



Training to support clients with lower back issues

Reference material created

by

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Pilates and Lower Back Pain

Pilates is often recommended for clients with lower back pain.

Pilates, taught in personalized, private or small group sessions can be very helpful for clients with lower back pain.

Pilates taught in a large class group setting is generally not as beneficial for a client with lower back pain without a very experienced teacher.



Pilates and Lower Back Pain

In order to work with clients with lower back pain safely and effectively, here are a few things to keep in mind:

- Stay within your scope of practice.
- Refer clients who are beyond your comfort zone to other practitioners.
- Know your limits and stay within them.



Scope of Practice

Pilates teachers are **not** licensed or authorized to diagnose or treat orthopedic injuries.

Pilates teachers **can** understand and correct movement patterns and design exercise programs to enhance them.

Movement plays a critical role in recovery from many kinds of injury and the Pilates teacher can be a critical member of the team for creating and enhancing health.



Client Health History

For clients with lower back pain, the most significant parts of the health history are:

History and Diagnosis:

Onset of symptoms.
Duration of symptoms
Diagnosis, if any

Current medical practitioners and treatment:

Exercise prescriptions
Manual treatment
Medications

Symptoms:

What makes it better?
What exacerbates it?
Sitting, standing, lifting, twisting, lying prone

Daily and athletic activities and client goals:

Manage pain
Become pain free
Return to sport and daily activities



Anatomy of the Spine

The spine has 4 segments each with unique properties:

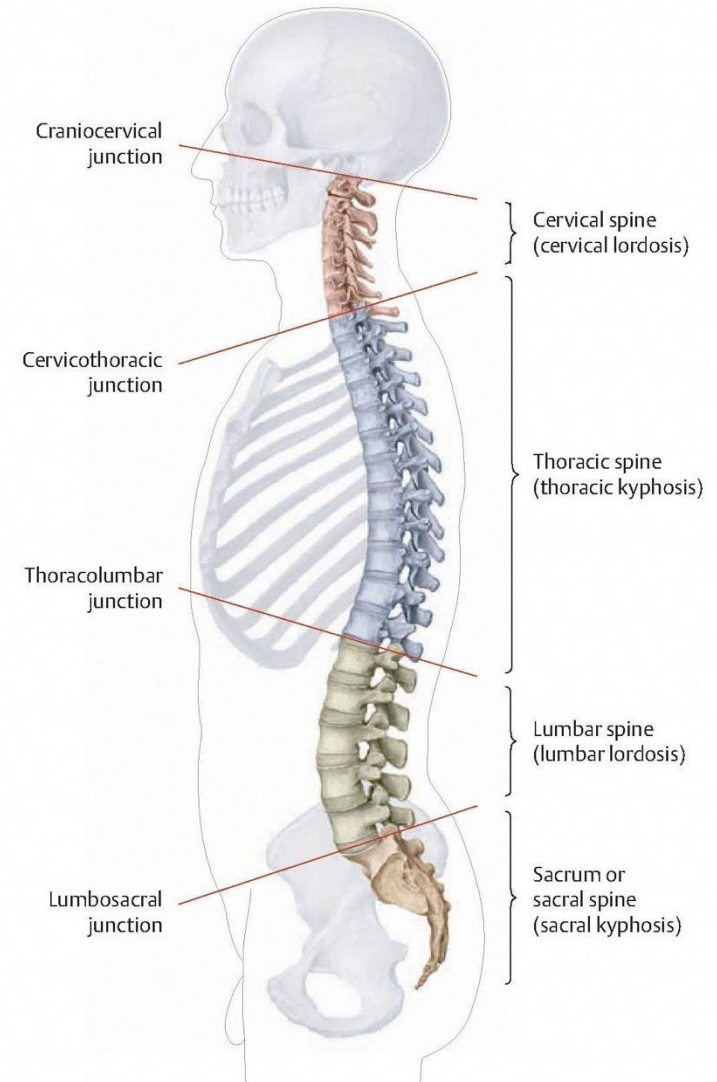
- Cervical
- Thoracic
- Lumbar
- Sacrum

B Regions and curvatures of the spinal column
Left lateral view.

Illustrator: Karl Wesker

pp. 78-79

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Lumbar Spine and Sacrum

The lumbar spine has 5 vertebrae.

The facet joints are oriented in the sagittal plane creating limited range of motion in rotation.

The sacrum is (usually) made of 5 fused vertebrae and the coccyx is made of 3 to 5 fused vertebrae.



Sacrum

4th lumbar

D Typical vertebra (atlas)
Sacrum, lateral view.

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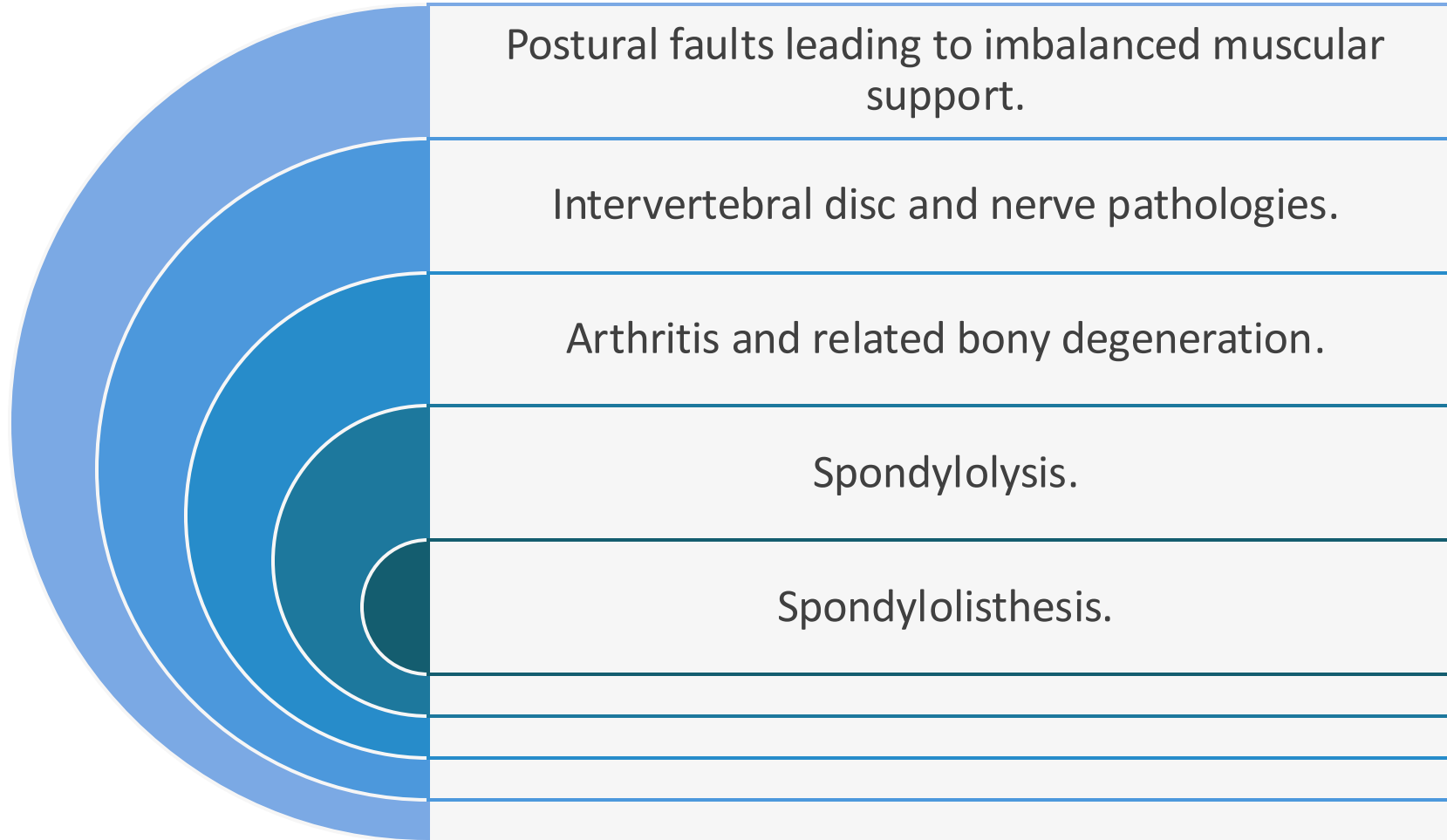
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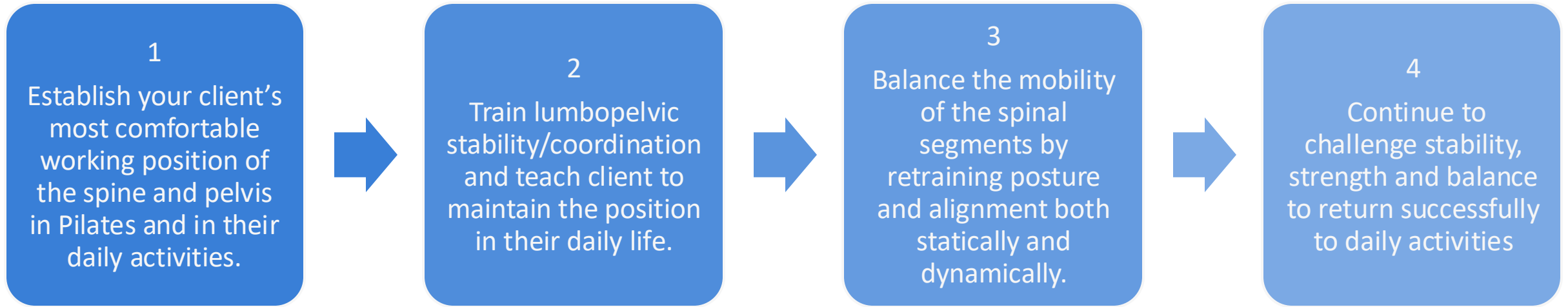
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Common Causes of Lower Back Pain



Training Principles



Core Activation

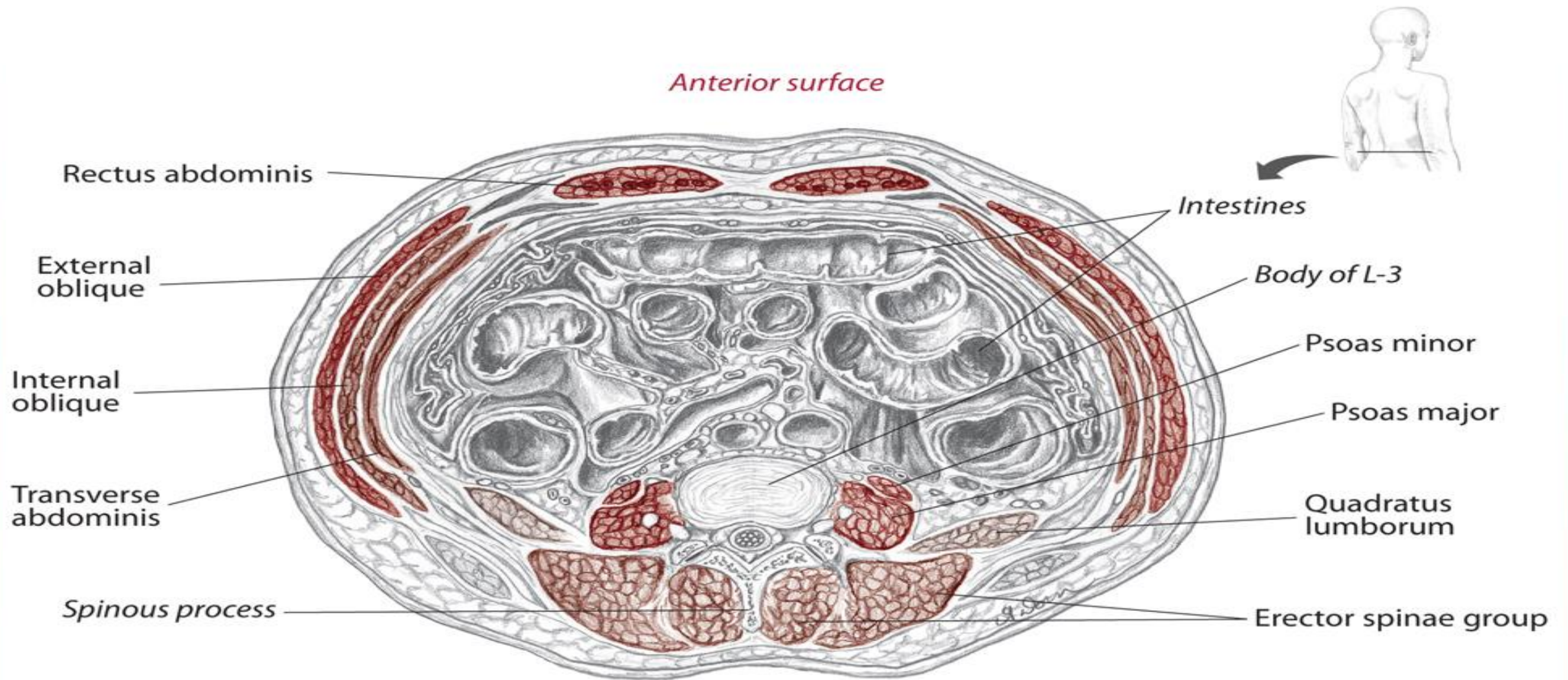
In people with a healthy back, the **transversus abdominis** and **multifidi** co-contract when the spine is under load to stabilize the vertebrae. In clients with back injuries, this stability system becomes dysfunctional.

The **pelvic floor** stabilizes the pelvis by drawing the bones together from the inside.

The **diaphragm** facilitates the activation of the other parts of the system.

The purpose of the Core Activation exercises in Pilates is to retrain the core or inner unit so it can provide effective lumbopelvic support during movement.





(4.48) Cross section of the abdomen at the level of the third lumbar vertebra

Transversus Abdominis Engagement



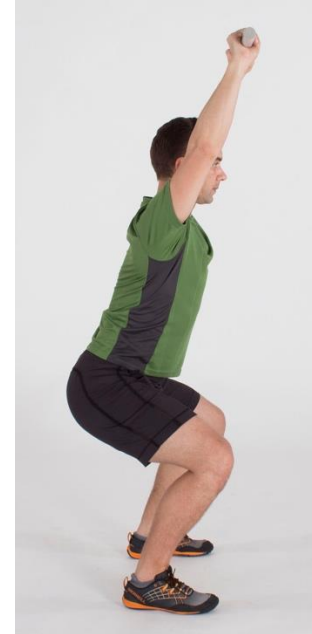
All fours abdominals



Marching and Toe Taps



Wall push ups or
suspension training



Squats to
support the
back



Multifidi Engagement



Standing Multifidi Engagement



Lunge Multifidi Engagement



Bridging Multifidi Engagement

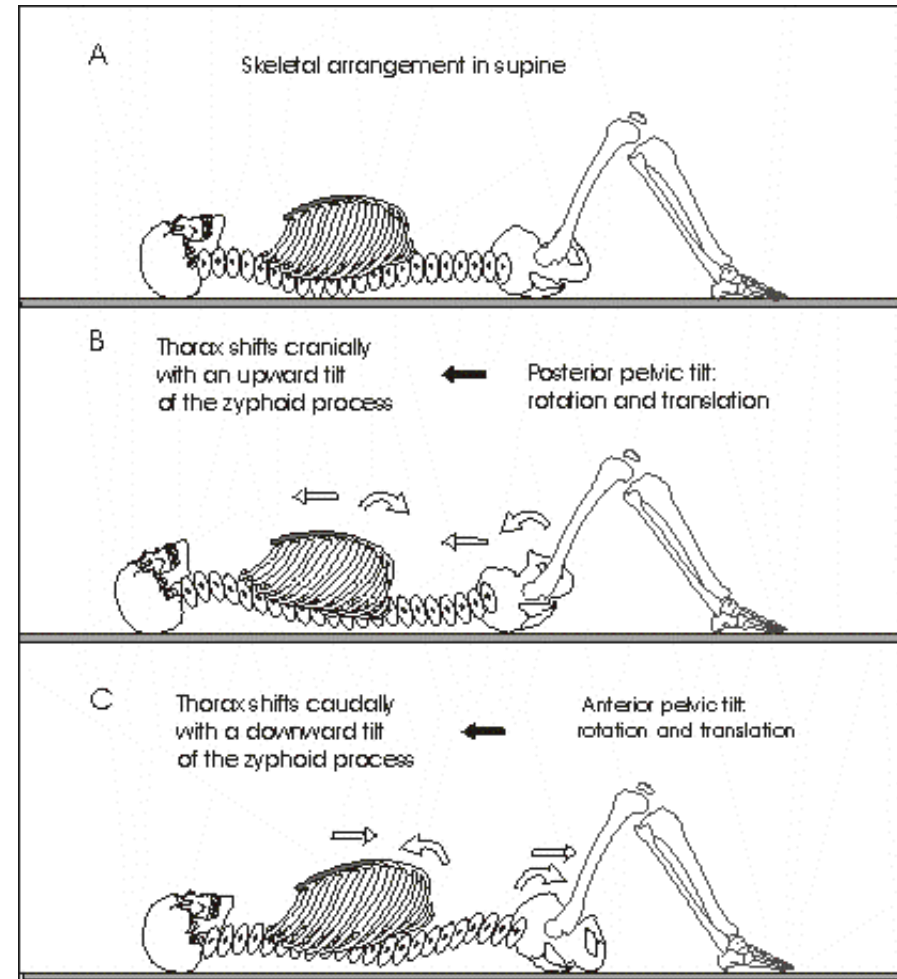


Lumbopelvic Placement

Neutral 'balanced'
placement

Imprinted spine – flexed
lumbar spine with a
posterior pelvic tilt

Exaggerated lumbar
curve with an anterior
pelvic tilt



Lumbopelvic Placement - Modifications

Supported neutral – Use a rolled up sticky mat or towel to support the lower back in neutral for:



Beginners – Who need both support and increased proprioception to learn where neutral is.

Clients with unstable lumbar spines – To keep the back neutral during challenging exercises.

Clients with an increased or decreased lumbar lordosis – To support and help relax the low back muscles.



Pilates and Lower Back Pain

Lumbopelvic Placement – Imprinted Spine

Imprinted spine

- For clients that need to use a slightly imprinted position for comfort:
 - Clients can maintain the position themselves by posteriorly tilting the pelvis.
 - Clients can use a sticky mat, towel or small wedge under the sacrum to passively tilt the pelvis posteriorly.



Lumbopelvic Placement – Exceptions to neutral

Back injuries

- Neutral lumbopelvic positioning may not be appropriate for some clients with low back injuries.
- The following conditions MAY prefer an imprinted spine and a slightly posteriorly tilted pelvis:
 - Spondylolisthesis (anterolisthesis only)
 - Spinal stenosis
 - Spinal arthritis
 - Some sacroiliac joint dysfunctions
 - Some disc injuries



Lumbopelvic Stability/Dynamic Lumbopelvic Control

Definition: Lumbopelvic stability/Control is the ability of the neuromuscular system to maintain appropriate support around the lumbar spine and pelvis during movement.



Lumbopelvic Stability

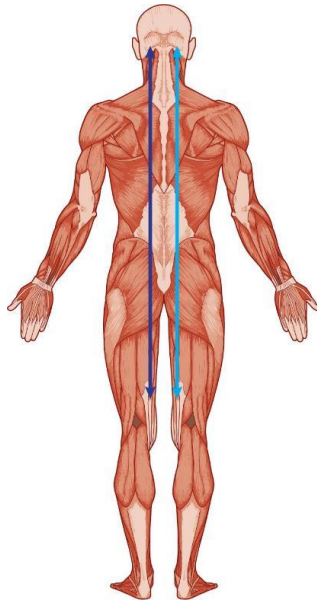
The 4 Outer Units are:

- Anterior Oblique Sling
- Posterior Oblique Sling
- Deep Longitudinal System
- Lateral System

All four muscular systems work together to create harmonious movement of the torso, pelvis and legs.



The 4 Outer Units

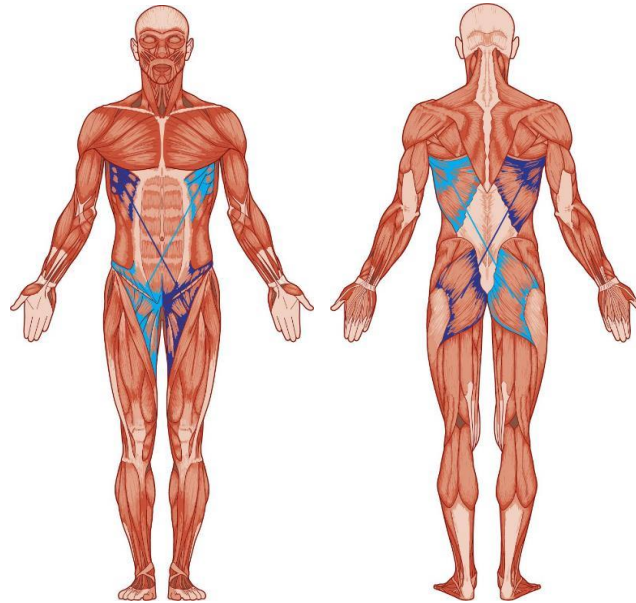


Deep Longitudinal System

- Erector Spinae, Quadratus Lumborum, Thoracolumbar Fascia, Sacrotuberous Ligament and the Biceps Femoris, Gastrocnemius, Plantar Fascia and Toe Flexors

Function

- This system holds us upright against gravity and creates spinal extension.

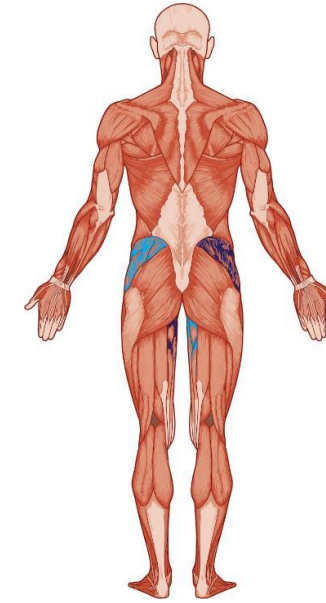


Anterior and Posterior Sling

- Anterior = Anterior serratus, External oblique, Contralateral internal oblique and adductors
- Posterior = Lattisimus dorsi and Contralateral glutes

Function

- Together stabilize the torso and in opposition create flexion, lateral flexion and rotation of the torso



Lateral System

- Hip abductors and adductors
- Quadratus Lumborum

Function

- Keeps the pelvis balanced over the femurs when walking, running or balancing on one leg.
- Imbalances lead to an un-level pelvis when standing on both legs.



Pelvic Stabilization/Coordination/Control Exercises

Supine

Focusing on the anterior and posterior oblique slings



Supine Marching, add opposite arm press, add small stability ball or roller



Bridging, add marching, add roller



Opposite Arm and Leg Reach



Pelvic Stabilization/Coordination/Control Swimming

Focusing on the deep longitudinal system



Swimming



Mini Swan, add small stability ball, add roller



Swan



Pelvic Stabilization/Coordination/Control

Lateral Sling system

Focusing on the lateral system



Bananas



Side Plank and Modifications



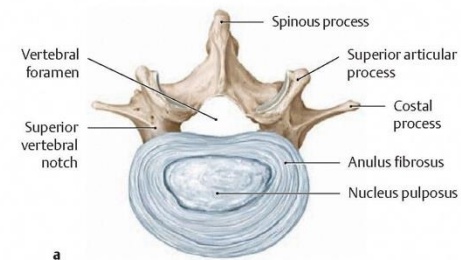
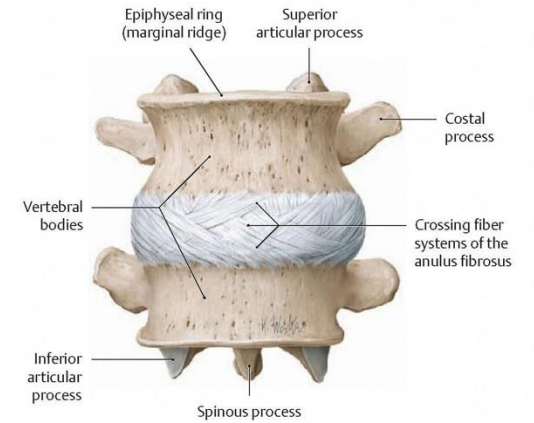
Standing Leg Lift



Structure of a lumbar disc

Intervertebral discs are made up of a gel like inner substance called the **nucleus pulposus** surrounded by a fibrous outer layer called the **annulus fibrosus**.

Intervertebral discs provide shock absorption and movement between the spinal segments.



C Main structural components of an intervertebral disk

Fourth lumbar vertebra with its associated upper disk, superior view.

a Intervertebral disk with the annulus fibrosus and nucleus pulposus.

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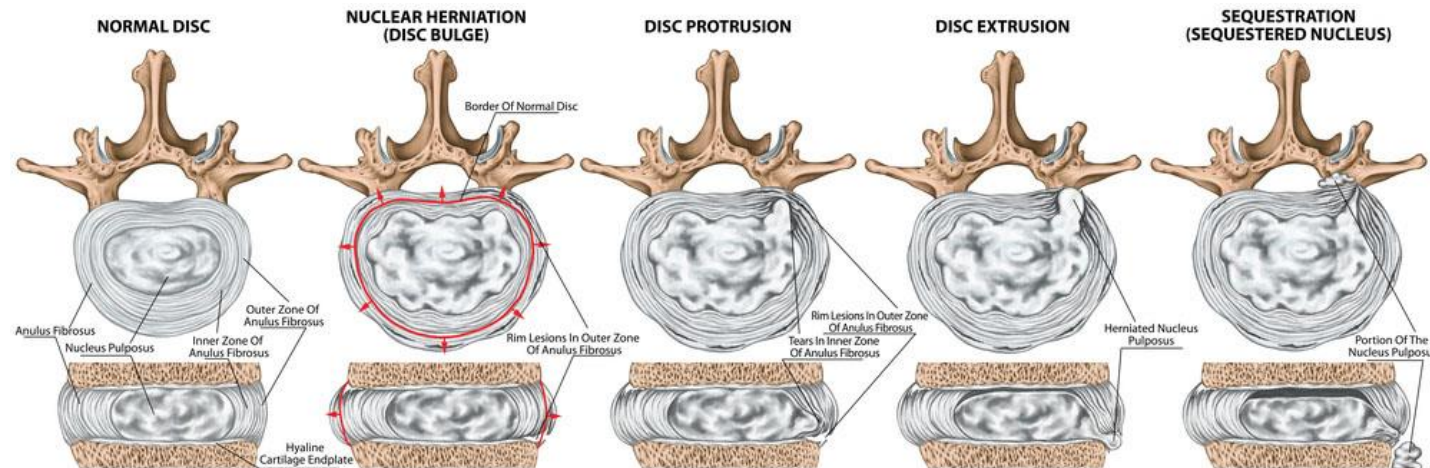
Intervertebral Disc Injuries - Definitions

Annular tear, bulge or protrusion occurs with a weakening of the annulus wall, allowing the nucleus pulposus to protrude

Prolapse occurs when the protrusion becomes a permanent distortion in the disc.

Extrusion occurs when the material inside the disc leaks out but does not move beyond the immediate area of the disc.

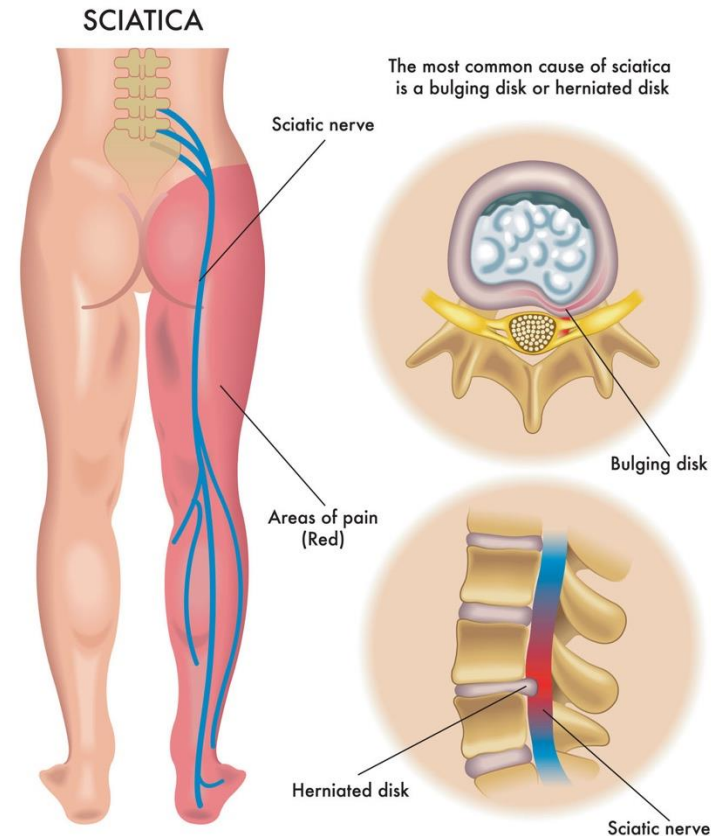
Free sequestration or a leaky disc occurs when the disc ruptures and the contents float away from the disc and enter the spinal canal.



Exercise Principles – Disc Injuries

Disc Injury with Radiculopathy or Sciatica

- Work to centralize nerve pain by using gentle extension exercises or hip glides to move the disc away from the nerve and relieve symptoms.
- Identify positions that increase or decrease pain and choose your exercises accordingly.
- Do nothing to exacerbate the pain and train the client to do the same.



Muscle Spasms

A common cause of pain for any lower back condition is muscle spasms

- Muscle spasms most commonly occur in the psoas major, quadratus lumborum and piriformis.
- A muscle spasm often develops when a muscle is used to stabilize when the deeper stabilizers aren't working.
- Manual techniques can be used to quickly release a muscle spasm.



Exercise Principles – Disc Injuries

Identify, support and train neutral position.

Teach pelvic stabilization principles.

Focus on neutral and gentle extension exercises. Be careful with rotation and lateral flexion initially and add spinal flexion in last.

Educate the client about supporting the back with core engagement in neutral when sitting, lifting, driving, leaning over etc.



Exercise Principles – Disc Injuries

Caution with hamstring stretching. Keep low back neutral to decrease stress on the nerves.

Avoid compression of the spine.

Add exercises to challenge core strength and pelvic stability in neutral as the client improves.

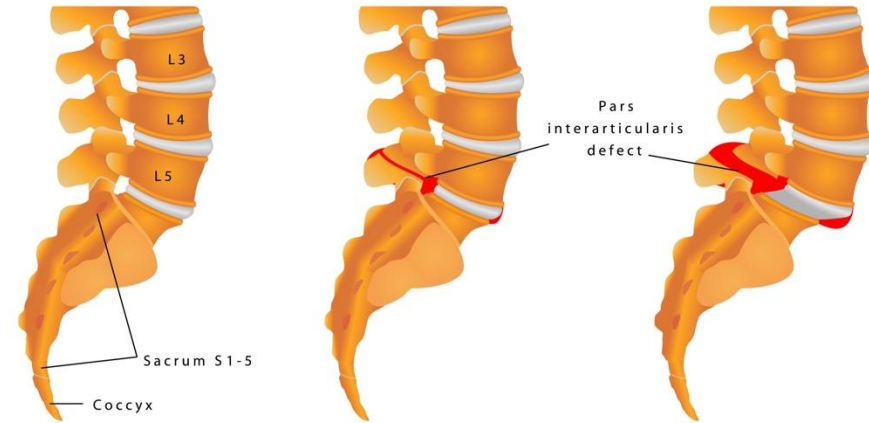


Bony Pathologies

Degenerative joint disease, osteoarthritis, spinal stenosis occur when bony changes happen around joints leading to impaired movement, pain or range of motion limitations.

Spondylosis involves a fracture of the vertebrae.

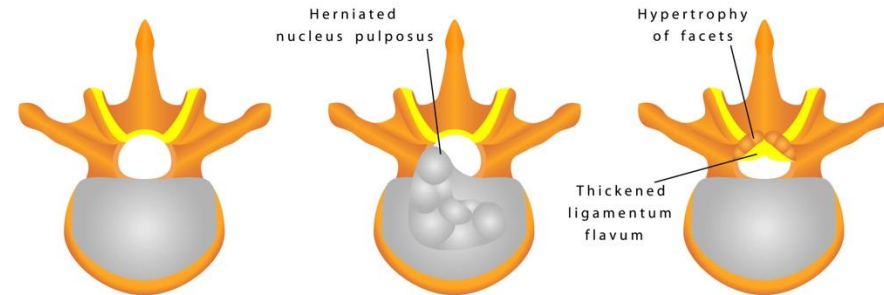
Spondylolisthesis is a fractured vertebrae body has slipped in relationship to the surrounding vertebrae.



Pars Interarticularis

Spondylolysis

Spondylolisthesis



Normal canal

Herniated disc

Spinal stenosis



Exercise Principles – Bony Pathologies

Identify the optimum starting position which may be a neutral lumbopelvic position or a slightly posteriorly tilted lumbopelvic position.

Teach core strengthening and pelvic stabilization.

Focus on increasing abdominal support and decreasing overuse of the back extensors. Focus on flexion rather than extension.

Work in as full a range of motion as is comfortable for the back.



Exercise Principles – Bony Pathologies

Focus on strengthening and supporting the surrounding areas – hips, legs, upper body to take the stress off the back.

Add some traction type exercises into the program.

Both rotation and lateral flexion can compress the area and increase symptoms so add in slowly and see how the client responds.



Postural Imbalances

Postural imbalances, whether structural or muscular are a common cause of chronic low back pain.

As Pilates teachers, our focus is on identifying and correcting posture and improving functional movement patterns.

This is where we are uniquely helpful for clients with lower back pain.



Pilates and Lower Back Pain

Exercise Principles - Postural Imbalances

Identify postural imbalances that may impact lower back pain.

Assess strength, flexibility and movement patterns that contribute to the postural imbalances

Develop exercise plan for addressing strength, flexibility and movement patterns.



Postural Imbalances

Postural imbalances include:

- Hyper or hypo lumbar lordosis
- Hyper or hypo thoracic kyphosis
- Pelvic alignment imbalances
- Rib translation or rotation
- Scoliosis
- Muscular imbalances related to alignment faults or habitual postural and movement patterns



Correcting Postural Imbalances

