. In their semi-protocolized investigation, a set of primary acupoints were applied plus secondary acupoints were added for specific diagnostic concerns. The primary acupoints for all patients were the following:

- Shuifen (CV9)
- Qihai (CV6)
- Guanyuan (CV4)

Next, secondary acupoints were added based on diagnostic criteria. For acute lumbar disc herniations, the following acupoints were added:

- Shuigou (GV26)
- Yintang (MHN3)

For prolonged lumbar disc herniation, the following acupuncture point was added:

- Qixue (KD13)

For generalized lumbago, the following acupoints were added:

- Wailing (ST26)
- Qixue (KD13)
- Siman (KD14)

For sciatica occurring when sitting, the following acupuncture points were added:

- Qipang
- Wailing (ST26), affected side only
- Xiafengshidian
- Xiafengshixiadian

He et al. measured improvement rates after three weeks of acupuncture therapy. Patients achieved significant improvements. The researchers conclude that the protocol is effective for the treatment of lumbar disc herniation symptoms. He et al. used several acupoints termed 'extra' points including Xiafengshidian, Xiafengshixiadian, and Qipang. The acupoints demonstrate that the researchers focused on abdominal acupuncture as a means of treating lumbar concerns.

Xia Feng Shi Dian (Xia Feng Shi Dian, Lower Wind-Damp Point) is located 2.5 cun lateral to CV6 and is indicated for the treatment of knee disorders, including postoperative swelling and pain. Xiafengshixiadian (Xia Feng Shi Xia Dian, Below Wind-Damp Point) is located 3 cun lateral to CV5 and is used for leg, ankle, and foot disorders. Qipang (Qi Pang, Beside Qi) is located 0.5 cun lateral to CV6 and is indicated for lower back and leg pain, swelling, and weakness; including postoperative disorders.

The meta-analysis included the clinical research of Zhang et al. Manual acupuncture was applied to acupoints surrounding the afflicted area. All needles were directed towards the center of the afflicted region. Zhang et al. achieved a 97.5% total treatment effective rate.

Overall, the metal-analysis by Wang et al. documents that acupuncture is a safe and effective treatment modality for patients with lumbar disc herniations. Implementation of Jiaji acupoints was common across several studies. Other techniques including abdominal acupuncture and local Ashi acupoint acupuncture also demonstrated clinical effectiveness. Both electroacupuncture and specialized manual acupuncture demonstrated effectiveness as well. As a result of the findings, the researchers conclude that acupuncture is an important treatment option for patients with lumbar disc herniations.

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Nerve Regeneration

Acupuncture repairs injured nerves. Findings published in *Neural Regeneration Research* demonstrate that acupuncture causes injured lower and upper limb motor nerves to repair. Electromyographic nerve conduction tests of acupuncture patients with nerve injuries document "an effective response" in 80% of patients participating in the study. Electromyography confirms that acupuncture significantly improves motor nerve conduction velocity and amplitude and also promotes functional nerve repair.

The researchers made an important discovery. A special set of acupuncture points resulted in good to excellent clinical responses at a very high rate. Using only local acupuncture points, patients had an effective rate of 38.5%. By adding acupuncture points to the Du meridian in addition to local acupuncture points, the effective rate jumped to 80%.

The Du meridian is a pathway composed of 28 primary acupuncture points plus extra acupoints. Many of the Du meridian acupuncture points are located on the midline of the back below the spinous processes of the vertebrae. In Traditional Chinese Medicine (TCM), the application of acupuncture points to the Du meridian (Governor vessel) are used for the treatment of many disorders including spine and brain ailments, vertigo, numbness, tremors, febrile diseases, and infertility.

The research published in *Neural Regeneration Research* confirms the Du meridian's significant role in the treatment of nerve injuries. Electroacupuncture was applied to both the upper and lower limb groups at a rate of once per day, five times per week for a total of six weeks. The total number of acupuncture treatments was 30 sessions per patient. The researchers conclude, "Our results indicate that Governor vessel and local meridian acupoints used simultaneously promote functional repair after peripheral nerve injury."

The acupuncture points used in the study were a protocolized set of two acupuncture point prescriptions, one for the upper limbs and one for the lower limbs. The upper limb acupuncture point prescription consisted of local acupoints at the site of the injured nerve plus the following Du meridian acupoints:

- Baihui (DU20)
- Fengfu (DU16)
- Dazhui (DU14)
- Shenzhu (DU12)

The lower limb acupuncture point prescription consisted of local meridian acupoints at the site of the injured nerve plus the following Du meridian acupoints:

- Jizhong (DU6)
- Mingmen (DU4)
- Yaoyangguan (DU3)
- Yaoshu (DU2)

The local acupuncture points used in the study were chosen based on the area of nerve injury. Radial nerve injuries were treated with the following acupuncture points:

- Jianyu (LI15)
- Binao (LI14)
- Quchi (LI11)
- Hegu (LI4)
- Yangxi (LI5)

Ulnar nerve injuries were treated with the following acupuncture points:

- Qingling (HT2)
- Xiaohai (SI8)
- Zhizheng (SI7)
- Wangu (SI4)
- Houxi (SI3)

Median nerve injuries were treated with the following acupuncture points:

- Quze (PC3)
- Daling (PC7)
- Neiguan (PC6)
- Laogong (PC8)

Peroneal nerve injuries were treated with the following acupuncture points:

- Yanglingquan (GB34)
- Guangming (GB37)
- Juegu (GB39)
- Qiuxu (GB40)

Tibial nerve injuries were treated with the following acupuncture points:

- Yinlingquan (SP9)
- Sanyinjiao (SP6)
- Diji (SP8)
- Lougu (SP7)

Sciatic nerve injuries were treated with the following acupuncture points:

- Huantiao (GB30)
- Ciliao (BL32)
- Zhibian (BL54)
- Yanglingquan (GB34)
- Weizhong (BL40)
- Juegu (GB39)

Brachial plexus injuries were treated with the following acupuncture points:

- Jianyu (LI15)
- Binao (LI14)

- Quchi (LI11)
- Waiguan (SJ5)
- Baxie (EX-UE8)

The acupuncture needles were 0.35 x 25 mm and were applied to an approximate depth of 1 cun at each acupoint. Manual acupuncture was applied to elicit a response followed by application of electroacupuncture with a sparse-dense wave between 2 - 100 Hz. Intensity was set to tolerance levels.

The researchers note that nerve injuries affect the metabolic microenvironment. Citing an example, they note that sciatic nerve injuries reduce acetylcholinesterase activity in the lumbar spinal cord microenvironment. This causes neuronal cell death thereby impeding nerve repair. The researchers note that acupuncture counteracts this effect citing that it successfully increases “acetylcholinesterase expression in spinal cord tissue after peripheral nerve injury.” As a result, the researchers suggest that this may be an important mechanism by which acupuncture promotes the healing of peripheral nerves.

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Disc Herniations

Acupuncture and electroacupuncture relieve lower back pain due to disc herniations. Heilongjiang University of TCM researchers investigated the analgesic effects of both manual acupuncture and electroacupuncture. Both types of acupuncture successfully relieved focal lower back pain and sciatica.

Electroacupuncture outperformed manual acupuncture in achieving the greatest number of positive patient outcomes. The total effective rate for the relief of pain was 97.5% for electroacupuncture and 89.5% for manual acupuncture in the randomized controlled trial. The total effective rate included patients with significant reductions or elimination of pain, improved lower limb reflexes, ability to resume work, and significant improvements in range of motion.

The researchers applied acupuncture to the following acupoints:

- BL31, Shangliao
- BL32, Ciliao
- BL33, Zhongliao
- BL34, Xialiao
- BL54, Zhibian
- BL40, Weizhong
- BL60, Kunlun

A manual acupuncture group was compared with an electroacupuncture group whose BL31, BL40, BL34, and BL60 acupoints were stimulated with continuous wave stimulation at a comfortable intensity level. Electroacupuncture was only added after the arrival of deqi at the acupoints. Total needle retention time was 30 minutes per acupuncture session for both groups. All patients received acupuncture at a rate of once per day for ten days. The researchers concluded that both acupuncture and electroacupuncture are safe and effective for the treatment of lumbar disc herniation pain.

The researchers conducted a protocolized study using a predetermined acupuncture point prescription for all participants in the investigation. No customization of the acupuncture point prescription was made based on individual symptoms or differential diagnostics. This approach differs from standard clinical usage wherein a licensed acupuncturist customizes the treatment protocol based upon signs and symptoms. The predetermined acupuncture point prescription is common in research due to the efforts of investigators attempting to eliminate experimental variables.

The researchers note that one part of the investigation was to test the efficacy of needling the Bladder Foot-Taiyang acupuncture meridian for the treatment of lumbar pain. Citing a historical precedent in Traditional Chinese Medicine (TCM) principles and usage, the researchers applied a modern biomedical experiment to test the ancient indication for use of Bladder Foot-Taiyang acupoints for the treatment of lower back pain. Based on the findings of the investigation, the researchers conclude that needling Bladder Foot-Taiyang acupuncture points are effective in the relief of lumbar disc herniation related pain. Moreover, the researchers conclude that the addition of electroacupuncture is more effective than using only manual acupuncture.

This investigation tests manual acupuncture, electroacupuncture, and TCM theory on the effectiveness of Bladder Tai-Yang meridian usage for lower back pain treatment. Using a modern randomized controlled study, investigators tested the principle of treating pain along the course of a meridian's pathway with acupoints located on the meridian. In addition, TCM principles state that lower back pain may be treated with the application of Bladder Tai-Yang meridian points. The results confirm this ancient principle making this an intriguing study in that both clinical results and ancient TCM theory align in a modern investigation.

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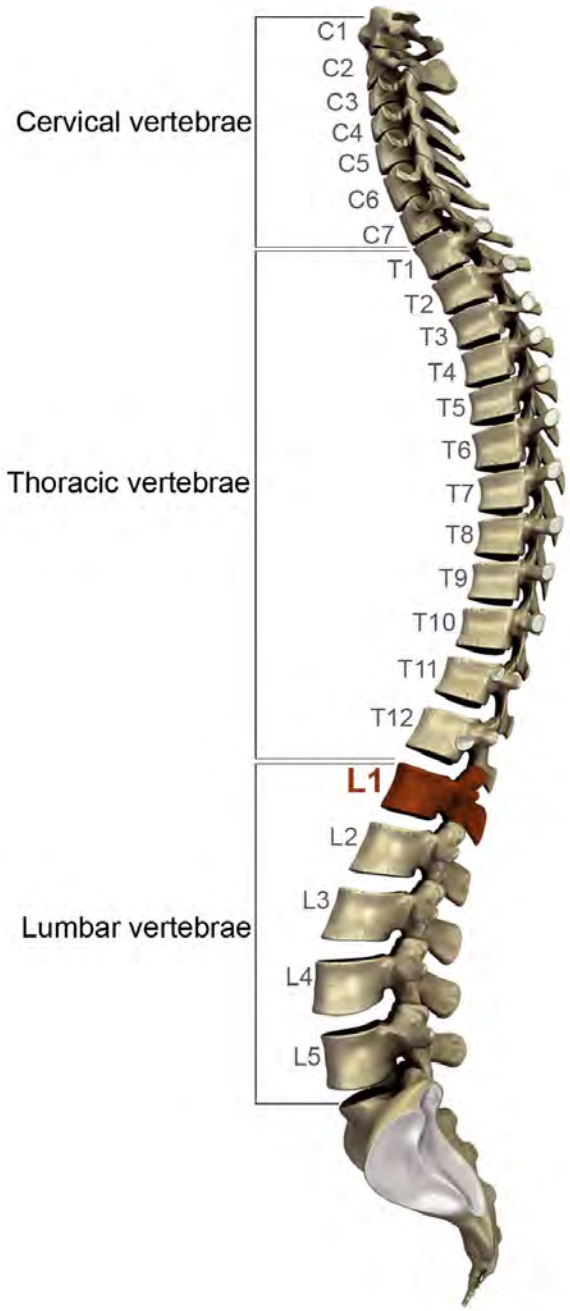

Lower Back Pain and Inflammation

Acupuncture relieves lower back pain and restores range of motion. Independent research teams find acupuncture effective for treating lumbar disc herniations, lower back muscle spasms and sprains, and chronic pain of the lower back. Researchers detail specific acupuncture point prescriptions found effective for the relief of these conditions.

Research published in China Health Standard Management by Huang et al. finds acupuncture plus moxibustion effective for the treatment of lumbar disc herniations. Research published in the *Shanghai Journal of Acupuncture and Moxibustion* by Liu et al. finds acupuncture effective for the treatment of chronic lower back pain. Research published in the *Clinical Journal of Chinese Medicine* by Yan et al. and by a separate team from the Heilongjiang University of Chinese Medicine independently confirm that acupuncture relieves lumbar sprains. In addition, the *Journal of Cervicodynia And Lumbodynia* has published research from the Wulumuqi Central Hospital of Lanzhou by Xu et al. finding acupuncture effective for the alleviation of lower back muscle spasms. Let's take a look at how these teams achieved successful positive patient outcomes.

Researchers from the People's Hospital of Han Nan District in Wuhan (Huang et al.) document a 90% total effective rate for the treatment of lumbar disc herniations with acupuncture plus moxibustion treatments. Acupuncture as a standalone therapy without moxibustion had an 85% total effective rate. The total effective rate includes a significant reduction or elimination of lower back, waist, and leg pain. In addition, significant lumbar motor functional improvements and improved results with the straight leg test were calculated as part of the total effective rate. The researchers document that acupuncture plus moxibustion improves range of motion and reduces pain, inflammation, and edema.

The primary acupuncture points used in the study were the following:

- Huatuojiaji
- Shenshu (BL23)

- Mingmen (DU4)
- Yaoyangguan (DU3)
- Huantiao (GB30)

Rotating and thrusting manual acupuncture techniques were applied to Shenshu, Mingmen, and Yaoyangguan for 2 – 3 minutes to elicit deqi. Huatuojiaji points were needled until patients reported sensations consistent with the arrival of deqi. Secondarily, acupuncture points were added for specific conditions:

- Yanglingquan (GB34) for L4 – L5 disc herniation
- Weizhong (BL40) for L5 – S1 disc herniation

Moxibustion was performed by cutting 2 cm moxa pieces from a moxa stick. The moxa was implemented at the handle of Shenshu, Yaoyangguan, and Mingmen. Moxibustion was performed once per day for six days followed by a one day break from treatment. Next, an additional six days of acupuncture plus moxibustion was applied. A 90% total effective rate was achieved using acupuncture plus moxibustion whereas an 85% total effective rate was achieved using acupuncture as a standalone procedure.

Researchers from the Chengdu Hospital of Traditional Chinese Medicine (Liu et al.) conclude that acupuncture is effective for the alleviation of lower back pain. The researchers document an 87.1% total effective rate including improvements in neurological testing, range of motion, and reductions in pain frequency and intensity. Acupuncture was applied to a protocolized set of acupoints:

- Ashi
- Yaoyangguan (DU3)
- Shenshu (BL23)
- Baliao (BL31 – 34)
- Weizhong (BL40)
- Feiyang (BL58)
- Kunlun (BL60)

The needles were manually stimulated to elicit deqi. Next, the needles were retained for thirty minutes. Acupuncture was applied once per day for five days followed by a two day break. The process was repeated three times for a total of four courses of care comprising a grand total of twenty acupuncture treatments. The researchers note that the 87.1% total effective rate included pain reduction, increased mobility, and the ability of patients to resume normal life and work activities.

Researchers from the Wulumuqi Central Hospital of Lanzhou (Xu et al.) conclude that acupuncture plus movement therapy alleviates muscle spasms of the lower back. Improvements include pain reduction, range of motion increases, and the ability to resume activities of daily living unencumbered by disability due to lumbar muscle spasms. Patients receiving acupuncture plus movement therapy had a 91.39% total effective rate. Patients receiving only acupuncture had a 70.70% total effective rate. As result, the researchers formally recommend acupuncture plus the addition of movement therapy for the purposes of achieving optimal clinical results.

Research published in the *Clinical Journal of Chinese Medicine* concludes that contralateral acupuncture is effective for the treatment of lower back pain due to a lumbar sprain. The use of the distal acupuncture point combination Yaotongxue was the key treatment application responsible for eliminating pain due to acute lumbar sprain. Spasms of the psoas muscles were completely eliminated or diminished along with reductions or elimination of lower back pain.

Key principles to the treatment procedure were the exercising of the lower back during needle retention, the use of distal Yaotongxue acupuncture points, and the use of contralateral acupuncture points. The researchers applied rotating and pulling techniques to the acupuncture points to patient tolerance levels. The acupuncture treatment protocol completely eliminated all pain and spasms in 72% of participants with only one acupuncture treatment. An additional 20% of participants experienced significant reductions in lower back pain with only one acupuncture treatment with an average of three acupuncture treatments needed for a complete recovery.

The remaining 8% of patients did not respond to the Yaotongxue contralateral acupoint stimulation combined with lower back pain movement therapy. CT scans were conducted on the non-responders and confirmed lumbar disc herniations. As a result, different protocols were applied to the these participants to help alleviate pain levels.

The treatment was applied with patients in a seated position for all participants in the study. The area of lower back pain was identified and contralateral stimulation of Yaotongxue with rotating and pulling reducing techniques was applied. The needle retention time was ten minutes. During needle retention of the hand acupuncture points of Yaotongxue, patients were advised to stand and exercise the lumbar region with bending, stretching, and rotating movements. The acupuncture needles were stimulated every three to five minutes. The total effective rate was 92%.

The research of Sun et al. at the Hospital of Heilongjiang University of Chinese Medicine finds electroacupuncture effective for the alleviation of lumbar muscle strain. The Traditional Chinese Medicine (TCM) principles used to determine the acupuncture point selection were to invigorate the circulation of both qi and blood. The results demonstrated a 93.3% total effective rate.

The treatments yielded a 23.3% complete recovery rate. These patients had no recurrence of lower back pain and associated physical exhaustion within two years of acupuncture treatment sessions. An additional 70% of patients had significant improvements including reductions in lower back pain intensity levels, less frequency of subacute flare-ups, and overall reductions in physical exhaustion due to pain. Non-responders with intractable pain accounted for 6.7% of patients.

Electroacupuncture was applied to the yang meridians of the back, especially the governing vessel and back shu acupoints of the bladder channel. The points were applied to regions of local pain with patients resting in a prone position. Manual stimulation was applied to elicit deqi

at the acupoints with mild reinforcing and reducing techniques. Next, electroacupuncture was applied using 80 Hz stimulation at intensity levels set to patient tolerance levels. Needle retention time was twenty minutes. Acupuncture was applied once per day, six days per week for a total of thirty days.

The 93.3% total effective rate demonstrates that local electroacupuncture is effective for the relief of lumbar muscle strain. The other aforementioned researchers have consistent findings demonstrating that acupuncture is effective for the relief of lower back pain in several different clinical scenarios. The findings demonstrate that the integration of acupuncture into conventional pain management protocols for the treatment of lower back pain is warranted.

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Anterior view

Sciatica

Acupuncture and herbs relieve sciatica, a condition characterized by lower back pain radiating through the hips, buttocks, and legs. Researchers from the Rizhao Hospital of TCM (Traditional Chinese Medicine) and the Shanghai University of TCM investigated the efficacy of acupuncture for the relief of sciatic pain.

Both acupuncture and acupuncture plus herbal medicine were effective and produced significant positive patient outcomes. In addition, the researchers document that acupuncture and herbs stimulate important biochemical changes causing pain reduction.

Acupuncture as a standalone therapy had a total effective rate of 81.6% for the relief of pain due to sciatica and restoration of normal function. Acupuncture combined with herbal medicine achieved a 95% total effective rate. As a result, the researchers conclude that the combined therapy approach is more effective than using only acupuncture as a standalone therapy for the treatment of sciatica.

Han et al. note that acupuncture increases serum β-EP, which reduces transmission of nerve pain signals. Sciatica is also characterized by increased levels of IL-1, IL-6, and TNF-α. Hand et al. note that acupuncture successfully downregulates these biochemicals thereby contributing to reductions of pain and inflammation. The research of Li et al. from the Rizhao Hospital of TCM and the Shanghai University of TCM confirms the findings of acupuncture's ability to regulate β-EP, IL-1, IL-6, and TNF-α. Li et al. note that both acupuncture and acupuncture plus herbs regulate the sciatica related biochemical expression but the combination therapy of acupuncture plus herbs outperforms standalone acupuncture therapy.

The Oswestry Disability Index (ODI), the Japanese Orthopaedic Association (JOA) score, and the Visual Analogue Scale (VAS) were used to measure changes in pain levels, functions of daily activity, lifting, walking, sitting, standing, sleeping, socialization, travelling, and other aspects of life affected by sciatica. Measurements were taken

prior to therapy and 3, 10, and 22 days after completion of acupuncture and herbal therapy protocols.

The primary acupuncture points used in the semi-protocolized acupuncture point prescription were:

- Zhibian, BL54
- Chengfu, BL36
- Huantiao, GB30
- Fengshi, GB31
- Weizhong, BL40
- Dachangshu, BL25
- Chengshan, BL57
- Yaoyangguan, DU3
- Ashi

Additional acupuncture points were added for specific differential diagnoses. For qi stagnation and blood stasis, Xuehai (SP10) and Taichong (LV3) were added. For liver and kidney deficiency, Shenshu (BL23) and Taixi (KD3) were added. For cold and damp stasis, Yanglingquan (GB34) was added.

Mild reinforcing and reducing manual acupuncture techniques were applied with 0.30 x 40 mm acupuncture needles. Stimulation was applied until deqi was evoked at each acupoint. Total needle retention time for each acupuncture session was 15 to 30 minutes.

The herbal formula Tong Bi Zhi Tong Tang was ingested orally. The primary ingredients are:

- Du Zhong, Eucommia ulmoides 15 g
- Sang Ji Sheng, Chinese taxillus 15 g
- Gou Ji, Rhizoma cibotii 15 g
- Gui Zhi, Cassia 10 g
- Hong Hua, Safflower 6 g
- Dang Gui, Angelica 10 g
- Chuan Xiong 15 g

- Niu Xi, Cyathula officinalis 15 g
- Wei Ling Xian, Clematis 15 g
- Sheng Ma, Bugbane 10 g
- Bai Zhi, Angelica dahurica 10 g
- Tian Nan Xing, Rhizoma arisaematis 10 g
- Zhi Gan Cao, Honey-fried licorice root 6 g

Additional herbs were added based on differential diagnostics. For cold and damp stasis, Chuan Wu (Radix aconiti preparata) 15 g and Xi Xin (Asarum sieboldii) 3 g were added. For qi and blood stasis, Ru Xiang (Boswellia carterii) 10 g and Mo Yao (Myrrh) 10 g were added. For qi deficiency, Huang Qi (Astragalus) 30 g was added. For liver and kidney deficiency, Shu Di Huang (Rehmannia glutinosa) 20 g and Shan Zhu Yu (Cornel) 10 g were added.

The clinical and objective tests results indicate significant reductions in pain, increases in functionality, and reductions in inflammatory responses for sciatica patients. Manual acupuncture, on its own, achieved an 81.6% total effective rate and, when combined with herbs, achieved a 95% total effective rate.

In a related study, Hoang et al. find electroacupuncture effective for sciatic nerve regeneration. In a laboratory experiment, electroacupuncture restored motor functions and enhanced recovery rates for injured sciatic nerves. The results demonstrate that electroacupuncture stimulates recuperation from “neuropathic pain that develops following a nerve injury.”

Hoang et al. note that electroacupuncture promotes sensory and motor nerve fiber regeneration while shortening the duration of recovery times following nerve injuries. The researchers concluded that “electro-acupuncture appears to be a valuable method to accelerate motor recovery and alleviate neuropathic pain symptoms that occur after nerve crush.” These findings are consistent with the Li et al. manual acupuncture results.

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Chuan Xiong

Failed Back Surgery Pain

Acupuncture relieves failed back surgery syndrome (FBSS) pain. Published in the *Journal of Emergency in Traditional Chinese Medicine*, Zheng et al. conclude that two types of acupuncture successfully relieve pain due to failed back surgery syndrome (FBSS). One acupuncture point prescription achieved a 94.87% total effective rate and another achieved a 76.32% total effective rate.

A total of 80 patients with FBSS were randomly divided into two groups that received different acupuncture point protocols. The total effective rate was determined by acupuncture's ability to reduce lumbar pain, leg pain and numbness, sensory and motor impairment, limits on daily life activities, and bladder dysfunction. Effectiveness was also measured in relation to improvements in the ability to walk, lift a straightened leg, roll while lying down, stand, lean forward, sit for an extended period of time, and lift.

Group one received acupuncture at the following primary acupuncture points:

- CV6, Qihai
- CV9, Shuifen
- CV4, Guanyuan

Supplementary points included:

- KD14, Siman
- KD13, Qixue
- ST26, Wailing
- Xia Feng Dian (2.5 cun below CV6)
- Xia Feng Shi Xia Dian (2 cun below CV5)
- Qipang (navel triangle points, 0.5 cun lateral to CV6)

Perpendicular insertion of 0.30 x 40 mm acupuncture needles was applied. Manual stimulation of the needles using twisting, pulling, and pushing techniques was used to elicit a deqi response. The depth of

needle insertion was based on the individual medical histories of each patient.

Group two received acupuncture needling at the following primary acupuncture points including:

- Jiaji (lower back Huatoujiaji)
- BL25, Dachangshuu
- GB34, Yanglingquan
- BL40, Weizhong
- GB30 Huantiao
- GB39, Xuanzhong

Both acupuncture groups had needle retention times of thirty minutes per session. Treatments were given once per day for ten consecutive days followed by a three day break between courses of care. Three courses of care were given for a grand total of thirty acupuncture treatments. Group one achieved a 94.87% total effective rate for pain reduction after failed back surgery and group two achieved a 76.32% total effective rate.

Failed back surgery syndrome (FBSS) is often referred to by other specific diagnoses. For example, postlaminectomy syndrome is billed by physicians with the M96.1 ICD-10 diagnosis code. A variation of this is postlaminectomy kyphosis, which is billed using the M96.3 ICD-10 diagnosis code. Fritsch et al. use the term failed back surgery syndrome in their research and note that repeated surgical procedures involving laminectomy and discotomy are often needed when there is epidural fibrosis and instability. Recurrent lumbar disc herniations were cited as an additional reason for multiple surgical revisions.

North et al. from the Department of Neurosurgery at Johns Hopkins University School of Medicine (Baltimore, Maryland) defined failed back surgery syndrome as involving 2.4 previous operations for “lumbosacral decompression and/or stabilization.” North et al. commented on the success rates of repeated lumbosacral spinal surgeries, “Successful outcome (at least 50% sustained relief of pain for 2 years or at last

follow-up, and patient satisfaction with the result) was recorded in 34% of patients. Twenty-one patients who were disabled preoperatively returned to work postoperatively; 15 who were working preoperatively became disabled or retired postoperatively." North et al. add, "Improvements in activities of daily living were recorded, overall, as often as decrements. Loss of neurological function (strength, sensation, bowel and bladder control) was reported by patients more often than improvement. Most patients reduced or eliminated analgesic intake."

Slipman et al. from the Penn Spine Center at the University of Pennsylvania (Philadelphia, Pennsylvania) reported several facts concerning failed back surgery syndrome. They conclude, "FBSS is a syndrome consisting of a myriad of surgical and nonsurgical etiologies. Approximately one half of FBSS patients have a surgical etiology." Chan et al. from Mount Sinai Hospital (Toronto, Canada) note, "FBSS is a challenging clinical entity with significant impact on the individual and society."

The Cedars-Sinai website notes, "After any spine surgery, a percentage of patients may still experience pain. This is called failed back or failed fusion syndrome, which is characterized by intractable pain and an inability to return to normal activities. Surgery may be able to fix the condition but not eliminate the pain." Given the complexity of FBSS and the success rates of acupuncture in eliminating or reducing FBSS related pain, acupuncture provides a therapeutic option for patients requiring pain relief.

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MRI and Biochemistry

Electro-acupuncture is found effective in reducing inflammation and pain.

A review published in *Anesthesiology - The Journal of the American Society of Anesthesiologists* concludes that electro-acupuncture is more effective at the 2 - 10 Hz setting than the 100 Hz setting for the relief of inflammation and neuropathic pain. The investigators note that electro-acupuncture "blocks pain by activating a variety of bioactive chemicals through peripheral, spinal, and supraspinal mechanisms."

Details reveal that electro-acupuncture activates natural endogenous opioids and other biochemicals that desensitize sensory receptors for painful stimuli (nociceptors). The researchers note that electro-acupuncture desensitizes "peripheral nociceptors and reduce(s) proinflammatory cytokines peripherally and in the spinal cord, and serotonin and norepinephrine, which decrease(s) spinal N-methyl-D-aspartate receptor subunit GluN1 phosphorylation." This results in less pain and inflammation.

The reviewers note that electro-acupuncture demonstrates unique characteristics. Electro-acupuncture activates the nervous system differently in healthy conditions than when treating pain related conditions. In addition, the reviewers note that studies now "suggest that electroacupuncture, when combined with low dosages of conventional analgesics, provides effective pain management which can forestall the side effects of often-debilitating pharmaceuticals."

Another study entitled the *Mechanisms of Acupuncture Analgesia* notes that acupuncture analgesia is commonly used for pain management in cases of both acute and chronic pain. The researchers from the Department of Anesthesiology, University of California at Los Angeles; and the UCLA Medical Center and Orthopedic Hospital document that MRI (magnetic resonance imaging) and PET (positron emission tomography) have demonstrated connections between Traditional

Chinese Medicine (TCM) acupuncture analgesia principles and modern medicine.

The researchers discovered that modern science can now quantify a connection between acupuncture analgesia, modern electro-acupuncture and biomedical science. They note that basic and clinical research has revealed, “There are correlations between acupuncture analgesia and the neural pathways such as afferent peripheral transduction and nerve transmission, ascending and descending modulation pathways, interpretation and central processing in the brain.” Acupuncture continuing education and research has revealed this and other important findings with advanced imaging and biochemical analysis technology.

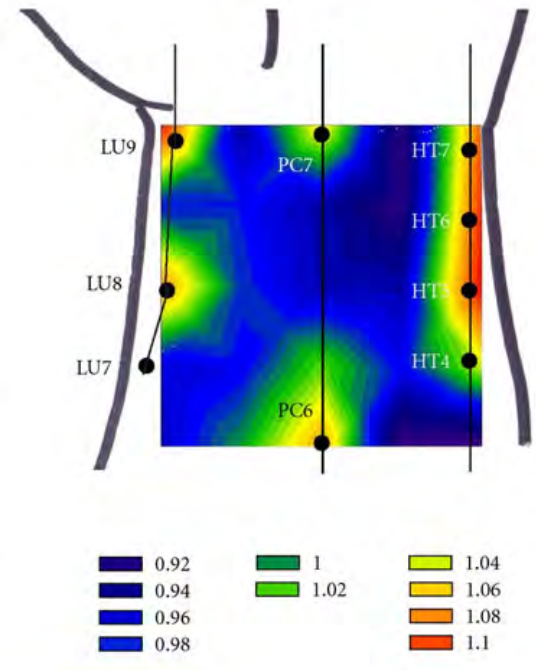
Imaging techniques including fMRI (functional magnetic resonance imaging) and PET (positron emission tomography) “revealed varying levels of neural modulation throughout (the) central nervous system. ” Overall, they note that acupuncture has demonstrated that it is “beneficial in the management of acute and chronic pain.” As a result of these findings, the researchers suggest continuing acupuncture studies to further elucidate the biochemical mechanisms of acupuncture analgesia.

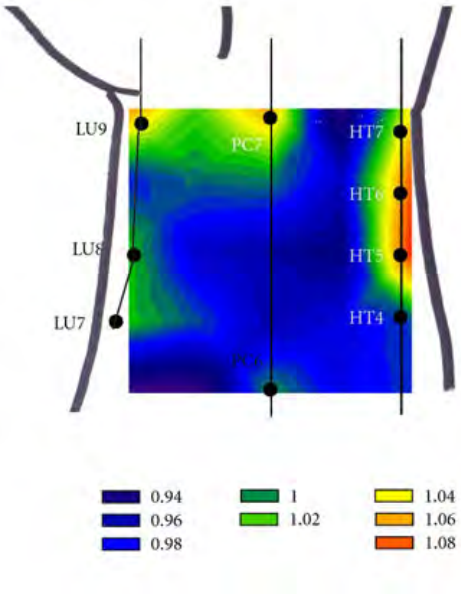
These findings have been discovered while basic research now reveals that acupuncture points have distinct anatomical characteristics. CT (computerized tomography) scans now demonstrate that acupuncture points have distinct structural differences than surrounding areas. At the acupuncture points, microvascular densities with bifurcations “can be clearly seen around thick blood vessels” but non-acupuncture points showed few thick blood vessels and none showed fine, high density structures. The acupuncture points contained fine structures with more large blood vessels that are several dozen micrometers in size plus beds of high density vascularization of vessels 15-50 micrometers in size. This structure was not found in non-acupuncture point areas.

This type of imaging has only been made possible with major advances in CT technology. The researchers used state-of-the-art in-line phase

contrast CT imaging with synchrotron radiation to get clear images of the microvascular structures. This eliminates artifacts, widens the field of view and significantly improves soft tissue imaging. Unique characteristics of acupuncture point structures has also been measured with MRIs, infrared imaging, LCD thermal photography, ultrasound and amperometric oxygen sensors.

In another interesting study, researchers used an amperometric oxygen microsensor to detect partial oxygen pressure variations at different locations. The researchers concluded that partial oxygen pressure is significantly higher at acupuncture points. Below are images from the study measuring the increase of partial oxygen pressure combined with an overlay of the local acupuncture point locations. The images map the Lung, Pericardium and Heart channels and their associated local points. Acupuncture points show high oxygen pressure levels and non-acupuncture points do not.





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Crushed Sciatic Nerves

Researchers have discovered that electro-acupuncture causes sciatic nerve regeneration. In a controlled laboratory mouse model experiment, researchers found that electro-acupuncture restores motor function and stimulates a rapid recovery. The results also showed that electro-acupuncture assisted in the recovery from “neuropathic pain that develops following a nerve injury.”

Acupuncture for Sciatica

The researchers note that their results show that electro-acupuncture stimulation promotes sensory and motor nerve fiber regeneration and shortens the duration of recovery times following crushed nerve injuries. The researchers concluded that “electro-acupuncture appears to be a valuable method to accelerate motor recovery and alleviate neuropathic pain symptoms that occur after nerve crush.” The study also concludes that acupuncture is an efficient treatment for pain related to crushed nerves.

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Disc Herniations – Acupuncture & Herbal Plasters

Acupuncture and Traditional Chinese Medicine (TCM) therapeutic techniques are effective treatments for lower back pain due to lumbar disc herniations. A new randomized, controlled clinical trial demonstrates that acupuncture and TCM therapy reduces back pain and restores motor functionality for patients with herniated lumbar discs. A sample size of 408 patients receiving a traditional combination of TCM therapies were examined in comparison to a control group receiving health education, pain medications and physical therapy. The acupuncture-TCM group showed significantly greater improvement than that of the control group.

Low Back Acupuncture

The patients in the TCM group received electro-acupuncture, a Chinese herbal medicine injection of Dan Shen (Salvia miltiorrhiza) and an external herbal medicated plaster during the acute stage. During the subacute stage, patients received Tuina massage, Chinese herbal medicine hot compresses and external herbal medicated plasters. During the chronic stage, patients received TCM functional exercises and external herbal medicated plasters.

The electro-acupuncture was applied to acupuncture points UB25 (Dachangshu) and Baihuanshu (UB30). De qi sensation was achieved followed by a continuous wave pulse of 0.6ms at 20Hz. The electro-acupuncture was applied once per day for 30 minutes. The chief ingredients in the herbal plasters were Zi Jing Pi, Huang Jing Zi, Da Huang, Chuan Xiong, Tian Nan Xing and Ma Qian Zi. The TCM function of the plasters are to enhance blood circulation, resolve blood stasis, eliminate swelling and to alleviate pain. The herbal medicated plasters were applied to the areas of intense pain. The herbal medicine injections functioned to enhance blood circulation and to resolve blood stasis.

The Chinese herbal medicine hot compresses were composed of Cang Zhu, Qin Jiao, Sang Zhi, Mu Gua, Hong Hua, Chuan Xiong, Hai Feng Teng and Lei Gong Teng. The herbs were placed in a gauze bag, decocted for 20 minutes, allowed to reduce in temperature slightly and were then applied to the lower back for 30-40 minutes at a rate of once per day. The TCM functional exercise was the Flying Swallow style (Fei Yan Shi). Here, the patient rests in the prone position, extends the hand backwards and lifts the chest and lower limbs off the bed using the abdomen as the pivot. Intervals of this exercise plus relaxation were conducted once a day with 4-5 repetitions. The function of the exercise program is to strengthen the lower back muscles and increase spinal stability. The intention is to prevent repeated relapses of the condition. The Tuina massage employed the Anrou (pressing & kneading), Tanbo (plucking) and Gun (rolling) techniques once per day.

The control group received health education including instructions as to avoid activities that exacerbate or aggravate the condition. Patients were also instructed to rest and received pain medications and physical therapy. The acupuncture-TCM group was compared with the control group. The researchers concluded, “This randomized controlled clinical trial provides reliable evidence regarding the effectiveness of integrative TCM conservative treatment for patients with low back pain due to lumbar disc herniation.”

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Deqi and Clinical Effectiveness

A new investigation of acupuncture connects modern research with the traditional inducement of deqi, a sensation evoked by acupuncture needles.

Researchers from Beijing University of Chinese Medicine, Medimar International Hospital and the European Foundation of TCM performed a research meta-analysis of the medical implications of evoking deqi. Prominent acupuncturists and modern research was included in the study. The findings suggest a direct correlation between ancient acupuncture techniques and improved clinical outcomes for patients.

A total of 140 acupuncturists were chosen for the study and a publication review of 81 sources met the inclusion criteria out of a total of 352 publications reviewed. The investigators started with a historical account of classical acupuncture and then covered responses by modern clinicians and research. The researchers noted that, historically, *The Yellow Emperor's Inner Canon* discussed deqi but the arrival of Qi was viewed in terms of the practitioner's experience and not the sensations experienced by the patient. They noted that by the end of the Ming Dynasty, deqi was described as dull, numb, distention, outward spreading and other similar sensations as described in *The Inner Chapters of Acupuncture and Moxibustion*.

Modern research was conducted to survey patient responses to deqi evoked by acupuncture needling. The subjective responses by patients included descriptors such as soreness, dull pain, heat, cold, heaviness, electrical, distention and numbness. The researchers also noted a distinction in subjective responses that were experienced as either fast or slow. Dull aches, for example, had a spreading sensation at a slow rate whereas electrical sensations were rapid. Correlates were drawn between the sensations and the rapid speed of nerve transmission and the slow speed, in centimeters per second, of channel transmission. Prominent acupuncturists added that deqi is visually observable when the skin surrounding the needle appears tensed, bulged or pitted. The deqi researchers note that classical authors describe deqi as both

tightness and heaviness that can be perceived in the fingers of the licensed acupuncturist holding the needle.

Acupuncture Speed Unique

The issues of deqi and speed of transmission has emerged in other independent research. Dr. Jones and Dr. Bae of the University of California, Irvine, delineated three pathways by which acupuncture sends signals to the brain by using fMRI and ultrasound measurements. A very fast bioelectric signal is triggered at acupuncture points that is less than or equal to 0.8ms, another signal travels along nerve pathways and arrives at the brain in 180 - 200ms and a very slow signal arrives at the brain in 15 - 25 seconds as measured from stimulation of acupuncture point UB67 on the foot. The very slow signal travels at a rate of 5 - 10 cm per second. The stimulation process communicates to other acupuncture points along the meridian at this rate and is quantifiable with ultrasound and fMRI measurements. Dr. Jones noted that the very fast 0.8ms response is two orders of magnitude faster than any other known process. If a non-acupuncture point is stimulated, this rapid response is not observed. If one stimulates a true acupuncture point, the speed is less than or equal to 0.8ms, which is not only fast but unequalled at any other area of the body. Only acupuncture points carry information at this rate. The work of Dr. Jones and Dr. Bae relates to this new deqi research in that the new deqi research involves a discussion of deqi and its relationship to neuro-stimulation, perception of dqi speed sensations and clinical outcomes.

The deqi researchers uncovered controversy in the determination of deqi arrival. Dr. Jin R., a prominent acupuncturist, notes that patient sensations of numbness, heaviness and distention are sometimes superficial local sensations and are not necessarily indicative of deqi. The researchers also noted that “clinical practice has shown that some patients can also get a good efficacy with weak needling sensation or even with no needling sensation at all.” They cited several styles of acupuncture that do not require a needle sensation response to achieve clinical results including abdominal acupuncture, wrist-ankle acupuncture and intradermal needle acupuncture.

Acupuncture Needle Techniques

The research focused on clinical data and licensed acupuncturist input as to the relationship between the arrival of deqi and specific clinical techniques. Dr. Peng J.S. notes that different deqi sensations are more appropriate for different ages and body constitutions. Dr. Qiu M.L. notes that changing the direction of needling sensation at one acupuncture point results in specific results. For example, if CV12 is used for the treatment of stomachache, the needle sensation is one of scattering around the region in order to relieve pain. To treat vomiting, the needling sensation is focused downward. Dr. Yu S.Z. notes that evoking numbness and electrical needle sensations are effective in the treatment of excess syndromes and acute diseases. Dr. Guan Z. H. added that needling GB30 for sciatica results in positive patient outcomes when the needle sensation spreads downwards towards the foot.

Various other factors were reviewed in the research including optimum needle retention time and its relationship to deqi, the quantity of deqi stimulus, the quality of deqi stimulus and appropriate techniques to apply after the arrival of deqi based on needle responses detected by the acupuncturist. Secondary responses to the arrival of deqi were also reviewed in this meta-analysis and interview process.

There was agreement that secondary responses after the arrive of deqi that are fierce, unsmooth, difficult for the patient to tolerate or even make the needle physically difficult to manipulate are indicative of a pernicious influence, Xie Qi. However, if the secondary response “comes slowly and softly” as described in the *The Yellow Emperor’s Inner Canon*, then it is indicative of upright Qi. Dr. Qiu M.L. noted that Xie Qi may involve patient disorders such as acute pain, gallstones, high fever or spasticity. These involve a tense body condition and may lead to a fierce body response after deqi arrival thereby giving rise to sensations of tenseness, dullness and pain beneath the needle. He noted that upright Qi secondary responses to deqi are sometimes indicative of symptomatic relieve caused by the acupuncture needle insertion wherein the needle sensation is soft, constant and is “neither of tension nor emptiness.” Dr. Tian C.H. summarized by noting that

upright Qi is mild and Xie Qi is quick and tense. The research then turned to a discussion of the specific nerve fibers related to specific deqi responses.

Interesting feedback by prominent acupuncturists involved a discussion of deqi and the appropriate acupuncture needle manipulations relative to the responses. There was agreement that the reinforcing and reducing methods can only proceed after the arrival of deqi. Dr. Jin R. noted that when the Qi arrives slowly there is a sensation beneath the needle of gradually filling and this indicates upright Qi. This indicates the proper application of the reinforcing technique. A compact and fast sensation during the arrival of Qi indicates Xie Qi and therefore a reducing method is appropriate. Dr. Zhang S.C. noted that reinforcing and reducing methods are limited to patient examination and evaluation. Dr. Lu S.Y. added that deqi sensations often reflect the proper application of the reinforcing and reducing techniques. He noted that the "reinforcing method requires the sensation beneath the needle to be tense and full, which was loose and puff before the procedure. Reducing method requires the unsmooth and tight sensation beneath the needle to be changed."

Not Just Nerves

This deqi research coincides with the release of other research finding no correlation between direct nerve stimulation at acupuncture point regions and deqi sensation. An interesting finding, direct needle stimulation and contact of the median nerve at acupuncture point PC6 (Neiguan) does not necessarily stimulate a deqi sensation. Conversely, deqi is often achieved at PC6 without any direct simulation of the median nerve. This and other research finds that deqi is not caused by direct irritation of a nerve fiber. Rather, deqi is a physiological response by the central and peripheral nervous system independent of direct contact to nerve fibers. In the same study it was found that achieving deqi at acupuncture points elicits distinctly different cortical responses than at non-acupuncture points. The researchers suggest that much of these findings point to deqi having a different effect on the central nervous system dependent on the acupuncture points chosen. Specific

acupuncture points demonstrate a consistent and unique ability to stimulate specific brain regions upon deqi stimulation.

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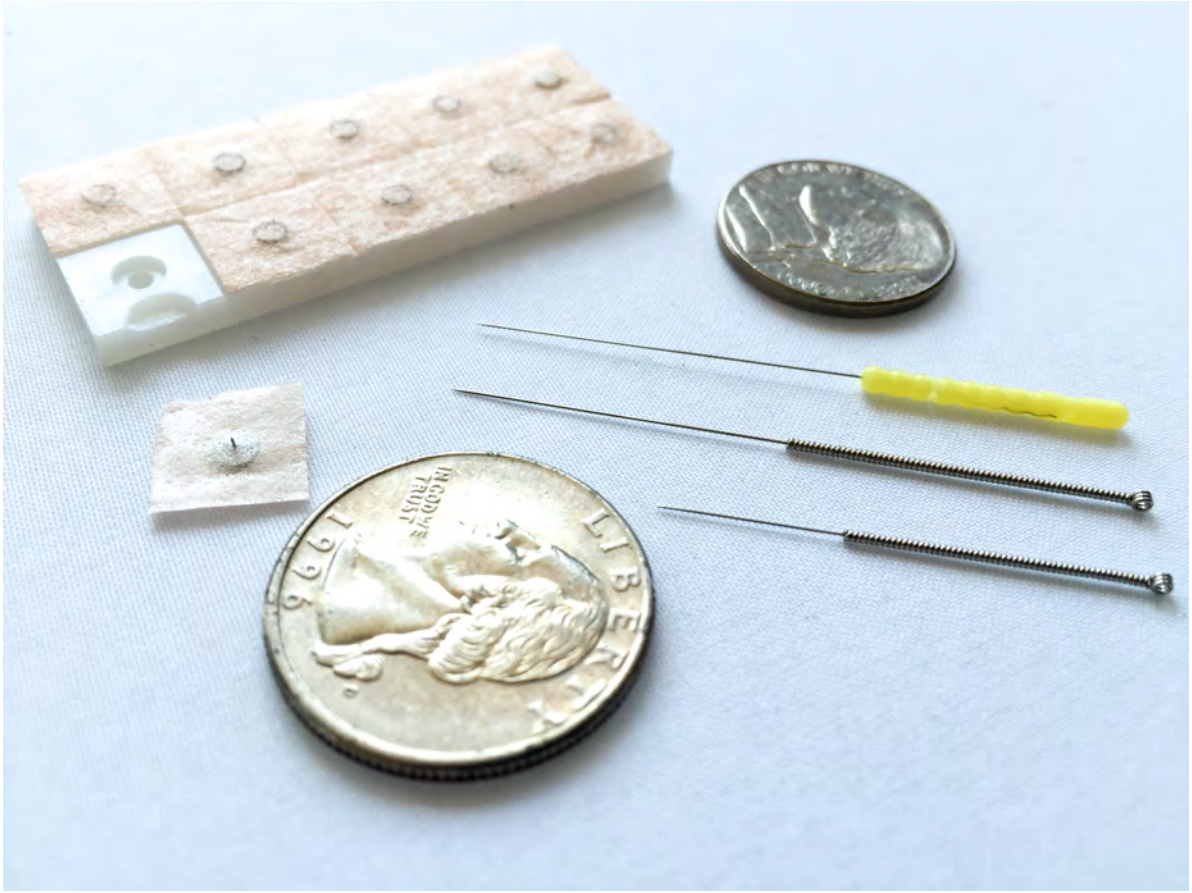

Warm Needle Acupuncture

Acupuncture combined with herbal medicine is effective for the treatment of lumbar disc herniations. Beijing Timber Factory Worker's Hospital researchers investigated the effects of warm needle acupuncture and Chinese herbal medicine on patients with lumbar disc herniations. The combined therapy produced a 69.2% total effective rate. Using warm needle acupuncture as a standalone therapy absent the use of herbal medicine produced a 50.7% total effective rate.

All patients included in the study suffered from lumbar disc herniations due to cold dampness. In Traditional Chinese Medicine (TCM), lumbar disc herniations are categorized into several differential diagnostic patterns including cold dampness, damp heat, qi and blood stasis, and kidney qi deficiency. The pattern investigated in this study, cold dampness, is characterized by lower back pain, tingling, numbness, range of motion impairments, a sense of heaviness in the lower back, and radiculopathy (pain, weakness, or numbness along the path of the impinged nerve). Cold dampness type herniations are chronic and are exacerbated by exposure to cold, dampness, and excess sitting, lying, or inactivity.

One of the most common types of lumbar disc herniation presentations is lumbar disc herniation with cold damp syndrome (Li & Wang). Common treatment methods include surgery, injections, medications, acupuncture, moxibustion, traction, and electroacupuncture (Sun, Wang & Xu). According to TCM principles, the Du (Governing Vessel), Bladder Foot-Taiyang, and Gallbladder Foot-Shaoyang channels are primarily affected by cold damp type disc herniations. The condition is often alleviated by warmth and therefore standalone moxibustion or warm needle acupuncture using moxibustion or a TDP heat lamp may be used to alleviate cold damp type disc herniations. The researchers followed standard TCM protocols and included moxibustion in their procedures. Acupuncture points included in the treatment protocol included the following:

- L1–L5 Huatuojiaji (based upon affected vertebral segments)

- BL22 (Sanjiaoshu)
- BL23 (Shenshu)
- BL24 (Qihaishu)
- BL26 (Guanyuanshu)
- M-BW-24 (Yaoyan)
- BL54 (Zhibian)
- GB31 (Fengshi)
- BL40 (Weizhong)
- BL57 (Chengshan
- BL60 (Kunlun)
- GB39 (Xuanzhong)
- GV3 (Yaoyangguan)
- GV4 (Mingmen)

Each acupuncture session lasted for 45 minutes. Patients received one acupuncture treatment per day for 15 consecutive days, comprising one course of care. In total, 3 courses of care were applied with a 2 day break between each course. Treatments began with patients in a prone position. Acupoints were disinfected with a 75% alcohol solution. Perpendicular insertion of filiform acupuncture needles at a high needle entry speed was used with 28 gauge acupuncture needles. The 28 gauge needle diameter is 0.35 mm and is labeled a #10 gauge in the Japanese system.

Manual acupuncture techniques were applied with lifting, thrusting, and rotating techniques to obtain deqi and for the purposes of applying attenuating and reinforcing methods. Once deqi was obtained at each needle, the needles were retained for the duration of the treatment session. Deqi was determined as a measure of the patient's experience of soreness, numbness, or an electric sensation produced by the needle. Practitioner observations of needle reactions were also used to indicate the arrival of deqi. Moxibustion was added to the Huatuojiaji, BL23 (Shenshu), and BL40 (Weizhong) acupoints. Medicinal moxa pieces of approximately 2 cm were attached to the needle handles and ignited. Thick paper heat shields were placed over the skin for protection. The following herbal formula was decocted for all patients (Wenshen Juanbi Tang):

- Sheng Di Huang, 10 g
- Wu Gong, 5 g
- Lu Rong 5 g
- Jiang Can, 10 g
- Dang Gui, 10 g
- Fu Ling , 10 g
- Fu Zi, 15 g
- Bai Zhu, 20 g
- Qing Feng Teng, 10 g
- Mu Gua, 15 g
- Xi Xin, 10 g
- Niu Xi, 10 g
- Gui Zhi, 10 g
- Yin Yang Huo, 10 g
- Xian Mao, 10 g
- Yi Yi Ren, 15 g
- Sang Ji Sheng, 20 g
- Lu Xian Cao, 10 g

The herbs Tao Ren and Hong Hua were added for patients diagnosed with blood stasis. Note: this herbal formula is only appropriately administered by licensed acupuncturists and is contraindicated for pregnant women. The combined therapy of acupuncture and herbs achieved a 69.2% total effective rate.

Huang et al. achieved superior positive patient outcome rates in their investigation. People's Hospital of Han Nan District researchers (Huang et al.) achieved a 90% total effective rate for the treatment of lumbar disc herniations with acupuncture plus moxibustion. Acupuncture as a standalone therapy produced an 85% total effective rate. A significant reduction or elimination of lower back pain and radiculopathy was achieved plus motor functional improvements were confirmed with diagnostics. The primary acupuncture points employed in the investigation were the following:

- Huatuojiaji (lower back region)

- Shenshu (BL23)
- Mingmen (DU4)
- Yaoyangguan (DU3)
- Huantiao (GB30)

Rotating and thrusting were applied for 2–3 minutes to Shenshu (BL23), Mingmen (DU4), and Yaoyangguan (DU3) to elicit the arrival of deqi. Stimulation of Huatuojiaji acupoints was maintained until the arrival of deqi. For L4–L5 disc herniations, Yanglingquan (GB34) was added. For L5–S1 disc herniations, Weizhong (BL40) was added. Moxa was added to the needles of Shenshu (BL23), Mingmen (DU4), and Yaoyangguan (DU3) with 2 cm moxa pieces. Treatment was administered once per day for 6 days followed by a 1 day break from treatment. Next, an additional six days of acupuncture plus moxibustion was applied. A 90% total effective rate was achieved using acupuncture plus moxibustion. An 85% total effective rate was achieved using acupuncture as a standalone procedure.

References

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