



LOWER BACK PAIN DEFINITIONS & TREATMENT

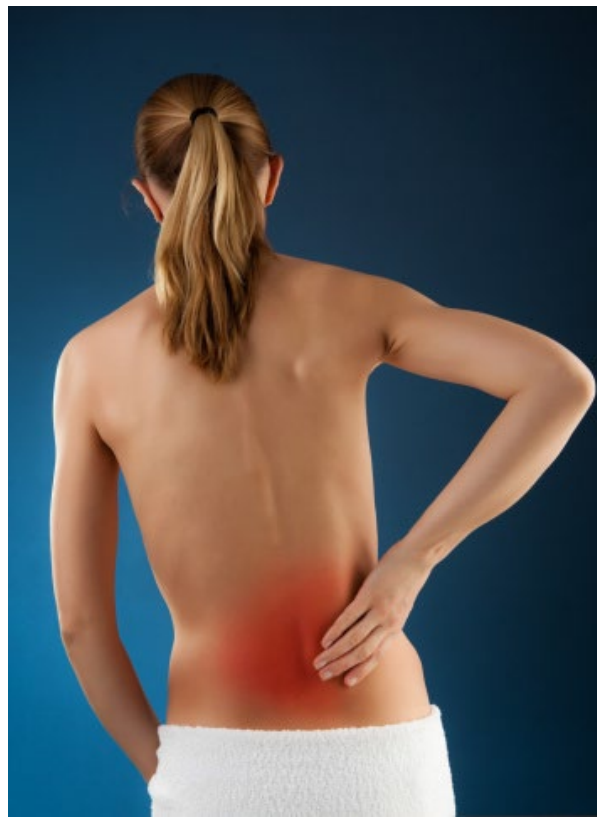
Continuing Education E-Book



ONLINE MASSAGE
— CE CLASSES —

Melissa Wood, ND, MTI, LMT

LOWER BACK PAIN DEFINITIONS & TREATMENT



6-HOUR CONTINUING EDUCATION UNIT CLASS

Approved by the Texas Department of Licensing and Regulation (TDLR)
& the National Certification Board for Therapeutic Massage & Bodywork
(NCBTMB)



ONLINE MASSAGE
— CE CLASSES —

LOWER BACK PAIN Definitions & Treatment

Welcome to the Lower Back Pain: Definitions and Treatment Class!

Class Objective: This online class has been developed to educate Licensed Massage Therapists on Lower Back Pain and how it impacts our lives, our health and what to do to try to alleviate it. This will benefit not only the therapist in their own life but will help them to better help their clients and give them tips to help their clients manage their back pain issues. It is my hope this material will be interesting, educational and a valuable resource to assist you with working with massage therapy clients.

About the Instructor



My name is Melissa Wood and I am a Naturopathic Doctor, Massage Therapy Instructor and Licensed Massage Therapist located in San Antonio, Texas. I have been studying alternative and natural medicine for over 25 years.

My mission is to enable everyone on this planet to be healthy and to be actively involved in their health and healing. My goal is to offer information that will provide you with new insights that are useful in your path to wellness. I envision a time when everyone will seek out herbs, essential oils, vitamins, minerals, nutritional supplements, and whole foods (not processed food!) to help heal themselves, as these are very powerful tools for enhancing your health and well-being.

APPROVED MASSAGE THERAPY INSTRUCTOR

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Disclaimer

I am a Naturopathic Doctor (N.D.), Massage Therapy Instructor (MTI), Licensed Massage Therapist (LMT), Approved CE Provider in the State of Texas and am an Approved Provider for NCBTMB (National Certification Board for Therapeutic Massage & Bodywork). I am NOT a Medical Doctor (M.D.). I have been trained in holistic and natural therapies for the body and do not diagnose any medical condition, nor prescribe any medications. Should you need immediate medical or psychiatric assistance, please telephone 911 or seek immediate treatment at an emergency room hospital. Nothing listed within this e-book class should be considered as medical advice for dealing with a given problem. You should consult your health care professional for individual guidance for specific health problems. It is understood that the author is solely responsible for the content of this work and is **NOT** responsible for your usage of said information either personally or professionally with your clients. In addition, you should ALWAYS encourage your clients to see their health care professionals for help with any medical issues they are having.

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ONLINE MASSAGE
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LOWER BACK PAIN
Definitions & Treatments – 6 CE Hours

TABLE OF CONTENTS

Introduction	7
Chapter 1: Defining the Lower Back.....	10
Chapter 2: Classifying Lower Back Pain	19
Chapter 3: Causes of Lower Back Pain	23
Chapter 4: Common Conditions Associated with Lower Back Pain	32
Chapter 5: Massage Therapy and Lower Back Pain.....	41
Chapter 6: Other Lower Back Pain	53
Chapter 7: Preventing Lower Back Pain	67
Conclusion	73
References and Resources	74

Introduction

The human spinal column is a marvelous structure to behold. This S-shaped structure is very complex and is made up of 33 different bone segments working together to support the human torso and head. In fact, if our spines weren't built like this, we'd still be walking on all fours!

However, the spinal column isn't solely responsible for our characteristic bipedalism and certainly does more than just keep us standing upright! It works in tandem with muscles, ligaments, tendons, spinal cord (one of the main nerve channels within the body, contained within the spinal column) and nerve roots to support our upper torso, direct nerve impulses to all parts of the body and is even involved in certain reflexes.

There is a caveat to all this, however; the complexity of muscles, ligaments, nerves and bones that make up the spine means that damage to any one of these four components causes dysfunction in the human spine, leading to discomfort, pain, paralysis - or even death.

Acute damage isn't all that we have to worry about. Just like all joints in the human body, the constant flexion and extension motions makes individual parts of the spinal column particularly vulnerable to wear and tear in the long run. Think about all of the segments of bones in the spinal column rubbing against each other hundreds of times each day – it's a miracle that we're still relatively pain-free for most of our lives!

Thankfully, the human body is excellent at preventing these dysfunctions; the back muscles hold the spinal column in place, the spinal column protects the spinal cord from damage, and lubrication helps to

prevent bone segments from rubbing against each other. It's safe to say that our body is well adapted to the rigors of an active lifestyle.

Ironically, it is our increasingly sedentary lifestyle that is placing a tremendous toll on our back – especially on our lower back.

The lower back is the portion of the human spinal column and its associated muscle groups that supports most of the weight of the upper body. The legs, abdominal muscles and muscles in the pelvic regions all share a portion of the burden when we are standing upright, but the lower back bears the brunt of the force when we're seated. Being seated for long hours each day puts a lot of stress on our lower back, causing one of the most common ailments that's costing the American healthcare system billions of dollars each year: **lower back pain**.



Lower back pain is more common than you might think; it's the 2nd most common reason Americans visit their family doctors (right after respiratory diseases), and it's also the most common reason for medical leaves.¹ Besides lowered work efficiency, lower back pain causes significant distress and discomfort to the sufferer.

There are many treatment options for lower back pain, but the effectiveness of massage therapy is gaining attention. Many different studies have shown massage therapy to be an effective alternative treatment for lower back pain.²

But why is massage therapy effective? How is it different from other forms of therapy? What is its effect on the lower back? What exactly *is* the lower back?

This e-book class answers those questions, and more. Here, we introduce the anatomy of the human back, before zooming into the types, causes and treatments for lower back pain – including massage therapy. After you read this book, you'll understand more about the origins of lower back pain and what can be done to help your clients deal with lower back pain more effectively.

Without further ado, let's head to our first chapter of this e-book: defining the lower back.



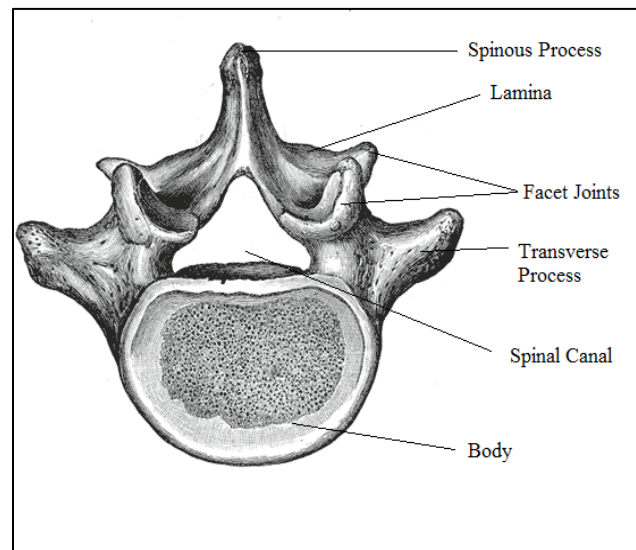
Chapter 1: Defining the Lower Back

The different parts of the human back coordinate with each other to help the human body stay upright and are involved in flexibility. We'll first examine the bone structures that make up the spinal column. Then, we'll talk about the spinal cord that's found within the spinal column, before moving on to the muscles that are associated in the functions of the spinal column.

The Spinal Column

The spinal column is made up of 5 regions and 33 bone segments, known as *vertebrae* (singular: vertebra), interlocked with each via *facet joints*. Because of the manner in which the vertebrae are interlocked, the spine becomes a very flexible structure; it allows us to bend forward to touch our toes and bend backwards into a bridge. Think of it as a chain of sorts – because the links are interlocked, the chain is able to flex and extend. Let us now take a closer look at the specific structures that makes this possible.

Vertebra: The individual bone segments that make up the human spinal column. There are a total of 33 of them in a normal human spine. The vertebra is, in turn, made up of the *vertebra body*, *lamina*, *spinal canal*, *facet joints* and *various processes*.



Lumbar Vertebra. Courtesy of Wikimedia Commons

The vertebral body bears the brunt of the pressure applied to each individual vertebra in the spinal column. It also is in contact with fibrous discs that separate and lubricate each

vertebra. The lamina protects the spinal canal, which in turn is an opening where the spinal cord is located. Processes are protrusions from the vertebral body; it serves as levers to “hook” the vertebra to other parts of the musculoskeletal structure, such as the rib cage or ligaments of back muscles.

Facet joints: “Hooks” that interlock vertebrae with adjacent vertebrae. There are 2 main pairs of facet joints in each vertebra: the *superior facet joint* and the *inferior facet joint*. The superior facet joint points upwards, toward the head. The inferior facet joint points downwards, toward the tail bone. The point when superior and inferior facet joints interlock is known as the interlocking facet. This interlocking is what allows the spinal column to flex and extend.

Intervertebral discs: A fibrous disc between vertebrae. There are a total of 24 intervertebral discs in the human spinal column. The intervertebral disc is made mainly of cartilage fibers (found between joints), and acts as cushions for vertebrae. It also prevents the vertebrae from rubbing against each other, causing numbing pain during flexion and extension of the spine.

The intervertebral disc has 2 parts: the *annulus fibrosus*, which is the tough outer layer, and the *nucleus pulposus*, the moist inner region of the intervertebral disc.

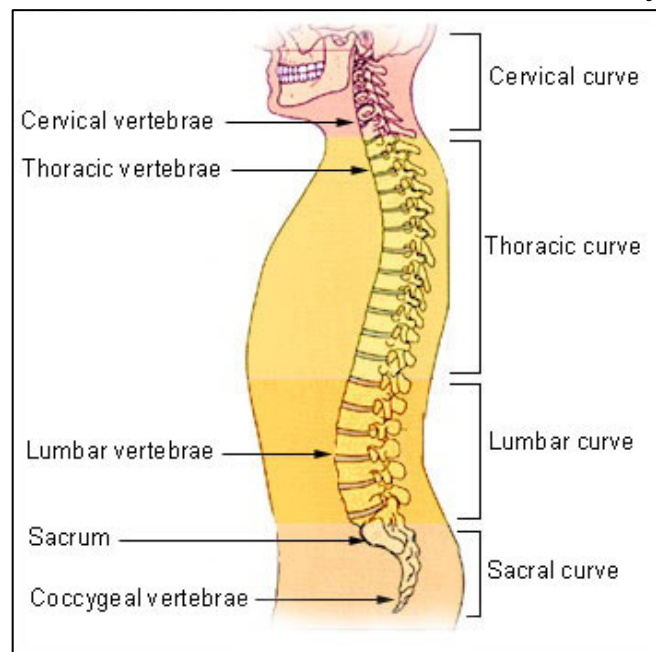
“My Vertebra Just Slipped Out of Position!”

Most people assume that “disc slippage” refers to a vertebra that slipped out of its normal position in the spinal column. This is false – disc slippage refers to the *intervertebral discs*, not the vertebrae! When your intervertebral disc moves out of place, it pinches on those sensitive nerves that run along the spinal column – resulting in pain! We’ll talk more about intervertebral disc slippage in Chapter 4.

Spinal Column: The Cervical, Thoracic, Lumbar Vertebrae and the Sacrum and Coccyx

Understanding the structure of the human spinal column is essential if you want to help your clients understand the source of their lower back pain. The human backbone is conventionally divided into 5 parts: the cervical, thoracic, lumbar, sacrum and coccyx vertebrae. In the sections below, we’ll study these 5 parts of the human spinal column.

Cervical vertebrae: Beginning from the vertebra closest to the head, the cervical vertebrae refer to the first 7 vertebrae of the human spinal column. Also known as the “neck vertebrae,” the cervical vertebra is associated with head movements.



Spinal Structure. Courtesy of Wikimedia Commons

Thoracic vertebrae: The next 12 vertebrae of the human backbone, after the cervical vertebrae. The thoracic vertebrae are found at the middle of your back, and the ribs are connected to this part of the backbone.

Lumbar vertebrae: The next 5 vertebrae after the thoracic vertebrae. The vertebrae in this region increases in size as we move down the spine toward the tailbone because of the increasing load each vertebra body bears; most of the upper body weight is borne by the vertebrae in the lumbar vertebrae, sacrum and coccyx. Its last vertebra is articulated with the *sacrum* (i.e., it is “hooked” to the entire sacrum, thus free to move at this point of contact – we’ll explain this in the next paragraph).

The cervical, thoracic and lumbar vertebrae are *articulate*; because of the interlocking joints between vertebrae in these 3 regions, the backbone is allowed to flex and extend. In contrast, vertebrae in the sacrum and coccyx are *fused*; the vertebrae in these 2 regions are permanently joined together, and thus cannot move except for the points where it is connected to another portion of the backbone, or to the pelvic bone.

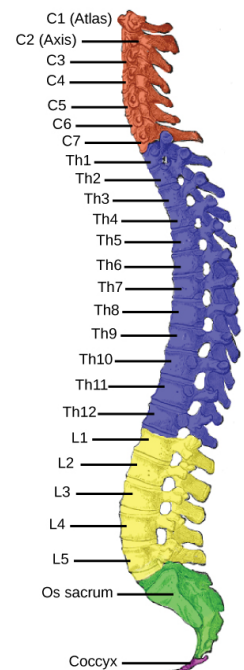
Sacrum: The 5 vertebrae that are found below the lumbar vertebrae and are part of the pelvis. The sacrum is articulated with the fifth lumbar vertebra, ilium – the largest bone in the pelvis – and coccyx. It’s interesting to note that the vertebrae here are initially articulate and begin to fuse at age 16-18. The sacrum becomes a single bone usually around the age of 34.

Coccyx: Also known as the tailbone, the coccyx is made up of 4 fused vertebrae. It is articulated with the last vertebra of the sacrum. The coccyx serves many important roles, such as bearing weight of a seated individual when he or she leans backwards.

Each vertebra is labeled in a letter-number format. The letter corresponds to the region where the vertebra is from, and the number indicates the position of the vertebra within the region; the cervical vertebrae's individual vertebra is labeled as C1 through C7, thoracic vertebrae's as T1 to T12, so on and so forth. This labeling is important for medical professionals to pinpoint specific vertebra in the spine that's causing distress and discomfort in a patient and is used in defining regions of the spinal cord as well.

Spinal Column: Where is the Lower Back, then?

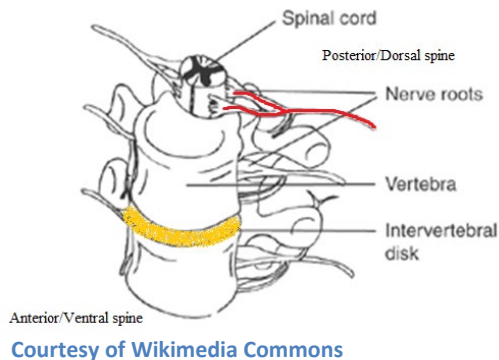
In modern medical literature, the region of the spine associated with the lower back is agreed to be the lumbosacral spine (i.e. the lumbar vertebrae, sacrum and coccyx). Applying some of the knowledge we've gained about classifying vertebrae in the human backbone, the lower back includes the vertebrae L1 to L5, S1 to S5 and Co1 to Co4.



Spinal Bones. Courtesy of Wikimedia Commons

Now that we're more knowledgeable about the human spine, we can finally talk about the main protagonist of this book: the lower back!

From here on, we will be focusing on the spinal cord, nerve roots, muscle groups, ligaments and tendons associated with the lumbosacral spine.



Spinal Cord and Nerve Roots

The spinal cord, along with the brain, is termed as the *central nervous system (CNS)*. Its counterpart is the *peripheral nervous system (PNS)*, a collection of motor and sensory nerves. Think of the CNS as a drill sergeant, and the PNS as the man under the sergeant; the CNS issues a command, and the PNS carries out any commands issued.

The spinal cord is part of the CNS because it harbors some primitive reflexes – such as the knee jerk reflex. Locating these reflexes in the spinal cord serves evolutionary and adaptive purposes. Think about it: if the reflex is activated by the brain, a nervous impulse will have to travel approximately 2 times the distance to the brain, and the same distance back to activate the reflex. Compared to locating the reflex in the spinal cord, you'll take 4 times as long to enact the reflex.

The spinal cord is divided into regions that correspond directly with the sections of the spine. Contrary to popular belief, the spinal cord does *not* run through the entire length of the human backbone; rather, the spinal cord ends at L1 to L2 (recap: those are names for the 1st and 2nd vertebra in the lumbar vertebrae). In the early stages of pregnancy, the spinal cord of the embryonic baby inside the mother was initially as long as its spinal column. However, as the baby grows, the spine grows longer – but the spinal cord has already

reached its maximum length. This elongation of the spine is why the spinal cord terminates around L1 to L2.

That doesn't mean that the rest of the lumbosacral spine is void of nerves. Beginning from the end of the spinal cord to the last vertebra of the coccyx harbors what is known as *spinal nerve roots* (AKA *nerve roots*).

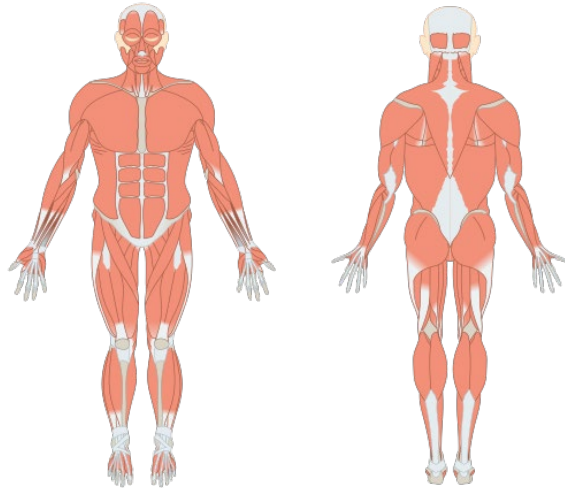
Some medical professionals consider spinal nerve roots a dilemma. They are seen as a part of the CNS, but functions more like a member of the PNS. Indeed, as per the PNS, spinal nerve roots' main function seems to involve relaying commands from the CNS to muscles and other organs in the body and transmitting feedback from these parts back to the CNS – not very CNS-like at all.

In this e-book we'll focus more on the spinal nerve roots than the spinal cord. Although spinal cord does play a part in lower back pain, most of the problems associated with lower back pain stem from the spinal nerve roots.

Muscles, Tendons and Ligaments

So, here's a good refresher for you regarding tendons, ligaments and muscles. Although they are similar in structure, these connective tissues are different in the structures that they connect. Tendons are connective tissues found between muscles and bones, while ligaments are connective tissues at joints (i.e., they join a bone to another bone).

There are 3 basic muscle groups in the lower back: the *extensors*, *flexors*, and *rotators*. Note that these muscle groups include tendons and ligaments that bind muscles, bones and joints together.



Extensors: This muscle group is made up of 3 layers: *superficial layer*, *intermediate layer* and *deep layer*. Intuitively, the superficial layer is located nearest to the skin, the deep layer nearest to the backbone and ribcage, and the intermediate layer between these 2 layers. These muscles are located at the back, and work together to help the spine extend.

Flexors: Flexors are muscles that flex the spine. The abdominal muscles are a major component of the flexors.

Rotators: Rotators are muscles that help us turn our torso left and right. The oblique abdominal muscles, as well as muscles to the sides of the back fulfill the role of rotators.

Another very important muscle is the *intertransversarii muscle*. These small, short muscles span between the transverse processes and are very deep in the lumbar regions. They allow the spine to bend sideways, forward and backwards.

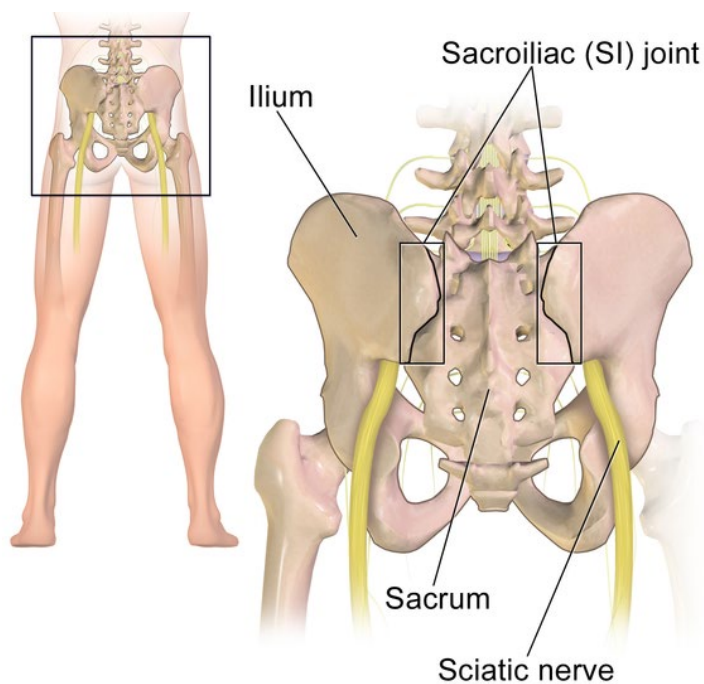


The Sacroiliac Joint

While the pelvis isn't considered part of the lumbosacral spine, it is sometimes implicated in lower back pains – especially the sacroiliac joint.

The sacroiliac joint is the point where sacrum is connected to the pelvic bone via sacroiliac ligaments. This joint allows the sacrum to move, allowing us to bend forwards or lean backwards without spinal flexion or extension.

The sacroiliac joint also harbors a pair of nerves known as the sciatic nerve. Each of this pair of nerves runs from the spine down the length of our legs. Irritation of the joint itself, the ligaments in the joint and the sciatic nerve is proven to induce lower back pain in a condition known as *sciatica*. We'll talk more about sciatica and associated pains in Chapter 4.



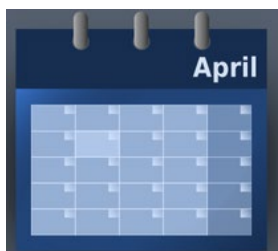
Sacroiliac Joint

[Courtesy of Wikimedia Commons](#)

Chapter 2: Classifying Lower Back Pain

With the lower back properly defined in the book, we can now move on to a very important topic: classifying lower back pain. Learning how lower back pain is classified helps greatly when you're communicating with your clients about their condition. Remember that a medical doctor will need to properly diagnose your client with this type of classification; this is not your job as it is outside the scope of massage therapy. But this section will give you a good understanding about the different classifications. And you may be able to help your client understand these classifications and give them a sense of reassurance that they're not suffering from some unknown, incurable disorder.

In this chapter, we look at 3 ways to classify lower back pain.



Classifying Lower Back Pain: By Length of Time

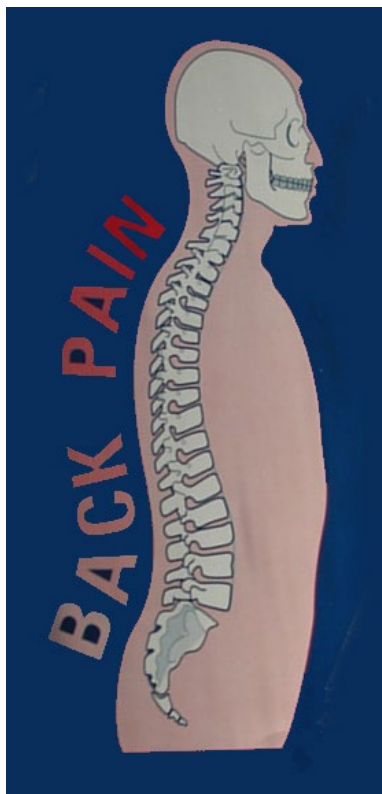
One way to classify lower back pain is by the length of time your client suffers from the disorder. There are 3 levels in this classification:

Acute lower back pain: This refers to lower back pain that lasts for less than 4 weeks.

Sub-acute lower back pain: Lower back pains lasting from 4 – 12 weeks are classed under sub-acute lower back pain.

Chronic lower back pain: This type of lower back pain lasts beyond 12 weeks. Often, your client would already be suffering from lower back pain for years.

Acute and sub-acute lower back pains are less serious than chronic lower back pain; lower back pains under the previous 2 classifications usually heal with time. Most of your clients looking for massage therapy to relieve their lower back pain would fall under the “chronic lower back pain” class and I believe this is the most common type of back pain that massage therapists will be presented with.



Classifying Lower Back Pain: By Specificity

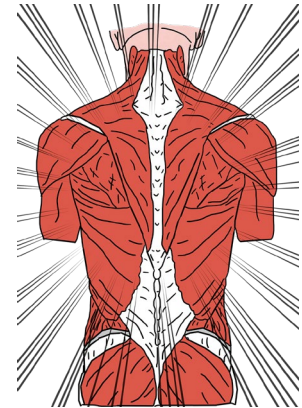
Another way to typify lower back pain is by whether a specific cause of the lower back pain can be identified.

Specific lower back pain: As the name implies, this refers to lower back pains where a specific area and a specific cause can be identified. A specific lower back pain is usually acute or sub-acute.

Non-specific lower back pain: The majority of lower back pains fall under this category. This refers to lower back pains where a single, specific cause cannot be identified. The majority of lower back pain suffered by the population falls under this category. It is usually chronic in nature, and it isn't caused by a recent injury, such as weightlifting or trauma.

Classifying Lower Back Pain: By Source of Pain

Our last method stems from Macnab's classification of back pain. (See info box on Macnab further down in this chapter).³ By using this classification, we are assuming that the lower back pain suffered by your client can be specified. He defines 5 categories in which most back pains (and lower back pains) fall into:



Viscerogenic: “Viscerogenic” comes from the word “viscera,” referring to the spaces that harbor our vital organs, such as the pancreas, stomach or liver. This points to lower back pain as a result of some form of organ damage or disorder in one of the organs.

Neurogenic: This refers to nervous system damage as the cause of lower back pains. For example, a trauma might have caused the intervertebral disc to rupture, resulting in a deformed intervertebral disc that compresses nerve roots.

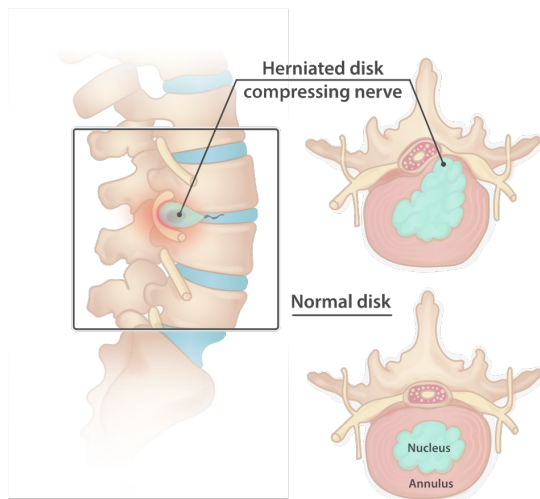
Vascular: Some form of disorder to the blood vessels in the spine or near the spine may also cause lower back pain. For example, in the case of abdominal aortic aneurysm (where blood vessels that supply blood to the abdomen, pelvis and legs, balloons and expands to an abnormal size), can cause lower back pain.

Psychogenic: This means that the source of the back pain may come from certain psychological conditions, such as generalized anxiety disorder (GAD). GAD causes lower back pains because the client's muscles are perpetually tense, leading to muscle fatigue. Hypochondriasis and

somatization disorders are psychological disorders where symptoms or diseases are present in the client without a physical cause.

Spondylogenic: This refers to lower back pain caused by the spine itself and muscles, ligaments and tendons associated with the spine. This is the most common cause of lower back pain; conditions such as osteoporosis, bulging/herniated discs and muscle, ligament and tendon strains fall under spondylogenic lower back pain. Armed with knowledge

about these lower back pains, you'll be able to discuss the nature of lower back pain experienced by your clients during massage therapy. However, it must be noted that *this knowledge is no substitute for professional medical advice*. Do NOT attempt to diagnose your clients based on the contents of this chapter! As always, diagnosing



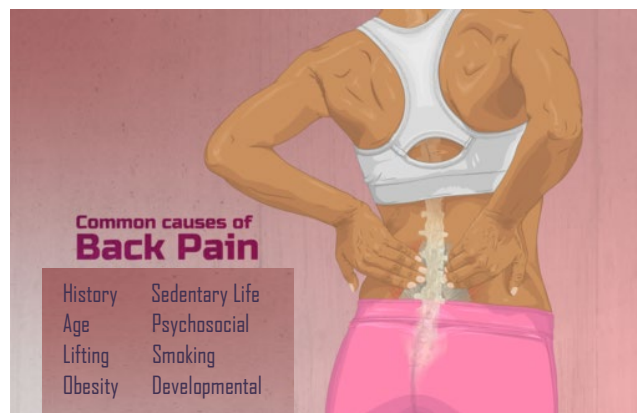
Herniated Disk. Courtesy of Wikimedia Commons

ANY medical condition is outside the scope of massage therapy...be sure you have some physicians and/or chiropractors as part of your referral network so you can easily refer your suffering massage clients to them if need be.

Chapter 3: Causes of Lower Back Pain

Lower back pain is a complex disorder; there are many possible sources of lower back pain, and even more external causes of lower back pain. Thankfully, at least one thing is clear: causes of lower back pain are related to the types of lower back pain. A psychogenic lower back pain will, for example, most probably be related to emotional distress.

More importantly, our lifestyles directly reflect the probability of developing lower back pain. An office worker, seated for hours on end due to his work requirements, is more vulnerable to lower back pain than a nurse who's constantly on the go. In this chapter, we talk about 8 possible causes of lower back pain and explain why they cause lower back pain.



History of previous back pain: Research has shown that lower back pain is directly related to a history of lower back pain. In fact, a previous incidence of lower back pain is the most reliable and accurate predictor if that person will have another bout of lower back pain in the future.

Recurrence is a major issue amongst sufferers of lower back pain, probably due to the chronicity of lower back pain. Some researchers have

even taken a step further by saying that lower back pain follows a chronic course, where the sufferer experiences periods of intense lower back pain interspersed with periods where the pain is absent.

Increasing age: Age is one of the most important predictors of lower back pain. As we age, our spinal columns begin to suffer from wear and tear; intervertebral discs start to lose water content and lose tensile strength. This eventually amounts to degenerative disc disorder (explained in Chapter 4)

In addition, age simply increases the chances of you suffering from an injury – a 50-year-old has 30 years more to suffer from an injury that causes lower back pain compared to a 20-year-old. Age also leads to an accumulation of chronic injuries, which collectively can cause lower back pain.

Indeed, studies have shown that the incidence of lower back pain reaches its peak at the 50 to 60-year bracket. In those studies, it is also shown that 60-year-olds have twice the incidence of lower back pain compared to 30-year-olds!⁴





Psychosocial factors: Psychosocial factors refer to possible psychological states and sociological events. A psychological state includes emotional states and psychological disorders, while sociological factors point to job security, job satisfaction, marital satisfaction and any social event that involves human interaction within a community.

Indeed, in a study known as the Boeing study,⁵ low job enjoyment and high distress scores were surprisingly linked to subsequent reports of lower back pain. In fact, in a separate study, it is even more strongly linked to lower

back pain than poor sitting postures – a factor that has constantly been blamed for lower back problems by the mainstream media.

Heavy or repetitive lifting: Jobs that involve high amounts of physical work, such as construction or mining, are at especially high risk of lower back injuries. Studies have shown that compared to another person who's working at a job that requires no heavy or repetitive lifting, an individual that constantly carries heavy loads is twice as likely to suffer from lower back pains.

The reason is simple: heavy or repetitive lifting puts strain and stress on the lower back, including the lower back muscles and the lumbosacral spine. Heavy lifting thus increases the likelihood that the worker would over-strain his or her lower back while on the job, thus causing lower back injuries and ultimately lower back pains.

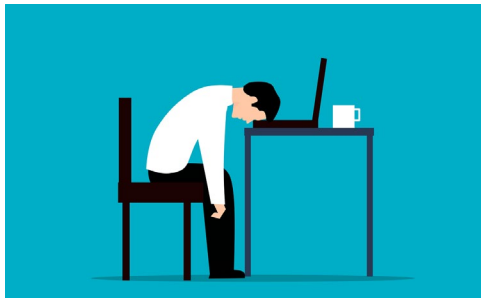
Steps	Techniques
<p>Planning</p> 	<ul style="list-style-type: none"> • Size up the load and check overall conditions • Check route for clearances and obstacles • Use a handcart or dolly, etc. when possible • Break down large and heavy loads • Know your limits • Seek help if necessary • Take extra care with awkward tasks
<p>Lifting</p> 	<p>Remember to use the "5" L's of Back Safety</p> <ul style="list-style-type: none"> • Load • Lungs • Lever • Legs • Lordosis – keep your back straight
<p>Carrying</p> 	<ul style="list-style-type: none"> • Hold the load close to your body • Look where you are walking • Take extra care carrying up and down stairs • Don't twist your body, move your feet to turn
<p>Lowering</p> 	<ul style="list-style-type: none"> • Bend your knees to lower the load • Don't trap your fingers and toes • Pull it down first, then slide it into place • Don't over-reach or stretch

Courtesy of Brookhaven National Laboratory

Repetitive lifting contributes to lower back injuries by increasing the rate of wear-and-tear of intervertebral discs and vertebra; parts of the spinal

column constantly rub against each other when you lift more often. The constant flexing and extension of the spine also increases the likelihood of discs or vertebra slipping out of place due to existing conditions, such as minor spondylolysis, being aggravated by repetitive lifting.

Do refer to the table on the prior page, courtesy of Brookhaven National Laboratory, for an overview of lifting techniques to protect your lower back.



Sedentary lifestyle, sitting posture and

lack of exercise: A sedentary lifestyle also causes lower back pain. While heavy or repetitive lifting puts too much stress on the lower back, a job that requires a person to be

constantly seated puts *too little* stress on the lower back. The problem is a spondylogenic one; the core muscles and lumbosacral spine begins to degenerate from the lack of use. This weakening of bone and muscle eventually leads to chronic lower back pain.

It may seem paradoxical that both heavy or repetitive lifting and a sedentary lifestyle can lead to lower back pain. However, as most things in life are, *moderation* is the key. The spine must occasionally be flexed or extended to stretch the ligaments found between vertebrae so that they do not become stiff from disuse. The back muscles and tendons must also be stretched and exercised to build their strength, allowing your back muscles to help your spine support the weight of your upper body.

Closely related to sedentary lifestyles, poor sitting postures contribute to a large proportion of all lower back pain cases. Most people slouch or lean

too far forward while working on the computer. This puts the spine in an unnatural position, forcing your lower back to work even harder to keep your body in balance. Over time, this strains the lower back, causing chronic lower back pains.



Lastly, sedentary lifestyles often mean a gross lack of exercise. Exercise, as mentioned, work abdominal and lower back muscles, making them stronger and thus more efficient in helping your spine support the upper body. It also increases the efficiency in which blood transports oxygen-rich blood to your muscles, ensuring healthier muscles and thus stronger core muscles to aid the spine in its function.

Obesity: Although the claim that obesity as a cause of lower back pain is still questionable (some researchers attribute the lower back pain to the sedentary lifestyle that causes obesity, rather than obesity itself), many studies have shown and recommended that weight loss may be helpful in reducing lower back pain.

These studies hypothesize that the weight gain from obesity puts an extra strain on the spine and lower back, thus putting the obese individual at risk of lower back pain. With obesity, the extra body fat in the abdominals pulls the center of gravity of the body forward. This puts extra stress on the lower back to pull the body up straight – resulting in a virtual “tug-of-war” between the abdominals and lower back. There’s no winner in this

competition, though; this stress on the lower back will eventually result in spondylogenic lower back pain.

Still, there are more and more studies showing a positive correlation between obesity and lower back pain. Although the link is not clear, it is at least certain that preventing obesity goes a long way in preventing lower back pain – because exercise usually plays a big part in combating obesity!



Smoking: Smoking has also been implicated in lower back pains. Many different explanations have been given; we'll look at 2 here.

Researchers have reasoned that it is the ***chronic cough*** that results from smoking itself that causes lower back pain.⁶ Coughing puts a lot of stress on the abdominal muscles, as the core muscles must contract violently during coughs (the reason why your abdominal muscles may hurt from too much coughing). This in turn puts more pressure on your spine, thus increasing the rate at which intervertebral discs and vertebrae wear out, eventually causing age-related lower back pains.

Smoking also reduces the amount of blood that reaches the vertebrae.⁷ This in turn decreases the amount of minerals and vitamins that reach the vertebrae, reducing the capability of the spine to repair degenerated areas and also contribute to losing bone mass. If the rate of loss exceeds the rate at which bone tissues regenerate, the spine becomes

weaker, becoming more prone to micro fractures over time – thus resulting in lower back pain.

Developmental disorders: Lower back pain can simply be caused by musculoskeletal defects that are present from birth. Spondylolysis, the condition where there are anomalies in the facet joints between 2 adjacent vertebrae, can be inherited, thus causing spondylolisthesis and eventually lower back pain.

Your lumbosacral spine or pelvis may also be naturally misaligned from birth, either because of developmental deformities or trauma from birth. This misalignment naturally causes discomfort and pain in the sufferer. This problem can be resolved, however, by visiting a chiropractor that will manipulate and make minor adjustments to the spine, such that the alignment of the spine is corrected.



Other medical causes and

conditions: Any trauma to the abdominal or pelvic areas, such as from a fall or vehicular accident, will likely cause pain in the lower back.

Lower back pain may also be *from* medical procedures, including surgery. Furthermore, lower back pain may be an indicator of other more serious conditions, such as cancer, endometriosis, kidney problems and Paget's disease of bone.

Injury or Surgery – It stands to reason that injuries and medical procedures can, and do, tear or cut the ligaments, fascia, or bone, as well as the paraspinal muscles. After the use of anesthesia for medical procedures,

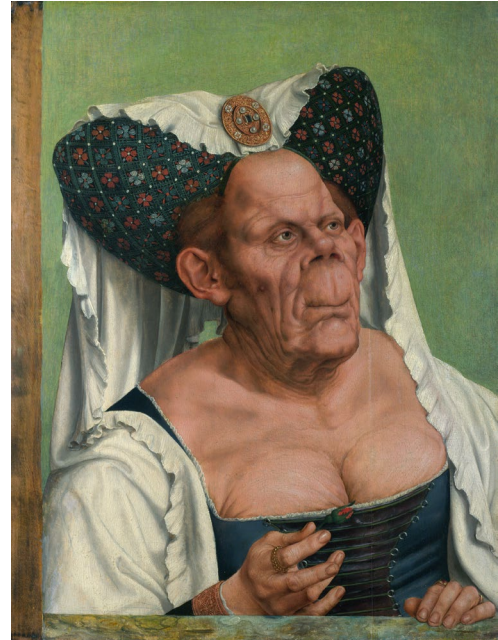
lower back pain can occur from over-relaxation of the paraspinal muscles, flattening of the normal lumbar convexity, and stretching or straining of the ligaments and joint capsules, especially if anesthesia was administered by spinal injection, such as an epidural. Certain surgeries, birthing, prolonged immobility, and orthotic positioning increase occurrence where--in general--lower back pain is localized and rarely radiates to extremities.⁸

Cancer – In cancer, tumors may be present at the lumbosacral area. The tumor may either originate from the spinal region itself (a primary tumor) or from another part of the body before spreading to the spine (a metastatic tumor). These tumors interfere with blood flow, thus preventing nutrients from reaching healthy parts of the spine. They may also compress nerves running alongside the spine, causing sciatica and other related problems.

Endometriosis – Endometriosis only affects women. In this disorder, cells from the uterus grow in other parts of the body, thus causing severe pain and discomfort in the individual. These cells follow a menstrual cycle; it will grow, bleed and grow again as with normal uterus lining cells. This thus causes chronic pain that waxes and wanes within the month; chronic lower back pain results when the uterus cells grow near the lower back.

Kidney Problems - Kidney problems, such as kidney stones, infection, and bleeding (hematoma) cause lower back pain. This lower back pain is viscerogenic in nature; the pain is from the kidneys, not the lower back itself.

Paget's Disease of Bone - Finally, Paget's disease of bone results in lower back pain. This disease, unfortunately, has no known cause; all we know is that it is more prevalent in individuals over the age of 50. The disorder results in bones becoming deformed and brittle. When it happens in the lumbosacral spine, this weakening of vertebrae eventually causes micro fractures and possibly spondylolisthesis, leading to lower back pain.



The Ugly Duchess. Depiction of a lady suffering from Paget's Disease of Bone.
Courtesy of Wikimedia Commons

The Spine's Pretty Fragile, Huh?

After reading this chapter, you might walk away with this notion: the spine is going to break at any time! With so many possible ways to injure the spine, it's a wonder we're not walking around with steel-plated braces to protect our spines!

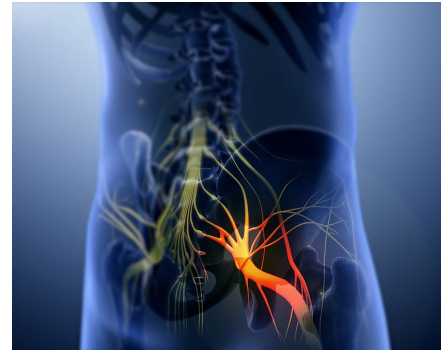
Actually, our spine is stronger than you think – textbooks state that a vertebra can withstand up to 2,800 lbs of pressure! However, there's a catch: the spine as a whole can only hold 20lbs of pressure before, well, buckling under the pressure. This highlights the importance of supporting structures in ensuring that our spine is healthy and strong; loads of exercise to work those flexors, extensors and rotators, as well as constant stretches to increase the flexibility of the spine is ideal in keeping the human spine strong and functional. The spine is only as strong as its supporting structures! And let's not forget the importance of nutrition in keeping our bones strong and healthy!

Chapter 4: Common Conditions Associated with Lower Back Pain

In this chapter we look at some of the most common conditions associated with lower back pain. It is important to note that lower back pain is *a symptom rather than the problem itself*. Lower back pain is an indicator of an underlying medical condition and solving the medical condition usually remedies lower back pain.

Sciatica

Definition: The irritation and compression of the sciatica nerve.



Sciatic Nerve. Courtesy of Wikimedia Commons

Symptoms: Sciatica causes neurogenic lower back pain. It is diagnosed as irritation of the sciatic nerve, resulting in numbness, discomfort and tingling sensations in the buttocks. These sensations can extend to the back (including the lower back) and legs up to the ankle and top of the foot.



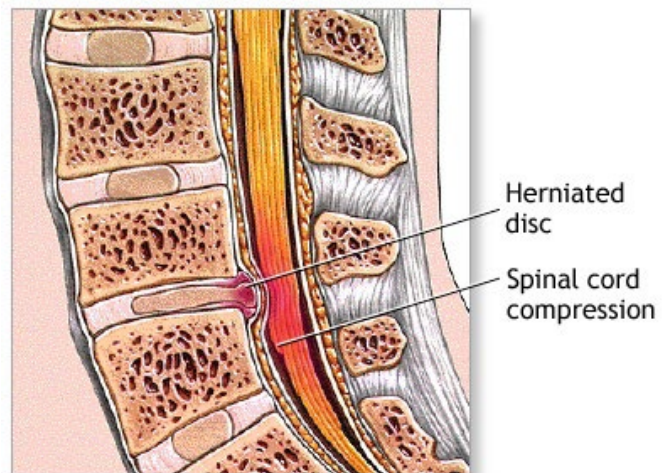
Causes: Sciatica is never a stand-alone condition; as sciatica is defined as the irritation of sciatic nerves, the source of this irritation is the true nature of sciatica. Certain conditions, such as herniated discs, degenerative disc disease, spinal stenosis and spondylolisthesis have been implicated in causing sciatica. These conditions will be explained in detail below.

Possible long-term implications: Unless the sources of irritations are chronic in nature, sciatica will resolve by itself in a matter of weeks. However, it is still advisable to find out the true cause of irritation.

Herniated/bulged/slipped disc

Definition and diagnosis:

Herniated/bulged/slipped disc are synonyms for the same condition: the intervertebral disc “slips” out of position, thus pressing against nerves that runs outside of the spine.



Herniated discs are usually separated into 2 categories: contained protrusions and non-contained herniation. In contained protrusions, the annulus of intervertebral discs is still intact; the nucleus of the intervertebral disc is kept separated from its external environment. In non-contained herniation, the annulus has either partially or completely ruptured, causing the nucleus to leak out of the intervertebral disc. Non-contained herniation are considered to be a more serious diagnosis of the two; the fluids contained in the nucleus are very inflammatory, and will inflame the nerves that come into contact with this leakage, causing lower back pain.

Symptoms: Herniated discs are usually characterized by lower back pain, which gradually radiates towards the legs. The pain is aggravated when you cough or bend forward and is usually relieved when lying on your back.

Causes: The most common cause of herniated discs is simply age; we simply have a higher probability of suffering from some sort of injury that cause herniated discs as we age. Also, excessive spinal motions in the form of lifting, bending or twisting may cause disc herniation. Lastly, as mentioned, trauma such as a direct impact onto the backbone or fall may cause herniated discs as well.

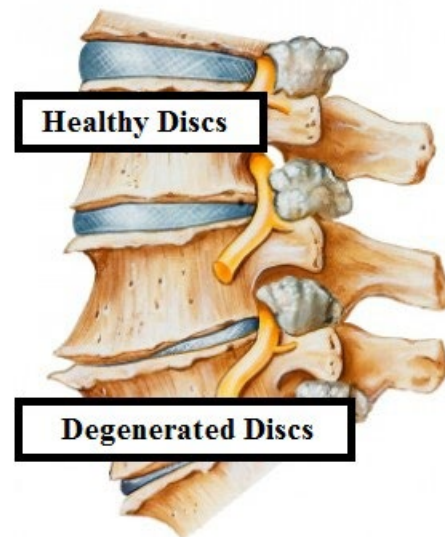
Degenerative Disc Disease (DDD)

Definition: Closely related to herniated discs, DDD refers specifically to the decrease in ability of intervertebral discs to resist spinal movements as we age.

If the annulus ruptures, inflammatory fluids will leak from the intervertebral disc and irritate the nerves that come into contact with this fluid. If the annulus is weakened but not ruptured, the weaker resistance of spinal

movement causes what is known as *micromotion instability*. Both causes muscle spasms in the lower back, leading to lower back pain.

Symptoms: It is usually characterized by lower back pain, which worsens in prolonged seated positions. In some cases, walking and certain



sleeping positions trigger these pains. Changing sleeping positions frequently may alleviate this pain.

Causes: As mentioned, the cause of DDD is age. As we age, the water content of intervertebral discs decreases, making it less capable in resisting spinal motions. This gradually weakens the intervertebral disc, and eventually causes the annulus to collapse.

Possible long-term implications: Contrary to popular belief, DDD usually gets *better* with age. As long as there are no herniated discs, the spine will automatically correct its micromotion instability over time – leading to less or even no lower back pain. Also, studies have shown that almost 85% of all people with DDD do not suffer from back pain.⁹

Spinal Stenosis

Definition: In stenosis, the spinal canal narrows, causing compression of the spinal cord or nerve roots running through the spinal canal. This thus causes irritation of the nerve fibers, resulting in pain.

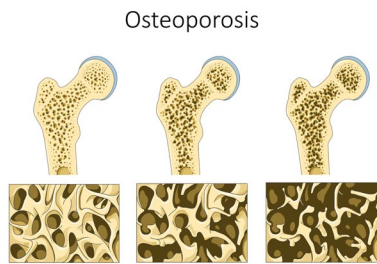


Spinal Stenosis. Courtesy of Wikimedia Commons

There are 2 forms of stenosis: *central stenosis* and *lateral stenosis*. In central stenosis, the spinal canal itself is compressed. Compression at openings where the spinal nerve exits at the sides of the spine is known as lateral stenosis.

Symptoms: Stenosis is usually characterized by pain in one or both legs, or at the back of the body. This pain is relieved when bending forward.

Cause: It is possible for stenosis to be a result of developmental defects; a person may simply be born with stenosis. However, stenosis is not purely a developmental disorder; there are other factors that may cause stenosis, such as disc herniation, trauma to the spine, DDD, spinal fractures and spinal instability.



Osteoporosis

Definition: Osteoporosis refers to the loss of bone mass because of an inability of bone cells to synthesize enough replacement bone mass. This decreases the bone density of the sufferer, resulting in brittle bones that break easily. This condition is not restricted to the spine alone; osteoporosis affects all parts of the body.

With osteoporosis, the vertebrae are at risk of compression fracture – where the fragile vertebrae cracks because of the stress applied to it when supporting the upper body’s weight.

Cause: Age is a major cause of this disorder. With age, the body becomes less adept at absorbing the vitamins and minerals necessary for maintaining bone density, resulting in decreased bone mass if the rate of bone degeneration exceeds the rate of bone regeneration.

A sedentary lifestyle is also a major cause of osteoporosis. The lack of exercise naturally causes a decrease in bone mass because of disuse; there is no need for dense bones when your body isn’t absorbing impact that comes from exercise.

Women are at a higher risk of osteoporosis. As a woman ages, hormonal changes cause bone density to decrease, leading to brittle bones and eventually osteoporosis.

Symptoms: Osteoporosis causes a marked decrease in height, due to the loss of bone mass. Also, because of the lack of strength, osteoporosis causes joint and bone pain – lower back pain due to weak vertebrae is a common symptom of osteoporosis. The most prominent indicator of osteoporosis, however, is the presence of low-energy fractures. The human bone is a very strong structure, and a normal human bone takes a lot of force to fracture it. Fractures from minor falls and knocks indicate brittle bones and the presence of osteoporosis.

Women: Osteoporosis' Preferred Partner

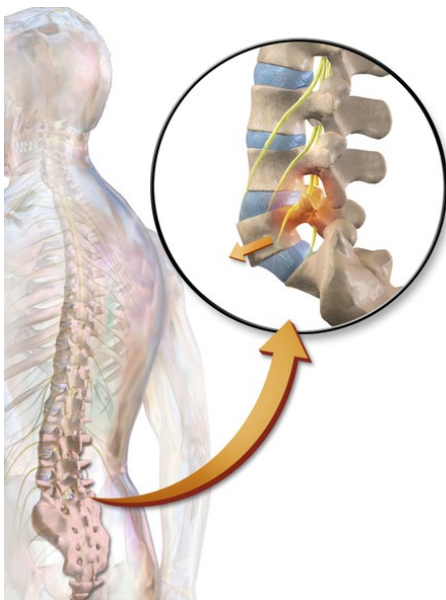
It seems inevitable that women will develop osteoporosis in the later stages of their lives. Indeed, women lose up to 20% of their bone mass within 5 – 7 years of menopause! This happens because of hormonal changes within the body; with menopause, estrogen levels fall drastically. Estrogen protects the bones, and a decline in this hormone's presence in the body eventually contributes to the increased fragility of bone in women.

Why not men, then? Men typically have bulkier builds, and thus more bone mass. This alone gives men more protection from osteoporosis.

It's not the end for women, though: dietary changes, calcium supplements and exercise can all help maintain bone mass. Vulnerability does not equate eventuality; with the right interventions, women can avoid being yet another victim of osteoporosis.

Possible long-term implications: Once present, osteoporosis is almost impossible to reverse, but contrary to conventional medicine, it can be done with diligence and working with a natural health practitioner that is skilled in nutritional therapy. As such, a significant effort should be put into preventing osteoporosis. Weight-Bearing exercise, nutrition and increased calcium and vitamin D intake should be conducted for at-risk individuals. At-risk women would be classified as having some of the below common factors:

- Women
- Caucasian
- Relatives with osteoporosis
- Over 60 years old
- Early menopause
- Removal of ovaries before age of 45



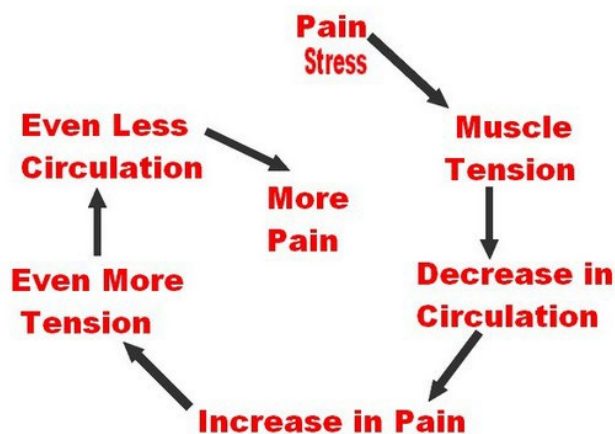
Spondylolisthesis. Courtesy of Wikimedia Commons

Spondylolisthesis

Definition: Spondylolisthesis refers to the misalignment of vertebra. For example, one vertebra might be moved forward over another vertebra located directly below it. When this happens, tissues and nerves (such as the sciatic nerve) around it are irritated, causing pain and discomfort. Spondylolisthesis is one of the sources of sciatica and is known to cause localized back pain.

Spondylolisthesis is an age-related disorder, usually affecting people over the age of 50. However, there are instances of spondylolisthesis affecting individuals as young as 20 years old; in these patients, spondylolisthesis usually involves the slippage of L4 over L5 or L5 over S1.

Symptoms: Spondylolisthesis is strongly correlated with lower back pain, because the majority of vertebral slippages occur in L4, L5 and S1 (and correspondingly associated with lower back pain in young people).



In addition, muscle spasms in the lower back are common. There is something called the “pain-spasm-pain cycle” and it can definitely contribute to issues in the lower back. This occurs when there is pain, then the muscles tense up and there is

an increase in pain, then more tension when the muscles spasm again and then pain again. The sufferer may also feel pain in the buttocks, as well as when walking, standing up or bending backwards. Sciatica may also be present, because of the slipped vertebra compressing the sciatic nerve.

Causes: A related condition known as spondylolysis is known to cause spondylolisthesis. In spondylolysis, the pars interarticularis, the bone mass that lies between the inferior and superior articulate facet joints, is abnormal, causing a separation of vertebra at the facet joint (remember that each vertebra is linked together at the facet joint). This anomaly is usually caused

by stress fracture from overtraining; young athletes and gymnasts are at a high risk of suffering from spondyloysis. Because of this defect, the vertebrae are held together less tightly, increasing risk of vertebrae slippage and thus resulting in spondylolisthesis.

Age plays another part; age causes bone mass to decrease (but not to the extent of osteoporosis), thus resulting in weakened facet joints between vertebrae. This results in vertebra slippage and thus spondylolisthesis.

Non-specific back pain

Unfortunately, many lower back pains are non-specific as there are no clear causes for the non-specific back pain. Such ailments are usually chronic in nature; acute lower back pain is usually linked to recent injuries such as lifting too heavy loads with the lower back or direct trauma to the lower back. Although medical professionals cannot pinpoint the exact cause of the lower back pain, they are at least able to identify various risk factors that cause lower back pain, as listed in Chapter 4.



If your client is suffering from non-specific lower back pain, feel free to share with them some of the lifestyle changes that they can carry out to alleviate those pain symptoms – such as quitting smoking, leading a more active lifestyle or sharing with them the information on proper lifting measures. Educating your client about these healthy lifestyle tips is *not* out of your area of expertise; you may be a massage therapist foremost, but you're also a health professional – and your client's health is of utmost importance! So, feel free to share information and knowledge with them.

Chapter 5: Massage Therapy and Lower Back Pain

Massage therapy is increasingly popular in the United States; indeed, the American Massage Therapy Association (AMTA) estimates that massage therapy is an \$18 billion industry! In addition, AMTA estimates that



22% of adult Americans received massage therapy in 2018. Since the COVID-19 pandemic, men are now more likely to get a massage than women.¹⁰ Massage therapy is also recognized as part of contemporary and alternative medicine by the National Center for Contemporary and Alternative Medicine.

Judging from the benefits listed by AMTA, it isn't hard to understand why more and more people are turning towards massage therapy to resolve their ailments:

- Alleviates cancer-related fatigue and pain
- Alleviates lower back pain
- Alleviates upper back and neck pain
- Bolsters bodily immune system strength
- Lowers blood pressure
- Minimizes headache pain and occurrences
- Relieves carpal tunnel syndrome's symptoms
- Relieves pain associated with fibromyalgia
- Remedies insomnia related to stress

- Relieves post-operation pain
- Remedies alcohol withdrawal symptoms
- Relieves pain associated with osteoarthritis

In this chapter we focus on how massage therapy relieves lower back pain. Many studies have been done on the effectiveness of massage and reports such as ones from The Touch Research Institute¹¹ and AMTA,¹² have shown that massage therapy has significant effects in alleviating lower back pain – some doctors are even advocating massage therapy as part of the treatment for lower back pain! However, how exactly do different types of massage help alleviate lower back pain?

We'll split the following section into 2 parts: the first part focuses on Western approaches to massage therapy, while the second part talks about Asian massage modalities.



Note: Although research has made inroads into the mechanisms of massage that cause these benefits, there is still insufficient evidence to point to what exactly massaging does to alleviate lower back pain. As such, we'll not talk about why a particular massage modality works in resolving lower back pain unless there is clear evidence for that particular modality.



Western Massage Therapy Modalities

Neuromuscular Therapy

Overview: Also known as *trigger point myotherapy*, neuromuscular therapy (NMT) is specifically targeted at spondylogenic lower back pain. According to the Buckland Massage and Neuromuscular Center, NMT targets 5 facets of pain:

Ischemia: Insufficient blood flow to muscular tissues, causing pain.

Trigger Points: Irritated points in muscles that cause referred pain in other parts of the body.

Nerve Compression or Entrapment: Pressure on or compression of a nerve by a bone, cartilage or soft tissue.

Postural Distortion: Bad body posture causing specific pains in the body.

Biomechanical Dysfunction: Defects in the musculoskeletal system, which results in bad movement habits (i.e., lifting with back).

Application to lower back pain: Here, we'll look at ischemia, trigger points and nerve compression or entrapment.

In ischemia, lower back pain is assumed to be caused by recurring muscle spasms (this is known as a pain-spasm-pain cycle), and neuromuscular therapy targets these trigger points in the lower back that are suffering from muscle spasms.

The muscle tissues in these areas are known as ischemic muscle tissues. Here, blood flow is restricted because of the constant pain-spasm-pain cycle that constricts blood vessels in the affected muscles. Oxygen is thus not delivered in sufficient amounts to the lower back muscles, causing lactic acid build-up – the same chemicals that cause muscle pain after a particularly hard workout session.

By applying pressure to these trigger points, the therapist attempts to resolve the muscle spasms by forcing the muscles to relax. Because of this, proper blood flow is established, and lactic acid is carried away from the muscles – reducing the feeling of “soreness” in the lower back.

Neuromuscular therapy also claims to be helpful in alleviating neurogenic lower back pain, such as sciatica, by helping to relieve nerves that are compressed by muscles, cartilage (i.e., intervertebral discs in the spine) and bones. Pressure is applied on particular trigger points that are suspected to be compressing exposed nerves. Tensed muscles then relax, reducing the pressure applied on the nerves they were compressing.

Deep Tissue Massage

Overview: Deep tissue massage involves, as the name implies, application of pressure to deeper layers of muscle tissues, *fascia* (a layer of fibrous connective tissue that surrounds groups of muscles, blood vessels and nerves), tendons and ligaments. It involves the use of long, smooth strokes, and uses the hands, thumbs, elbows and forearms to work the deeper muscles.



The logic of deep tissue massage is simple: it serves to remove *adhesions*, rigid bands of muscle tissues that are present and are usually the cause of chronic pain or tension, from affected areas. Adhesions block blood flow and causes stiffness, limited motion and inflammation. By applying pressure along the grain of muscles and to fascia, tendons and ligaments, these adhesions are removed, thereby restoring blood circulation, relaxing the muscles and thus resolving pain from chronic tension.

Application to lower back pain: One major difference between deep tissue massage and other more traditional forms of massage is the specific nature of deep tissue massage. The therapist usually targets one specific muscle group to resolve pain from that area – for example, if the client says he or she is suffering from tension and lower back pain, the therapist will specifically work on the lower back for that session. Indeed, deep tissue massage helps with osteoarthritis, flexibility, muscle tension and spasms – targeting spondylogenic lower back pains.

Swedish Massage

Overview: Swedish massage is probably one of the best-known massage modalities in the West. First formulated and popularized by Pehr Henrik Ling in Sweden's University of Stockholm (hence "Swedish massage"), Swedish massage came into the U.S. in the middle of the 20th century, and is responsible for reigniting interest in massage therapy in the U.S.

Unlike the focus on energy, sen lines and meridians in Eastern massage modalities (such as in shiatsu massage, Thai massage, and acupressure), Swedish massage is based on western concepts of human anatomy and physiology. In fact, Swedish massage lays the foundation for many modern forms of massage, such as NMT and deep tissue massage. Swedish massage is also focused on removing adhesions deep in muscles, tendons, ligaments, and fascia.

There are major differences, though. Swedish massage uses massage oils – making it similar to aromatherapy (discussed in the next section) – in



conjunction with a massage routine that Pehr Henrik Ling himself termed as "massage gymnastics." This includes effleurage (French for "to touch lightly"), kneading, stretching and tapping.

Application to lower back pain: In a study that compared Thai massage with Swedish massage, researchers concluded that both massage

modalities decreased pain and discomfort for people with chronic lower back pain, and that there wasn't any significant difference between both massage modalities.¹³ The mechanisms behind Swedish massage are expected to be similar to NMT and deep tissue massage. The massage oils used may also have a soothing effect on clients; this will benefit clients that are suffering from psychogenic lower back pain.

Hot Stone Massage

Overview: Hot stone massage involves placing heated basalt stones on specific points on the spine, hands, and feet, thus warming and relaxing the muscles while improving blood circulation to these areas of the



body. The logic behind this is that the heat expands blood vessels, allowing a better flow of blood into the areas where the basalt stones are placed.

Native Americans have used this technique as a form of massage therapy for ages, but Mary Nelson popularized modern usage in the 1970s. Mary Nelson introduced a form of hot stone massage known as LaStone Therapy, and hot stone massage thus became part of mainstream massage modalities.

Also known as lava stone massage, river rock massage or warm stone massage, hot stone massage is rarely used alone. Rather, a therapist typically conducts Swedish massage before applying hot stone massage.

Application to lower back pain: While scientific literature is lacking in showing how hot stone massages resolve lower back pain, preliminary (but unproven) opinions suggests that hot stone massage might help spondylogenic lower back pain because the heat relaxes tense lower back muscles, putting a stop to pain-spasm-pain cycles.

Asian Massage Therapy Modalities

Shiatsu Massage

Overview: A form of Japanese massage, “shiatsu” stands for “finger pressure” – the reason why it’s sometimes called finger-pressure massage. Shiatsu massage is based on the traditional Chinese belief that illness is caused by blockages of “winds” – known as *qi* – that flow within the body. Qi revitalizes the body, and a faulty flow diminishes causes disorders and illnesses.

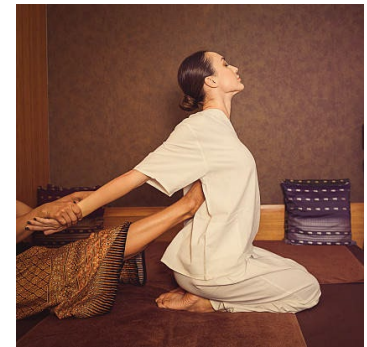
Thus, the massage therapist uses his or her fingers to apply pressure on particular pressure points of the body – known as “meridians” – to improve the flow of qi throughout the body. Modern science explains that shiatsu massage calms an overactive sympathetic nervous system (which is associated with tension and the fight/flight response), thus relieving stress, improving blood circulation and relaxing stiff muscles. Typically, no massage oil is used for shiatsu massage.

Application to lower back pain: A research done by Linda H. Brady and colleagues, published in the Journal of Holistic Nursing,¹⁴ provided evidence that shiatsu massage helps alleviate lower back pain. In this study,

participants were asked to attend four shiatsu massage treatments, and their lower back pain and anxiety levels were measured. Two days after the treatment, a significant number of participants responded that their lower back pains were alleviated, and that they were less anxious than before the treatment.

Thai Massage

Overview: Thai massage, also known as nuad boran in Thailand, is one of the branches of Thai Traditional Medicine, which is recognized and regulated by the Thai government. Originally from India, Thai massage is based on the usage of the therapist's hands, knees, legs and feet to move the client into a variety of yoga poses.



It is based on a similar concept as shiatsu massage. Here, the body is believed to be permeated by winds known as “*lom*” that travel along channels known as “*sen*,” and terminate at the orifices. The yoga poses allow the lom to travel more efficiently throughout the body, thus revitalizing the client.

Thai massage isn't just about techniques; practitioners are taught the importance of “*metta*” – the concept of humility, awareness and concentration to heal the client of his or her ailments. Indeed, it was one of the tools that Thai monks used to heal the populace.

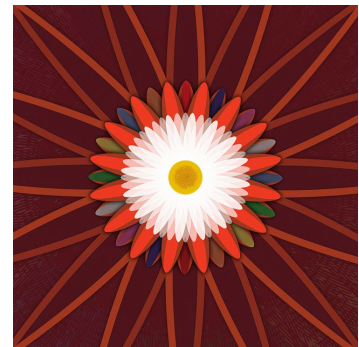
Application to lower back pain: With centuries of use, Thai massage has proven itself in Western studies¹⁵ at being effective in reducing lower back pain. Because of the movement into yoga poses, Thai massage effectively increases the flexibility of clients, improving range of motion of the

lower back and thus allowing the spine to flex and extend to a greater degree. This is especially helpful for individuals with sedentary lifestyles, who may suffer from lack of exercise and thus lower back pain. It also improves psychological functions by improving mood and reducing anxiety.

Acupressure

Overview: Acupressure stems from the Traditional Chinese Medicine method of acupuncture. Instead of using needles, light pressure is applied to various meridians on the body that control the 12 main energy channels which qi flows within the body.

The concept is similar to shiatsu massage: qi regulates the balance of the chemistry within the body, and an unbalanced qi results in pains, illnesses and disorders. By pressing on these pressure points found across the body that corresponds to the site of pain or the illness/disorder in question, acupressure restores balance and thus alleviates symptoms of pain and distress.



One major difference between shiatsu massage and acupressure is the techniques involved: in acupressure, the emphasis is not on how much pressure is applied onto each and every pressure point, but the contact between the therapist and the client. Also, shiatsu massage focuses on “pushing qi” along channels to clear blockages along these energy channels, while acupressure focuses on pressing the different pressure points to regulate energy flow. Shiatsu massage guides the flow of qi, while acupressure simply presses the right buttons to allow qi to flow again.

Still, the therapist usually massages his or her client to loosen up the body. This makes the client's body more receptive to the therapeutic effects of acupressure.

Application to lower back pain: Many studies have proven the effectiveness of acupressure in alleviating lower back pain. In a study done by Yong-Suk Kim and colleagues in Korea's Kyung Hee University,¹⁶ acupressure is better at decreasing the pain and disability of patients with chronic lower back pain by 89% compared to physical therapy!

It's all in the Mind: The Placebo Effect

Imagine that you're in an experiment investigating the effects of a particular drug on your IQ. Placing a green capsule on your open palm, the researcher tells you that just consuming one capsule per day will increase your IQ significantly after 3 weeks.

You follow the instructions: one capsule every day, one capsule every day, one capsule every day... until the 3 weeks are up. Back in the lab, the researcher gives you an IQ test, pits the score with your previous score 3 weeks before, and voila! You scores actually increased!

And the researcher finally tells you: you've actually just been eating a sugar pill for the past 3 weeks.

This is what we term as the *placebo effect*: because you anticipate an improvement, that improvement actually shows up! As such, many experts are skeptical that massage therapy actually does anything other than exerting a placebo effect on clients suffering from lower back pain.

Still, the experiments that were mentioned were done with another control group receiving placebos or other forms of treatments – and massage therapy turned out to exert a real effect on lower back pain. However, more experiments are needed to verify these experiments – but the outlook looks promising.

Chapter 6: Other Lower Back Pain

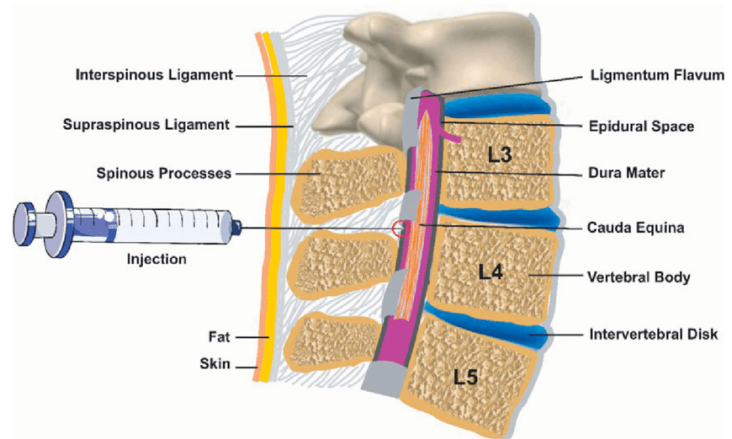
Treatment Approaches

Massage therapy is considered a relatively new treatment for lower back pain – it was only popularized about half a century ago when Swedish massage first entered the radar of the western civilization. There are many other forms of treatments, ranging from conventional medical treatments, such as use of drugs, surgery and physical therapy, to other alternative, natural health care treatments, such as nutritional supplements and herbs, therapeutic-grade essential oils, acupuncture therapy and biofeedback.

This section briefly covers the conventional and alternative treatment methods of lower back pains, apart from massage therapy. We'll first look at conventional methods before moving on to alternative treatment methods for lower back pains.

Conventional Medical Treatments: Drugs

Lumbar epidural steroid injections: In a lumbar epidural steroid injection, the doctor injects steroids, sometimes coupled with anesthetics or a saline solution, to the *epidural* space of the spine. This injection has been used since 1952 and is usually used to treat acute lower back pain.



The epidural space refers to the region of the spine that is right above the *dura mater* of the spine, the soft tissue that covers the bony structure of the spinal column itself and separates the cerebrospinal fluid from bodily fluids outside the spine.

Main problem targeted: The main purpose of lumbar epidural steroid injections is to reduce inflammation in the lumbosacral region. Inflammation causes swelling of tissues around the affected region, which may result in compression of the sciatica nerve. As such, it is primarily used to treat sciatica resulting from herniated discs, DDD, stenosis and vertebral compression fractures.

More than 50% of patients report relief of lower back pain for 1 week to a year. However, epidural steroid injections are usually used to temporarily relieve lower back pain, so that patients can pursue other treatment methods that target the root cause of the lower back pain.

Side effects: Side effects include infection from injection, dural puncture that results in bleeding, and nerve damage.



Nonsteroidal anti-inflammatory drugs

(NSAID): NSAIDs are a class of drugs that, like lumbar epidural steroid injections, reduce inflammation in the body, including the lumbosacral region. Unlike the previous treatment, NSAIDs are ingested orally –

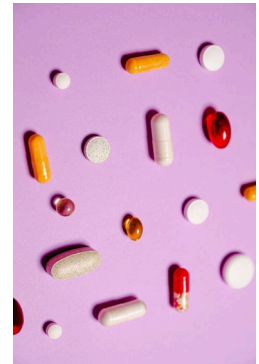
although there are intravenous (directly injected into the body) drugs as well.

There are 4 main classes of NSAIDs: *ASA*, *ibuprofen*, *naproxen* and *COX-2 inhibiting NSAIDs*.

ASA, also known as aspirin or acetylsalicylic acid, targets a particular enzyme that produces a particular protein known as *prostaglandins*. This protein causes blood to clot, inflammation and even fevers – in short, it is a substance produced by our body to indicate injury in a particular part of the body. ASA thus stops this inflammation, reducing swelling and thus reducing possible compression of sciatic nerves in the lumbosacral spine.

Ibuprofen is one of the earliest NSAID manufactured, and also targets prostaglandins. The main difference between ibuprofen and ASA is the side effect cause by ibuprofen; ASA irritates the esophagus and stomach linings and thins the blood. While ibuprofen *does* have these side effects, it seems to affect the body to a lesser extent.

Naproxen: Naproxen also works on prostaglandins to reduce inflammation, swelling and resulting in decreased lower back pain. As with ASA and ibuprofen, naproxen may irritate the upper digestive tract (i.e. the esophagus and stomach) and causes thinning of blood. There are unconfirmed reports of naproxen working better for pregnant women.



COX-2 inhibiting NSAID: The main difference between this type of NSAID and ASA, ibuprofen and naproxen is that it doesn't affect the upper digestive tract when inhibiting the enzyme producing prostaglandins. However, it has been shown to cause cardiovascular disorders. The FDA has ordered more research to be done regarding the side effects of COX-2 inhibiting NSAIDs.

Main problem targeted: As with lumbar epidural steroid injection, NSAIDs reduce inflammation and reduces compression of the sciatic nerve, thus resolving sciatica issues. Also, it may reduce inflammation in muscles, thus relieving lower back pain caused by muscle strains.

Side effects: As mentioned, side effects include irritation of upper digestive tract, thinning of blood and cardiovascular disorders in the case of COX-2 inhibiting NSAID.

Narcotics: Narcotics are a class of drugs that induce a dissociative effect, thus making the patient less aware of the pain. It does not directly target the source of the pain, as in steroid injections and NSAIDs; it changes brain chemistry, dissociating the patient from the body and thus “deadening” lower back pain.

Narcotics are highly addictive. They are also known as opioids – and heroin, one of the most abused and addictive drugs on the black market, is classed as an opioid.



Main problem targeted: Narcotics do not resolve lower back pain; it serves only as a temporary solution for disabling lower back pain.

Side effects: As mentioned, addiction is a serious concern. As such, doctors must regulate the prescription dose carefully to prevent abuse. Also, the body becomes habituated to the dose of narcotics after about 2 weeks – this means that a higher dose must be applied for the same level of pain relief to be felt. As such, narcotics are not used for long-term treatments of lower back pain.

Antidepressants: Although the exact mechanisms aren't clear, research has shown that tetracyclic and tricyclic antidepressants can reduce chronic lower back pain.

Antidepressants target particular hormone systems in the brain and is known to improve mood – thus its heavy usage in treating Major Depressive Disorder, Dysthymic Disorder and Double Depression.

Main problem targeted: Research is ongoing to determine how exactly antidepressants help with lower back pain. However, it is hypothesized that antidepressants target psychogenic lower back pains by relieving stress and correspondingly muscle tension.

Side effects: Unfortunately, antidepressants come with a host of side effects, such as dry mouth, digestive problems, blurred vision, sexual dysfunction, tremors and sweating, urinary retention, lowered blood pressure and weight gain.

Muscle Relaxants: Muscle relaxants act on various brain centers to help relieve muscle spasms. Contrary to intuition, muscle relaxants do not act directly on muscles to reduce spasms.



Main problem targeted: Muscle relaxants target the pain-spasm-pain cycle that causes muscle tension, and thus spondylogenic lower back pain.

Side effects: Muscle relaxants are a very powerful class of drugs; a small overdose may cause heart failure and even paralysis. Reaction time is slowed, and the patient may experience fatigue, dry mouth, blurred vision and light-headedness.

Valium, a type of muscle relaxant, is also a depressant. As such, it will cause lowered mood levels – which will negatively affect patients that also have a history of depressive disorders.

Anti-convulsants: Anti-convulsants, also known as anti-seizure drugs or neuroleptics, are a powerful class of drugs that are primarily used to treat schizophrenia. There is research to show that neuroleptics improves lower back pain, but not much is known about the exact mechanisms that causes an improvement in lower back pain.

Conventional Medical Treatment: Surgery

Surgeries are usually done as a last resort, or if the presenting lower back pain is causing great discomfort and disruption to the patient’s life. Below are 5 types of surgery that relieve lower back pain.

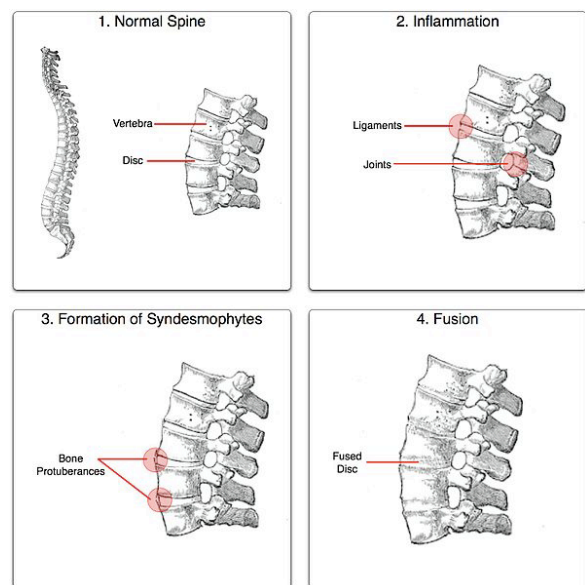


Discectomy (Note: -ectomy means “to remove”): Used for herniated discs, spondylosis and sciatica, discectomy refers to the surgical removal of a portion of herniated discs, thus removing the source that’s compressing the sciatic nerve and thereby relieving lower back pain. The doctor will usually require the patient to rest for 2 – 4 weeks before allowing him or her to go back to work. Full functioning usually comes back within a month, but doctors may recommend patients that are recovering less effectively to participate in a rehabilitation program.

Nucleoplasty: Nucleoplasty also targets herniated discs. Here, a small probe is inserted into the herniated intervertebral disc, and a small amount of the nucleus is removed. The disc is then heated slightly, causing the pressure inside the disc to decrease. This thus resolves the herniation.

This is a very recent development, and is relatively easy to perform – in fact, treatment only takes 60 minutes, and few patients require inpatient care.

Spinal fusion: In the event of DDD, spinal fusion may be recommended, especially if the DDD is causing intense lower back pain. Here, the two vertebrae that are adjacent to the degenerated intervertebral disc are fused together, thus remedying the pain caused by the degenerated intervertebral disc.



Fusions across one disc are known as a *single-level fusion*, while fusions across two or more discs are known as a *multi-level fusion*. Spinal fusions' success rates are at 80% and fall sharply with every addition level of fusion. In fact, it usually stops at two levels; three-level spinal fusions have a very low rate of success in resolving lower back pain and are rarely recommended.

Lumbar laminectomy: Usually performed for herniated discs, spondylosis, or sciatica, lumbar laminectomy removes a section of the

lamina in one or a few of the lumbar vertebrae in an effort to reduce lower back pain. This is usually performed in conjunction with discectomy.

Lumbar disc replacement: Another relatively new treatment for lower back pain, disc replacement targets patients with DDD. It removes the degenerated disc that's causing lower back pains in the lumbosacral region, and replaces it with a prosthetic intervertebral disc.

Lumbar disc replacements emerged as an alternative to spinal fusions; it removes the source of lower back pain (degenerated discs) and cause a lower degree of inflexibility in patients. However, the long-term effects are still not well studied.

Contemporary Medical Treatments: Physical Therapy

Physical therapies are usually recommended to patients who are suffering from all forms of lower back pain as a nonsurgical treatment (remember that surgery is often the last resort because of the possibility of complications). It is usually conducted

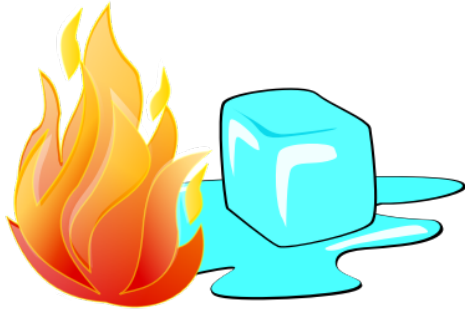


over a period of 4 weeks, and the patient's recovery is assessed before the doctor decides whether a surgery is necessary.

There are two types of physical therapy: *passive physical therapy* and *active physical therapy*.

Passive physical therapy is the application of treatment options onto patients by the therapist; the patient does nothing while the treatment is

being applied. All passive physical therapy modalities are used to reduce muscle spasms, thus putting an end to the pain-spasm-pain cycle that plagues lower back pain sufferers. It also serves to reduce inflammation, thus resolving sciatica.



Heat or ice packs are one form of physical therapy modality. It is applied to the region of the lower back where pain is felt and left there for 15-20 minutes each session.

Iontophoresis is the process where steroids are passed through the skin into the body. The steroid is applied onto the skin, and an electrical current causes the steroids to diffuse through the skin and into the body. Steroids, as mentioned, help to reduce inflammation.

A transcutaneous electrical nerve stimulator (TENS) unit uses electrical pulses to override pain electrical signals that are emitted from towards the brain by the region where lower back pain is felt.

Finally, ultrasound involves the use of high-frequency sound waves to penetrate the body, thus relieving acute episodes of pain and enhance tissue healing.

Active physical therapy involves the patient's participation in building the strength and flexibility of muscles, ligaments, tendons and bones that make up the lower back. Active physical therapy includes core strengthening exercises, stretches and low-impact aerobic conditioning.

Natural Health Care Treatments: Anti-Inflammatory Nutritional Supplements & Herbs

Anti-inflammatory nutritional supplements and herbs are generally all-natural ingestibles that, in one way or another, alleviate lower back pain. Although it might be intuitive to reject the efficacy of these natural treatments that have been used for centuries, literature reviews like the one conducted by Joel J. Gagnier of the University of Toronto¹⁷ have shown that nutritional supplements and herbs are indeed helpful in alleviating lower back pain.

Most anti-inflammatory nutritional supplements are slated to have anti-inflammatory properties – this makes its mechanisms probably similar to other anti-inflammatory drugs. However, a key difference is that natural supplements and herbs, although sometimes weaker in dosage, have little to no side effect at all because of the enormous range for safe dosage.

Natural Health Care Treatments: Therapeutic-Grade Essential Oils

Therapeutic-grade essential oils come from nature – from flowers to trees and everything in between. Indeed, therapeutic-grade essential oils are basically highly concentrated liquids that are extracted from flower petals, leaves, barks, roots, seeds or fruits. They are usually used in aromatherapy, where the scents of essential oils are inhaled for its therapeutic and medicinal effects, or as massage oils, such as in Swedish massage.

Essential oils' therapeutic effects have been tested and proven worldwide and in various studies.¹⁸ It has been proven that exposure to these essential oils fight infection, improves blood circulation to cells and organs in



the body and aid in the removal of toxins from our bodies. In addition, the body readily absorbs therapeutic-grade essential oils within 21 minutes of exposure.¹⁹

However, not all essential oils are therapeutic and useful. It is very important to know that most over-the-counter brands available in stores are made with toxic ingredients and can actually be quite harmful to your client (and to you because you're absorbing the oil when you're applying it to your client!). It is very important to do your research in regard to using essential oils and to make sure you're using a reputable and PURE brand. Here, we'll talk about eight different types of single essential oils that are especially relevant to lower back pain. You might find them useful as you work with your clients during massage therapies.

Basil: As a powerful anti-spasmodic (a drug that suppresses muscle spasms), and helps remedy headaches and migraines, Basil is potentially effective in stemming lower back pain by stopping the pain-spasm-pain cycle. In addition, its anti-inflammatory properties are also applicable to relieving sciatica.



Marjoram: Marjoram has pain-relieving qualities and helps to relax tense muscles. This may help in lower back pain by relaxing tense lower back muscles.

Balsam Fir: Also known as Idaho Balsam Fir, this magical oil provides muscular pain relief. Also, its anti-inflammatory properties help soothe spondylogenic lower back pain, especially for those suffering from arthritis.

Copaiba: Originating from Brazil, natives have been using this oil to remedy joint pains. It has anti-inflammatory properties, which may explain its effectiveness in relieving joint pains, and correspondingly lower back pain.

Lavender: One of the most popular essential oil and aromatherapy products in the massage therapy industry, Lavender helps to relax the body and improve the mood of the client. If the client is suffering from lower back pain because of depressive disorders or muscle tension from possible anxiety disorders, Lavender may help soothe lower back pain because of its soothing effects. Beware that although Lavender is the most popular essential oil, it is also the most adulterated product on the market. Again, seeking quality and purity is absolutely essential.



Black Pepper: Black pepper is a great analgesic (an agent that relieves pain without inducing a loss of consciousness), thus useful for neurogenic and spondylogenic lower back pain. Indeed, many massage therapists use black pepper to sooth tight and tense muscles.

Peppermint: Peppermint brings a cooling sensation to the skin, making it ideal for soothing aching muscles. Also, it helps ease arthritis, thus soothing lower back pain. It also helps to relieve sciatica.



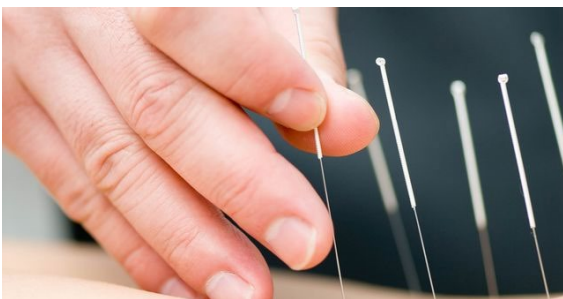
Rosemary: A very powerful essential oil for soothing arthritis, Rosemary also helps to ease muscle cramps and sprains. These properties may remedy lower back pain.

CAUTIONS & CONTRAINDICATIONS: Some oils must be diluted as they can cause skin sensitivity in some clients. Keep all essential oils out of the reach of children. Use caution with women who are pregnant or breast-feeding; be sure you consult a reference guide or healthcare practitioner that can best guide you. Be sure to keep all essential oils away from eyes, nose and genitals.

There are many other therapeutic-grade essential oils that are helpful for lower back pains, but the application of these oils is outside the scope of this e-book. If you are interested in using pure essential oils and want some guidance, feel free to contact me for more information and assistance.

Natural Health Care Treatments: Acupuncture Therapy

Acupuncture therapy is based on the same concepts as acupressure. However, it places emphasis on the use of needles to puncture specific pressure points, thus regulating the flow of qi within the body.



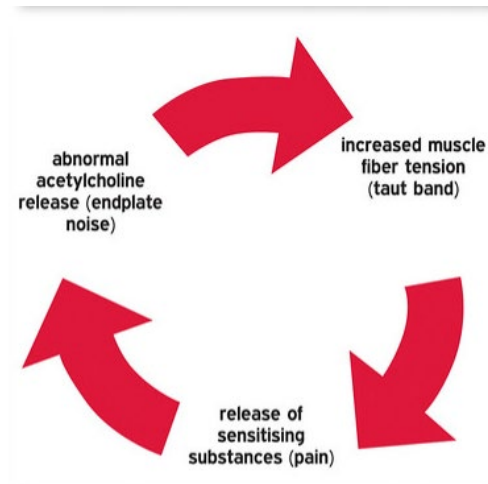
Acupuncture is also beyond the scope of this lesson. Make sure that you have a licensed acupuncturist in your referral network so that you can refer clients if necessary.

Natural Health Care Treatments: Biofeedback

Biofeedback is the use of instruments to generate readings about a person's physiological status in an effort to allow the person to control

aspects of his or her physiology, such as heart rate, muscle tone, muscle tension or even pain perception.

The key of biofeedback is to make a person more aware of the various symptoms of pain and discomfort he or she is feeling, and to use this knowledge to control such symptoms.



In a study observing the correlation between use of biofeedback and decreased lower back pain,²⁰ patients experienced significantly decreased lower back pain after use of electromyography, an instrument used to detect muscle contractions, to increase the participant's awareness of muscle tension.

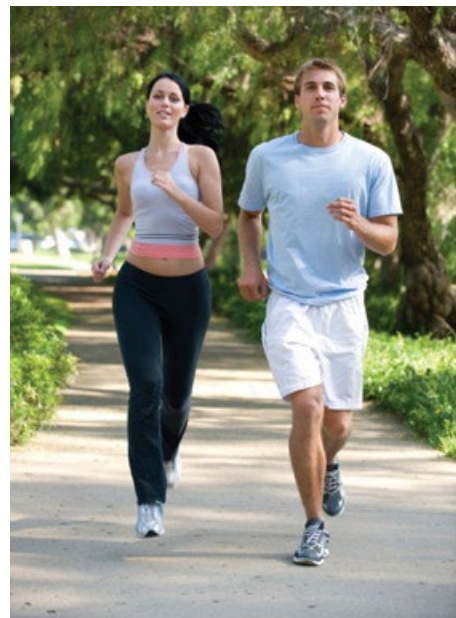
Chapter 7: Preventing Lower Back Pain

“Prevention is better than cure.” Nowhere is it more accurate than in the realms of medical disabilities and debilitating conditions – especially lower back pain. As most lower back pains are a result of an accumulation of habits that increases the probability one suffering from such a disorder, it is crucial to understand how to stop lower back pain in its tracks before it strikes.

As such, this chapter is entirely dedicated to how a person can prevent lower back pain. This advice will come in handy when you are working with a client suffering from lower back pain; although lower back pain has already struck your client, applying these tips to their lives will help them to prevent a recurrence of lower back pain.

Exercise

As mentioned, a sedentary lifestyle leads directly to lower back pain due to weakening of lower back muscles and a drop in the flexibility of our spinal column. By constantly exercising, we ensure that our muscles are worked out, preventing it from weakening due to disuse. This allows the core muscles to have enough strength to support the spinal column, preventing lower back pain from setting in.



immune system and preventing disorders and illnesses from possibly causing lower back pain. This translates into LOTS of whole foods (fruits and vegetables) and limited to no fast and processed foods.



Frequent Chiropractic Adjustments

If you are born with a naturally misaligned spine, you should head to a chiropractor for your usual check-up. Your spine may gradually revert to its natural misaligned position, and only a chiropractor can help you manipulate your spine, such that it's back in the correct position.

Proper Posture While Sitting Down or Lifting Objects

Posture is also very important in preventing acute lower back strains. When sitting down, make sure you choose a chair that supports your lower back – especially if you are in an office job that requires you to sit down for long periods of time. This prevents the lumbosacral spine from bearing too much pressure over the course of the day, which may result in herniated discs.

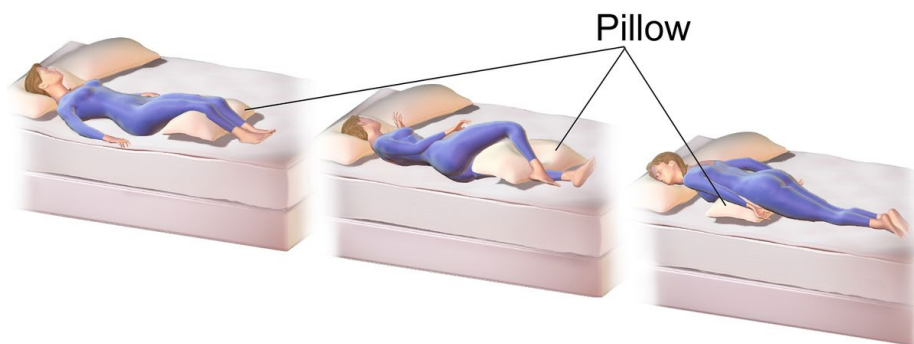
As a massage therapist, if you are practicing full time, you'll likely NOT be sitting all day but bending over your clients for most of the day. Using proper body mechanics is CRUCIAL to protect yourself from injuries. Proper table height is important as well as keeping up with your personal care routine, like regular exercise and stretching. Taking proper breaks between

appointments to rest is crucial to your long-term success and will help you to avoid back injuries.

Also, when lifting objects, lift with your legs, not your back! Pulling the object up with your back increases the risks of lower back muscle strains or even spinal injuries.

Getting adequate sleep on a supportive mattress

Sleep is important because the body repairs itself while you are asleep. However, getting adequate sleep isn't the end of the equation – you'll have to make sure that you're sleeping on the right mattress. A supportive mattress means that the mattress isn't so soft that your body sinks into the mattress when you're lying on it. This is because you'll need a mattress that's firm enough to support your spine in its usual "S" shape when you're asleep – imagine your spine being curled into an unnatural position for 8 hours each night!



Sleeping Positions for Back Pain



Getting frequent massages

You should also consider getting frequent massages! While exercise may be useful in preventing lower back pain, massage therapies help to make the most of your exercise regimes by helping to remove lactic acid from aching muscles, and improve blood circulation, thus decreasing the time needed for your sore muscles to recovering from hypertrophy (muscle fiber microtears that results in gains in strength).

Also, massages have a positive effect on your mood – and relaxation is the first step to preventing muscle tension, a culprit of lower back pain! By keeping your mood up, you'll make sure that lower back pain is kept at bay.

Even though you are massage therapists, there's nothing stopping you from getting massages! Getting massages from your fellow massage therapists allow you to relax after a long day massaging your clients. In addition, you're also putting yourself in the shoes of your clients; observe what your massage therapist does that makes your experience more special, and avoid doing the things that made you feel... well, less than happy about the session!

Quit smoking



As mentioned, smoking causes two things: chronic cough and worsened blood circulation. Chronic coughs force your core muscles to work extra hard each time you cough, resulting in possible muscle strains and thus lower back pain. Smoking also worsens blood circulation, which might result in osteoporosis stemming from a higher rate of bone degeneration compared to bone mass regeneration.

Proper Posture and Massage Therapy

As massage therapists, you spent most of your days leaning forward when massaging your clients. This is why proper posture is of utmost important for you – you can't be telling your client how to prevent lower back pain and be guilty of the exact same problem, can you? The below are some pointers for maintaining a proper posture during massage therapies:

Legs: Remember to bend your knees when applying pressure instead of flexing your spine to reach down to your clients. Also, make sure that you are always facing the direction in which you are applying pressure.

Shoulders: Make sure your shoulders are relaxed; your shoulder blades should never be rounded. This helps to keep your spine in its natural "S" shape, preventing strains on your lower back.

Wrists hands and elbows: Relax your wrists and hands while massaging. When applying pressure, use your entire bodyweight rather than your biceps and triceps; use your entire arm to transfer the pressure from your bodyweight to your client!

Fingers: The fingers are especially neglected; many massage therapists complain of finger pains after long sessions of massage therapy. Do not hyperextend your fingers when massaging! Also, as mentioned, use your bodyweight, not your fingers, to apply pressure.

Conclusion

And with the section on how to prevent lower back pains, we conclude this e-book on lower back pain. Congratulations! You're now armed with education and information that you can use for your own personal use, and to help your clients more effectively with their lower back pains.

You'll inevitably come across many clients suffering from lower back pains. Do share with them what you've learned from this e-book class. You are, after all, a health-care professional and your client's health goes beyond the massage therapy! Ask about the origins of their lower back pains, and discuss the possible reasons for their ailments, and how to relieve them. Of course, bear in mind that you *cannot* make a diagnosis – you're not a medical doctor, after all! But sharing this valuable information with them will be appreciated and you will solidify your relationship with them, which will result in long-term clients!

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**THANK YOU for taking this e-book class. I hope you found this e-book class to be informative and helpful. I am available to offer support to you, so please don't hesitate to get in contact with me if you have any questions!**



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