Abstract

Diastasis Recti is a separation of the outermost abdominal muscles. When these muscles separate, the connective tissue (linea alba) joining these muscles stretches sideways, the sideways stretching causes the connective tissue to become thinner and weaker. The abdominal muscles play a vital role in supporting the body’s internal organs and also the back. The separation of the muscles causes a weak core and little protection for the internal organs. While diastasis recti can occur in any person it is most common among postnatal women. Due to it’s emphasis on core stabilization, Pilates has proven to be an effective form of rehabilitation for diastasis recti. The Pilates repertoire provides exercises that can assist in bringing the abdominals back together, and allowing the connective tissue to begin healing.

Due to my last pregnancy 6 years ago which resulted in twins weighing just under 14lbs, I was diagnosed with diastasis recti. I will discuss in this paper the exercises that have helped me rehabilitate my weak core and eliminate pain in my abdominal, lower-lumbar and pelvic region.
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Anatomical Description of Diastasis Recti

The separation of the right and left rectus abdominis muscles along the linea alba is called diastasis recti. The rectus abdominis muscle (see figure 1) runs vertically in the center of the stomach region. The rectus abdominis are two muscles separated along the linea alba, which is a fibrous structure made up of mostly collagen connective tissue. The rectus abdominis muscle is the most anterior abdominal muscle, and it originates at the pubic crest and pubic symphysis and inserts at the 5th through 7th costal cartilages and xiphoid process.

![Rectus Abdominis](image)

The function of this muscle is to flex the spine, tense the anterior abdominal wall, assist in compressing the abdominal contents, and provide support to the back and organs. In pregnant women, diastasis recti is caused by the growing uterus pushing against these
muscles and separating them. Additionally, hormones during a woman’s pregnancy can also cause the connective tissue that holds these muscles together to weaken, aggravating the problem even more. The divide normally closes up again, but this can vary, depending on the number and size of the babies.

To test for diastasis recti, one should lie on their back with knees bent, place two fingers just below the navel and apply gentle pressure while slowly engaging the abdominals, raise the head, neck and shoulders to a chest lift position, move the fingers to check at belly button and then again about 3 inches above belly button. If the space is more than two fingers width apart you may have diastasis recti (see Figure 2). Although it can heal on its own, pregnancy related diastasis recti may remain long after the woman gives birth.

Focusing on the transverse abdominis is a major component of healing and re-gaining strength, this is our deepest abdominal muscle and is directly beneath the internal oblique muscle, it acts like an internal corset bringing the rectus abdominis in and back together. Pilates and diastasis recti can go very well together, however it is important to know that there are some exercises that are contraindicated for diastasis, such as ones that involve flexion, rotation, and back extension. Once the diastasis recti has been healed or improved, these exercises can be done as long as the transverse abdominis can be activated and there is no bulging or doming of the rectus abdominis, as this can cause the diastasis to return.
Figure 2

Case study

Name: Kelly Piersant (self)

Age: 42

Limitations: Difficulty achieving adequate flexion and rotation, no extreme back extension, or rib flaring and no exercises that could stretch the diastasis recti.

Symptoms: Lower back pain, weak core, umbilical hernia, and dome like bulge in the center of the abdominals.
Lifestyle: Mother of twin 6 year old girls and 8 year old boy.

After having my twin girls back in 2011 I was left with a pretty severe case of diastasis recti accompanied by an umbilical hernia. I am a slender build and my girls had a pretty high birth weight for twins, they weighed in at just under 7lbs each, so a combined weight of just under 14lbs. I had a my son in 2008 and that pregnancy resulted in a c-section due to his breach position, my twins were also born via c-section, so due to this I was left with an extremely weak core. My OB GYN suggested a possible surgery for the hernia due to the fact that it caused me extreme discomfort, but also suggested exercising could help heal it. Being opposed to surgery I decided to try working out to see if that would make a difference. Due to my busy lifestyle as a mother of 3 young children, I wasn’t able to start this until 2013. I initially started going to the gym and working a little with a trainer, my diastasis recti had healed a little since the birth but was still at about 3cm. In 2014 I started doing Pilates and noticed an improvement in my overall physical health and well being in general. I found that Pilates was strengthening my core and relieving my lower back pain. I made the decision to enroll in the teacher training program in 2016, and have been able to restore my abdominal strength and stability, pelvic-lumbar stability, and although my diastasis recti has not completely gone it has improved tremendously and my umbilical hernia has been greatly reduced.

Program goals

- Strengthen the transverse abdominis to help minimize the diastasis recti
• Stretch and strengthen the gluteals, piriformis, and hip flexors to support proper alignment of the pelvis
• Restore proper posture by encouraging neutral pelvis alignment
• Restore proper ribcage positioning by strengthening the muscles attached to the thoracic rib cage, including the abdominals, pectorals, erector spinae and diaphragm
• Encourage diaphragmatic breathing

Conditioning program

Warm up (Mat)

• Pelvic Curl - Emphasis placed on pelvic lumbar stabilization and returning to neutral pelvis every time.
• Spine twist supine - Emphasis placed on not flaring the ribs and engaging TA
• Chest lift - Emphasis placed on engaging TA and keeping pelvic-lumbar stabilization
• Chest lift with rotation - Emphasis on pelvic lumbar stabilization, and engaging TA

Footwork on the reformer

• Parallel heels
• Parallel toes
• V position toes
• Open V heels
• Open V toes
• Calf raises
• Prances
• Single heels
• Single toes

During footwork on the reformer emphasis was placed on staying in a neutral pelvis and neutral spine position, encouraging pelvic stability. Also focus was on breathing correctly.

**Abdominal work on the reformer**

• Round back
• Flat back
• Tilt
• Twist

I found the abdominal work in the short box series beneficial due to the fact I was sitting up and felt I had better control of my abdominals, rather than the supine series in which they sometimes can start to bulge when I get fatigued. Also flexion is still challenging for me whilst in the supine position, particularly when pulling arms down to sides. I was conscious of not flaring my ribs in flat back, tilt and twist.

**Hip Work on the reformer**

• Frog
• Circles (Up, Down)

• Openings

• Extended Frog

• Extended Frog Reverse

I would sometimes choose to do fundamental hip work and other times intermediate, my focus would be on maintaining pelvic lumbar stabilization, neutral spine, plus hip disassociation throughout circles.

**Spinal Articulation on reformer**

• Bottom Lift

• Bottom Lift with Extensions

Emphasis was on not flaring my ribs when articulating up, and using my breath to activate TA

**Stretches on the reformer**

• Standing Lunge

• Kneeling lunge

• Side Split

I found the Side Split to be a great stretch for me as I was able to focus on pulling up from my pelvic floor when adducting legs, and emphasis was on maintaining co-contraction of abdominals and back extensors.
Full Body Integration on reformer

• Reverse Knee Stretch
• Up Stretch 1
• Up Stretch 2
• Elephant

The Up Stretch group again encouraged me to focus on my co-contraction of abdominals and back extensors, whilst the Reverse Knee Stretch enabled me to really feel my lower abdominals which is something I struggle with due to my two c-sections. When I would really focus on my TA I was able to begin to start feeling sensation in my lower abdominals, which was previously not felt.

Arm Work on the reformer

• Chest expansion, Biceps, Rhomboids, Hug-a-tree, Salute (Arms Sitting Series)
• Chest Expansion, Up Circles/Down Circles, Triceps, Biceps (Arms Kneeling Series)
• Shoulder Push
• Shoulder Push Single Arm

Emphasis was placed on maintaining trunk stabilization throughout both sitting and kneeling series, while paying close attention to my ribs particularly in the Arms Kneeling Series. I find the Arms Supine Series a little more challenging again, due to the flexion required, and often feel that my abdominals start to bulge when fatigued.

Leg Work on the reformer and mat
• Single Leg Skating
• Side Leg Lift
• Forward and Lift
• Forward with Drops

Emphasis was placed on maintaining pelvic lumbar stabilization.

**Lateral Flexion/Rotation on reformer**

• Mermaid
• Side Over on Box

Emphasis was placed on keeping my ribs from flaring on the Side Overs, also on maintaining a stable pelvis and co-contraction of abdominals and back extensors.

**Back Extension on reformer and Mat**

• Breaststroke Prep
• Back Extension (Mat)
• Cat Stretch (Mat)

Emphasis was placed on maintaining abdominal engagement, shoulder stabilization and back extensor control.
Conclusion

Pilates provides a safe and effective means to rehabilitate a condition such as Diastasis Recti. Particularly helpful is the fact that the isometric contraction of the TA is used in every exercise. It is important to note that certain exercises are contraindicated, so a client with Diastasis Recti should initially avoid flexion, rotation and back extension, which can all worsen the condition. Diastasis is a very common, yet little known and diagnosed condition. Many women engage in post pregnancy workouts that actually irritate their Diastasis, making the divide bigger. If Diastasis goes untreated it can actually become worse, and could require surgery.

Fortunately, due to the fact I was completing my teacher training, I have been able to immerse myself in my Pilates practice, and have enjoyed incredible gains in my strength (particularly abdominal) pelvic stability, alignment and relief of my lower back pain. I have been able to experience first hand exercises that have irritated my diastasis, and find others that I am able to perform extremely well. Even ones that I struggled immensely with at the beginning, due to my weak core, I am now able to attempt and perform in a far better way.

http://www.preggopilates.com/what-is-diastasis/

“Diastasis Recti During and After Pregnancy” BeFit Mom
http://www.befitmom.com/diastasis-recti.php/