Flexion-Intolerant Lower Back Pain (Part 2): Exercise Rehab

By Marc Heller, DC and Phillip Snell, DC

One of the things that has puzzled us for years is the presentation of the flexion-intolerant patient. We have realized there is a large overlap with sacroiliac indicators.

In acute lumbar pain, the SI often twists, subluxes, goes haywire. The patient will often have a short leg, the ASISs are not level; there are trigger points in the glutes. This can be a red herring: You can chase the SI, but if the patient continues to irritate their flexion-intolerant lumbar spine, they won’t get better.

Many patients with flexion-intolerant pain are misdiagnosed, often for years. The family doc will tell the patient they strained their back. The PT or chiropractor will often tell the patient their pelvis is twisted or out of line. Unless the person has obvious disc signs, such as antalgia or sciatica, the disc component is often missed.

What do we suspect is happening? What does pain do to the musculature? Any pain that affects the lower back will shut down the multifidi, and upregulate the erector spinae and the quadratus lumborum. Any pain in the lower back, hips or pelvis will create gluteal amnesia (inhibited glutes) and upregulate the hip flexors, such as the rectus femoris and TFL.

This is a hypothesis, an idea why the sacroiliac ends up in the forward-rotated, loose-pack, unstable positioning. We don’t know for sure. We just know we see many patients who fit the flexion-intolerant picture, many of whom are misdiagnosed and poorly treated.
Rehabbing the Flexion-Intolerant Back

Treating the flexion-intolerant patient is primarily about rehab. Once flexion intolerance has been identified, self-care includes graded exercise progressions with the goal of long-term improvement.

As the flexion-intolerant pattern encompasses the disc-injured back, many clinicians are overly cautious about exercise and recommend excessive activity restriction. Similarly, many patients may be reluctant to embark on an exercise program, as they have previously had major flare-ups or re-injury with exercise.

The following recommendations borrow from the rehab works of Robin McKenzie, Craig Liebenson, Gray Cook, and Pavel Kolar and add the strength training expertise of Pavel Tsatsouline, Dan John and others to offer a graded exercise program with acute and chronic considerations. We will introduce four key components of self-care for flexion intolerance:

- Pain management with movement
- Correction of the spinal hinge
- Building endurance in spine stabilizers
- Improving mobility in key restriction areas

Step 1: Pain Management With Movement

In line with the empowering approach of Robin McKenzie, repetitive end-range loading of extension may allow for quick, self-directed pain management for not only peripheral sciatica symptoms, but also for back pain. In assessment, once a seated slump test, SLR, and/or other signs suggest flexion intolerance, prone extensions to the elbow position can be performed several times to gauge the response to extension loading.

If the patient feels no change in pain or feels only slightly improved, continued performance of the extensions can make an equivocal case become clearer. In chronic cases, it may be necessary to trial the
provocative flexion movement for 10-20 repetitions to see if this aggravates the pain.

Once the flexion intolerance is clear, revert to the extension movements for corrective home exercise. A standard prescription of 5-6 reps, each lasting 30 seconds, may be performed 5-6 times daily. In severe cases, the sets of 5-6 reps can be performed as frequently as hourly.

Another option for pain control is decompression exercises, tested to see if they relieve pain or improve antalgic posture. This concept is outlined in several previous articles and also is presented in a YouTube video.

It is important to explain to the patient that extension exercise may help the pain, but does not correct the faulty movement problem. For that, we need to establish a different set of spine-sparing movements.

**Step 2: Correcting the Spinal Hinge**

Here is a simple way to frame the flexion-intolerant spine. The patient has a tendency to habitually hinge or bend forward in the lumbar spine when bending forward. Enough volume and intensity of this faulty movement can result in progressive failure of the inner layers of the annulus. This process can progress for some time with no apparent consequence, owing to the lack of innervation of the inner annular layers.

Once the torn layers progress to the innervated outer third of the annulus, the lumbar hinging that used to be well-tolerated begins to cause pain. Prolonged sitting with a rounded lumbar curve may also play a role in this. Tissue creep stretches the annulus and potentially makes it more vulnerable to injury.

Establishing a hip-hinge pattern is the correction and can be performed by teaching a "waiter’s bow" or by using a dowel. This should be the prime objective in the first encounter, as no amount of passive pain management will be enough to help the patient from hurting themselves again when they try to get up from the treatment table.

Placing three fingers on L3-5 while the patient attempts the hip hinge will help the clinician feel the beginning of the hinge and stop the patient before they feel pain. The goal is to build on pain-free movement to reduce threat and improve function.

By using graded exposure to pain-free movement, we can start to "rewire" the altered pain processing in the chronic pain patient struggling with central sensitization. The patient now begins to feel empowered as they
associate reduction in pain with the quality of their movement. Moreover, the feeling of pain with lifting now can even be educational at this stage, as the patient begins to relate the pain to less-optimal movement.

After the hip hinge is grooved, the next order of business is to apply that good-quality movement to getting things off the floor. We recommend using the box squat and the sumo deadlift. These should be taught and repeated to build confidence and reduce fear of performing daily tasks.

While we borrow from the gym for these patterns, the box squat is performed with body-weight only. We showed you a very similar exercise in the last article, titling it "sit to stand." It bears repeating. The goal is to affect a posterior weight transfer with the squat pattern to cue the glutes while the spine is maintained in a stable position. Ingraining this pattern allows for pain-free transitional movement when getting up and down out of a chair, etc.

In this first visit, if the patient is demonstrating the ability to get to a reasonable depth on their box squat, we can then progress them to the sumo deadlift pattern. Again, while we’re using gym vernacular, the sumo deadlift is not done with heavy weight. A 20-35 lb. kettlebell is handy, as the handle is about a foot from the floor and the weight approximates the weight of a child or other commonly encountered weights with day-to-day activity.

At this stage, overcoaching the lumbar curve is appropriate to help assure that the patient does not lapse into the lumbar hinge. Later, we can back off that extreme lumbar lordosis to avoid facet, pars and hip injury. The patient is usually sent home at this point with instructions to utilize the more sustainable hip hinging, squatting and lifting strategies; and to manage pain with repeated lumbar extensions.

**Step 3: Training Endurance in Maintaining a Neutral Spine**

McGill’s work has shown us that endurance of the lumbar stabilizers is more important than strength or power in those muscles. To help anchor the patterns discussed in the first treatment, we may now begin building better support for the "guy wires” of the spine. An analogy of the spine as a tower, supported by guy wires (the surrounding muscles) is sometimes helpful.

An important point must be made as we embark on these exercises to improve "core muscles." Many people with flexion intolerance may have previously undertaken a "core strengthening" approach that consisted of many sit-ups or crunches. Often they found that these exercises helped for a while, but then began to aggravate their back. While sit-ups and crunches will definitely build a robust set of abs, they do it at the
expense of spine flexion.

We strongly advise abdominal exercises that maintain neutral. Think of the isometric and eccentric function of the abdominals as anti-extensors, rather than spine flexors. Plank-based abdominal exercises are imperative, but it is also important to attend to the lateral stabilizers and the extensors.

The following three exercises are performed with the same set / repetition and volume schedule: 10 seconds of work followed by 2 seconds of rest. We suggest a total volume of about 80 percent of perceived maximal effort each day until the patient is able to pass a lumbar functional capacity evaluation (FCE). [Click here to view a demonstration of the FCE].

Plank variations to address the abdominal muscles can be performed supine as McGill’s trunk raise and/or in prone as a front plank on the elbows. On the trunk raise, make sure the patient does not come up too high from the floor to the point that hinging in the lumbar spine occurs.

Side planks can address the lateral spine stabilizers quite well. Instruct patients to raise their ribs as high from the floor as possible before lifting up and then push the floor away to keep the shoulder happy. If straight-leg position is too difficult, peeling back to bent knees is OK at first. They can build up to the straight-leg position.

For extensor muscles, care must be taken to not exceed tolerable compression loads generated by many exercises. The bird dog, performed with a very tightly held core, can be very rigorous. Tracing an imaginary square at the hand and foot allows a bit of perturbation challenge to the tightly held neutral spine.

Keep extremities rigid and don’t let rotation occur at the pelvis. Have the patient push the floor away with the hand and keep the spine long. The essence of core is to keep the trunk still as the extremities move.

**Step 4: Enhance Thoracic and Hip Mobility**

Consistent with the "joint by joint" philosophy, the tendency to hinge in the lumbar spine area may be a reflection of poor mobility in the hips and thoracic spine. Spending time focusing on mobility in the inherently stiff areas helps to assure that during global movement patterns, the body isn’t "requesting" mobility from the inherently stable lumbar spine.
We don’t have room to describe this in detail, but a simple exercise to begin to address this is the thoracic sphinx. It is basically a pelvic tilt on all fours, modified to focus the movement into the thoracic spine.

We have given you an overview of how to start to rehab the flexion-intolerant back patient. We cannot overemphasize how important the rehab aspect is for these patients. Either do the rehab work or co-treat by referring out for rehab on these patients. These folks need our help.

The optimal approach is not repetitive steroid injections. Fusion surgery should be a last resort. The solution starts with simple exercises for pain control, learning to move properly and safely, building core endurance, and increasing mobility above and below the lower back.

*Editor’s note:* The final article in this series will focus on soft-tissue work and mobilization for the flexion intolerant back.

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