Pilates for a Herniated Disc

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November 9, 2012

Indianapolis, Indiana
Abstract

Brette Smith is a twenty-five year old female who developed a herniated disc between L4 and L5 while working as a grocery store cashier. I have been teaching her the Pilates repertoire to strengthen her abdominal and back muscles and thereby minimize the back pain that she feels in everyday life. Extreme lumbar flexion is contraindicated for herniated discs, so I have modified exercises accordingly and have used the BASI block system to give her a fully rounded and safe workout. In the discussion that follows I will describe a herniated disc with pictures, discuss the circumstances of her injury, why she started doing Pilates and what exercises I have used in each block to meet her fitness goals.
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Anatomical Diagrams

The spine is a column of 33 bones called vertebrae. Small, round, flat and spongy discs are positioned between most of the vertebrae. These discs act as shock absorbers and keep the spine healthy and flexible. If one of these discs becomes damaged, it may bulge out or break open. When this happens, it is called a spinal disc herniation and commonly referred to as a slipped disc, herniated disc or ruptured disc. Often times, a herniated disc or slipped disc will press upon a nerve running through or extending from the spine and cause severe pain, numbness and/or weakness in the area of the body that nerve controls.
Case Study

The subject of this case study is Brette Smith, a twenty-five year old female. Three years ago she was working as a grocery store cashier and, in the course of performing her duties, she herniated a disc in her lumbar spine (between L4 and L5). Her job required her to rotate and lift items off of the grocery belt to be scanned, put them in a bag, then rotate and lift the bag into the cart. Constant engagement of her deep and superficial core muscles would be required to sustain safe rotation, flexion and lifting; because she did not do this, she was injured. After consulting her doctor she learned how to minimize and manage the pain through daily stretching and awareness of spinal movements that would be contraindicated for her—extreme flexion of the lumbar vertebrae. This knowledge was sufficient for managing the pain for about two years, but after graduating college and getting married, the pain flared again, so she contacted me for help.

Brette is an active and healthy person with an athletic background, so being limited by back pain frustrates her. Our first step was to try to figure out why her pain had increased. After discussing her daily activity and how it had changed from prior years, we were able to link her increased pain to two specific activities: her new job as a part time nanny to a one year old child and being less physically active on her days off than she had been in college. In her role as a nanny, she was constantly engaged in weighted spinal flexion, rotation and lifting (of a twenty pound child) and, on her off days, she frequently sat in a flexed lumbar position for long periods of time, as compared to college, when she was training to be a teacher and stood for most of her day.

Brette already had postural awareness from her childhood (being told to “stand up straight” by her parents), so her deviation from the ideal alignment was not extreme, but she tended towards lumbar hyperlordosis, with a head and chin that jut forward slightly. As one
would expect with this posture, she has tight hip flexors and back extensors and weak abdominals. Her shoulder girdle is also weak, but her quadriceps and triceps are strong. She also carries a lot of tension in her neck and upper trapezius muscles. Our main goals were to control her back pain by strengthening her abdominal and back muscles, to increase flexibility in her tight areas and to build shoulder girdle strength. She was also interested in the Pilates method in general, so I have made it a personal goal to teach her as much as I can about the history and theory behind the movements.

Flexion of the lumbar spine is contraindicated for herniated discs, so I structured Brette’s program with this at the center. I vary her workout by week, but I’ll discuss the general details of her program in order of the BASI block system.

The roll down is contraindicated for Brette, so we usually begin our sessions with a time of supine breathing on the floor or barrel. She comes to me straight from work, so this is an important time for her to put aside the stresses of the day and transition to the Pilates mindset.

Brette’s warm up varies, but I generally include the pelvic curl (modified so that there is no lumbar spinal articulation), single and double leg changes and spine twist supine. I cue neutral pelvis and pelvic lumbar stabilization throughout her workout. When she arrives tense in the upper trapezius and neck muscles, I use exercises and stretches on the foam roller to alleviate it before beginning footwork. If I don’t bring her awareness to this before footwork, she carries the tension on to the reformer and jams her shoulders in to the shoulder rests the whole time. I also like to focus on thoracic flexion and extension, to avoid any postural movement towards kyphosis. To do this, I use moves such as sternal drops, the BASI mat version of cat stretch, but with minimal lumbar flexion, and the thoracic stretch portion of the teaser prep on the long box.
Brette does footwork in every session, either on the chair or reformer. I like the chair because it teaches her to co-contract the back and abdominal muscles, an important functional movement to carry over into her job. On the reformer, her hip-knee-ankle-foot alignment is fine. Though her quadriceps are strong, I haven’t taken her above 3 red springs on the reformer because I don’t want the extra resistance to compress her spine or cause her to shrug into the shoulder rests any more than she already does. I tried footwork on the Cadillac once, thinking it would be a beneficial stretch for her hamstrings, but it made her back uncomfortable, so we stopped. When I try it again, I will flip her body so it’s opposite the usual position. I think giving her more distance from the tower in this way will help her keep her pelvis neutral and eliminate the stress on her back, even though it won’t be the super hamstring stretch that I originally wanted.

A large portion of abdominal work utilizes lumbar flexion, so I have had to adapt and modify exercises to accommodate Brette’s limitation. We’ve also had to learn how to communicate about which exercises are appropriate for her and, when she says that an exercise is hard, what she means by that. When we started working together, if she said that an abdominal exercise was challenging, I worried that she was hurting her back, so I would stop her immediately. This wasn’t always what was needed—sometimes it was just challenging because her abdominals were being strengthened and that’s hard work. The short box series on reformer (minus round back) has been beneficial and she especially enjoys the back extension in climb-a-tree. We’ve been able to progress through hundred prep, the hundred and coordination as she’s gotten stronger. After about four months of work we were able to add single leg stretch and criss-cross to her repertoire as well. I tend to use the reformer for most of her abdominal work,
as the tower and chair exercises utilize more extreme lumbar flexion than the ones mentioned above.

Hip work is very good for Brette because she is tight in her hip flexors and weak in her hip external rotators. We usually do two of the three frogs, openings and circles on the reformer. If we are using the chair, I’ll have her do hip opener. When we tried frog front it was too challenging with respect to shoulder girdle strength, so she missed the muscular focus of the exercise, but we’ll keep working on it. On the reformer I add a series of single leg hamstring, adductor and IT band stretches at the end of hip work to progress her towards the goal of hamstring flexibility.

Spinal articulation is contraindicated for Brette, so there are no exercises in this block that she can perform as choreographed. We’ve done bottom lift and bottom lift with extension, but I modify the lumbar spinal articulation phase to protect her back.

Stretches are a very important part of Brette’s program. In addition to the hamstring stretches mentioned above, we tend to incorporate a thirty second back extension stretch like swan prep in between most blocks, as flow allows. Standing lunge is also a safe hamstring and hip flexor stretch for her. Brette recently started teaching high school again and I’ve noticed a tendency towards rounding her shoulders after the long day of leaning/sitting on a stool. We’ve made shoulder stretching an essential part of the stretch block, using the barrel, the pole stretches from the Auxillary MAWB, and shoulder stretch prone on the Cadillac.

I use plank work frequently for the FBI beginning/intermediate block. This could be anything from front support, back support, holding a plank for a specific amount of time (30-60 seconds), walking planks or dolphin planks with accessory limbs held off of the floor.
Sometimes we add in pushups (off her knees for 3-5 reps and on her knees for 3-5 reps). We’ve also been able to incorporate the up stretch series and elephant as she’s gotten stronger and more flexible in her hamstrings and back extensors. Stomach massage flat back is an excellent exercise for Brette because it opens up her chest while working her in an upright spine position.

I started Brette with the arms supine series on the reformer, and I have been able to progress her through the arms sitting and kneeling series and the shoulder push series. Because none of these exercises call for lumbar flexion, she can safely do them. We use the opportunity to work on back and abdominal muscle co-contraction and full upright extension of the spine in the seated and kneeling positions. In supine, she is able to maintain a neutral pelvis and fully contracted abdominal muscles. Brette felt precarious preforming the standing arm work series on the Cadillac. I think it would be easy to hurt her back at her current level of core strength—with the added balance challenge and the pull of the springs behind her—so we don’t use it for now.

Brette hasn’t progressed to any of the full body integration advanced/master level exercises yet.

I’ve done a variety of exercises for additional leg work, including the leg press standing and hamstring curl on the chair and the skating exercises on the reformer. Sometimes I have used the side split from the stretches block as a part of this as well. Brette really enjoys jumping on the reformer, so we integrate a series of jumps with different foot positions. In all of these exercises I cue neutral pelvis and an engaged core.

For lateral flexion/rotation I use the mermaid on the reformer most frequently. Brette loves the fluidity of the movement and the stretch that it gives her quadratus lumborum, so she
does 6-8 reps per side, holding the stretch with hands on the footbar for two breath phases as desired. Lateral rotation can be harmful to Brette’s back if she loses concentration and goes into unstabilized flexion (similar to the movement that first injured her), so she performs it in the very controlled context of the mermaid exercise. I also use this block to strengthen her abdominal oblique muscles, using side overs on the box or barrel.

Back extension is pure joy for Brette. She can feel the space that it creates in her spine and she uses it at home to relieve disc pain. For a person who tends to lumbar hyperlordosis and tight hip flexors, she actually has a very nice range of motion in her back extension. In addition to the swan stretches that she does throughout the workout, we do all of the back extension exercises in the BASI curriculum. I cue her to start in neutral pelvis when prone, and I am working on fine tuning her articulation up off of the mat so that it begins at the head and travels down her spine, as opposed to lifting as a unit and making the lumbar do most of the work. I have recently introduced prone 1 and 2 to her. The choreography and shoulder flexibility required for prone 2 is more challenging, so we will continue to work on executing it with precision and fluidity in the future.
Conclusion

When Brette began her Pilates journey she had high hopes for learning how to manage the back pain caused by her herniated disc. This goal has been met and she lives with no/tolerable pain most days. When something causes her disc pain to flare, such as a long car ride, she uses the knowledge that she’s gained from our sessions to alleviate the pressure on her disc and stretch her spine. She’s also learned a great deal about posture, where her body is in space, and correct muscle activation and stabilization for functional living. As she continues to progress in her Pilates practice we will keep our focus on her back health and on meeting her other goals of increased flexibility and shoulder girdle strength. Brette has come to love Pilates through this process and is very thankful for the non-surgical healing it has given her.
**Bibliography**


