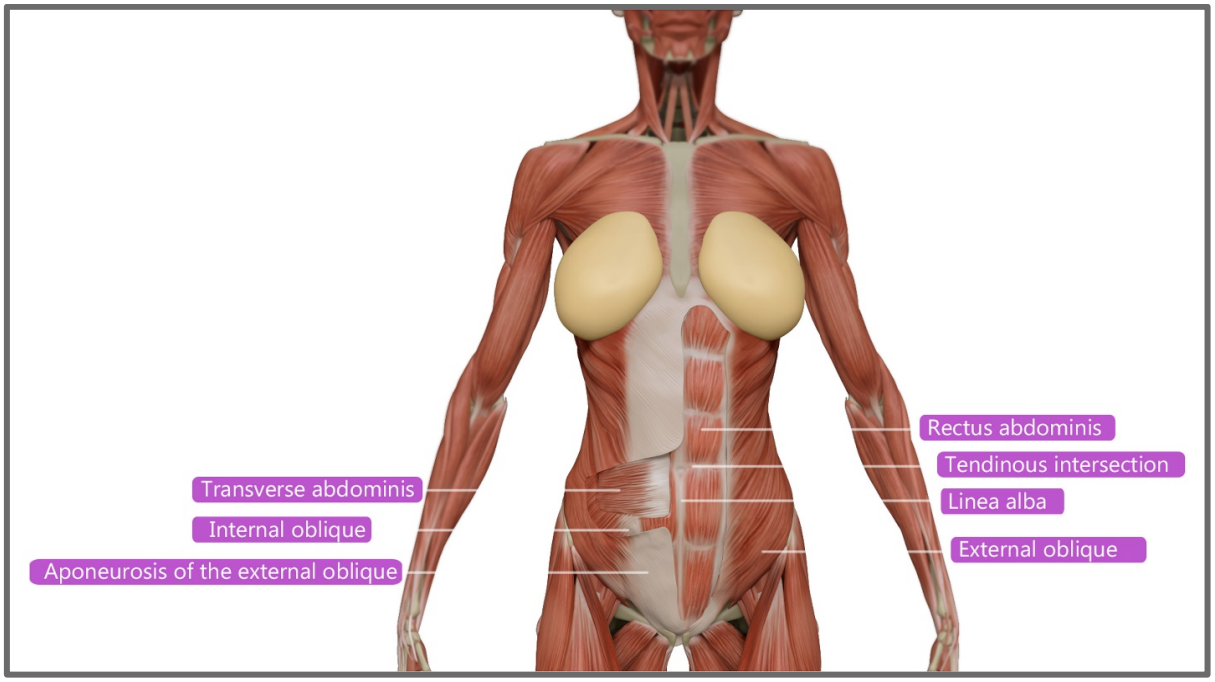
Diastasis Recti

By Megan Hoover, DPT

What is diastasis recti abdominis?

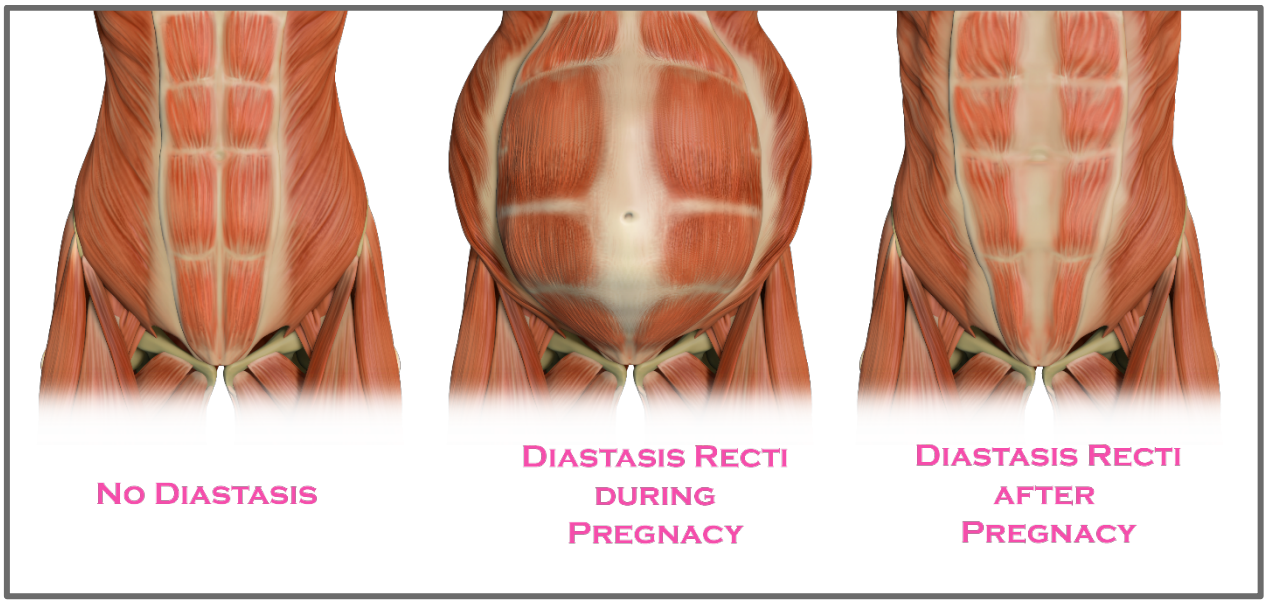
Diastasis recti abdominis (DR) is a condition in which the rectus abdominis muscle separates or thins along the middle of the muscle at the linea alba (Boissonnault, 1988). This distance is referred to as the inter-recti distance. The separation can be mild or severe and depending on severity can allow for hernation of the abdominal organs. DR is most often seen during pregnancy and the postpartum period, but also can affect women in the menopausal years as well as men. (Fernandez da Mota, 2015, Sperstad, 2016, Chiarello, 2013). Little research has been done into the risk factors, best treatment practices and prevalence of DR until more recent years. More research is needed into determining the most effective way to prevent and resolve this common disorder. Additional efforts should be made to expand public awareness and encourage the medical community to provide more comprehensive evaluation. So often individuals, especially women, put up with discomfort, limitations in function and poor self-image when there are options available to address the altered mechanics of the abdominal wall.

Anatomy



Our bodies are complex structures with multiple components including muscle, bone, connective tissue and the nervous system. These components must function synergistically to allow for stability, mobility and function. The anterior abdominal wall is made up of four muscles groups with fibers running vertically, horizontally and obliquely (Gilleard, 1996). The abdominal muscle groups from deepest to most superficial include: the transversus abdominis, the internal obliques, the external obliques, and the rectus abdominis. The anterior abdominal wall must work in conjunction with the back musculature including multifidi, quadratus lumborum and erector spinae. The pelvic floor muscles also co-contract to allow for upright posture, propulsion and participation in normal activities (Hodges, 1996). Diane Lee described these muscles as abdominal and lumbopelvic canisters that are made up of dozens of components that are dependent upon working together to provide "optimal strategies for function and performance and ensure controlled mobility, preservation of continence and organ support and respiration" (Lee, pg 1). "Core" muscles are made up of this group of abdominal, back and pelvic floor muscles. They aid in trunk movement, trunk and pelvic stability, restraint of the abdominal contents (Gilleard, 1996), respiration, posture and support of the growing baby during pregnancy (Benjamin, 2014). With all the responsibilities of these abdominal muscles, is it any surprise that dysfunction can arise when the mechanics are altered?

Diagnosis



There is much disparity in what is considered the "normal" inter-recti distance. One can read a dozen research articles on DR and come up with multiple suggestions for what is normal. Chiarello in 2013, presented that in women who had never given birth, ≤1 cm above or below the umbilicus was considered normal, but in women who had given birth,

1.5-2 cm above or below the umbilicus was considered normal. She also stated that normal inter-recti distance in men was 1.5 cm above the umbilicus and 1 cm below the umbilicus, but noted that further research into DR in the male population is needed to adequately establish what is normal. Other research has reported that individuals with DR present with an inter-recti distance of >1.5 cm (Gilleard, 1996), >2 cm (Lo, 1999), >2.5 cm (Candido, 2005) or >2 finger widths during a partial sit-up (Sheppard, 1996). The differences have been attributed to variances in measuring tools (ultrasound imaging, fingers, caliper), location along the linea alba, whether the trunk was at rest or actively flexes, if the individual was pregnant, and gender. Calipers or finger measurements, while not as accurate as ultrasound imaging are used much more frequently for diagnosis of DR. Specific diagnosis of DR typically is performed by a physician or physical therapist. However, if you are a fitness professional working with clients, you may be the first to suspect that an individual has DR.

To test for DR the individual should lie supine with knees bent and feet flat on the floor. Have your client cross her/his arms across her/his chest and perform an abdominal crunch until her/his shoulder blades are off the floor. If your client is late in her third trimester, she may not be able to fully clear her shoulder blades but have her contract as far as possible.

Palpate with fingers of one hand across the midline of the abdomen at the umbilicus. If a separation exists, your fingers will sink in. Measure at the umbilicus, as well as two inches above and two inches below the umbilicus (Acharry, 2015, Sperstad, 2016, Candido, 2005).

A normal separation is considered <2 finger widths, a mild DR as a separation of 2-3 finger widths, a moderate DR as 3-4 finger widths and a severe DR as a separation of >5 finger widths (Sperstad, 2016, Candido, 2005). If you find that your client has a DR >2 finger widths above/at/below the umbilicus, please refer them to a physical therapist who specializes in women's health. These individuals often have a difficult time accurately activating transverse abdominis and frequently are dealing with pelvic floor issues as well.

Prevalence

As with diagnosis and measuring of DR, the prevalence has varied in the research. Boissonault, in 1988, found that 66% of pregnant women in their 3rd trimester had DR. Candido in 2005, reported 35% of women immediately post-partum had DR. "Prevalence of DR was 33.1%, 60%, 45.4%, and 32.6% at gestation week 21, 6 weeks, 6 months, and 12 months' post-partum, respectively (Sperstad, 2016, pp 1092). Fernandez da Mota found in her review of research that 39% of older women who had given birth at one point in their lives and were undergoing abdominal hysterectomy had DR and 52% of female urology patients who were menopausal also had DR. Even though the percentiles vary, it is evident that DR is very common and can affect women throughout their lives. As health care or fitness professionals, we should be screening all female clients or patients, as they may have DR and be unaware.

Causes and Risk Factors

Pregnancy is the most common cause of DR and risk/severity appear to increase with each pregnancy (Candido, 2005, Coldron, 2008). Hormonal changes resulting in softening of the linea alba and increasing stretch placed on the abdominal wall during pregnancy is suggestive as to be a culprit of increased incidence in women during the 2nd and 3rd trimesters (Boissonnault, 1988). Coldron found in 2008, that during pregnancy inner-recti distance increased and the rectus abdominis became thinner, longer and wider compared to women who had never been pregnant. Individuals with DR may have a decreased capacity to generate force as demonstrated by a decrease in successfully performing a trunk curl or pelvic tilts than those without DR, which may increase the strain along the linea alba (Gilleard, 1996). Pregnancy with multiple babies (ie: twins, triplets…) also increases the presence of DR (Lo, 1999). Age also appears to have an impact on DR as the inter-recti distance increases over the course of an individual's life (Chiarello, 2013). Additional research has suggested possible risk factors including: age, sex, number of pregnancies, obesity, and connective tissue disorders (Lo, 1999). Caring for another child while pregnant suggests possibility of increase in DR as a result of repetitive lifting, but researchers noted additional studies were needed (Candido, 2005).

Precautions

When an individual is diagnosed with DR, there are specific activities they should avoid. Loading of the rectus abdominis, twisting of the trunk, traditional core exercises (sit ups, crunches, planks…) and heavy lifting are contraindicated.

Impact on Daily Life

Symptoms of DR tend to progress gradually over a woman's pregnancy and may extend to the post-partum period. While DR in and of itself may not be painful, the effects of DR can limit function and cause pain. Individuals with DR may experience palpable and visible separation of the RA, a feeling of having "flabby abs", altered mechanics of the pelvic floor leading to incontinence of the bladder and bowels, low back or pelvic pain, poor posture, a feeling of weakness in their abdominals and low back, and pain with sexual intercourse. Women who have had cesarean sections may find that the scarring of the incision can worsen the symptoms associated with DR. Many women attribute these symptoms as "normal" and just part of life. However, the above limitations should not be considered normal. These individuals should be educated on the treatment options available to allow them to return to normal daily and recreational activities without pain or fear of pain. It should be noted that DR is not the only cause of back and pelvic pain, incontinence, poor

posture, weakness and pain with intercourse. Research into the prevalence of these symptoms with regards to presence/absence of DR demonstrates significant disparity.

Exercise

The focus of exercise for DR should involve re-education of the "core" muscles to allow for optimal function and load transfer in functional positions and activities. Progression of these exercises should be made with caution and only after an individual can successfully perform specific activation of the transverse abdominis and rectus abdominis without exacerbating the DR. Diane Lee, in 2011, stressed the importance of understanding that deeper core muscles (transverse abdominis) function much differently than the superficial musculature (obliques, rectus abdominis and long back muscles). Re-education of these muscles is essential and a foundational pillar of Moms Into Fitness. Many women do not know how to appropriately activate the transverse abdominis and compensate with rectus abdominis and hip flexors, which can exacerbate DR. "You cannot strengthen a muscle that your brain is not using, one's current core strengthening exercises may merely be reinforcing a non-optimal pattern of muscle activation that you already have." (Lee, Core Training vs Core Strengthening). Activation of the transverse abdominis approximates the bellies of the rectus abdominis and strengthens the integrity of the linea alba. Exercises involving transverse abdominis activation have been shown to increase fascial tension which improves the ability to transfer loads and successfully manage torque (walking, carrying, lifting, running) (Benjamin, 2014).

In general, research supports exercises focusing on core stability and strength before, during and after pregnancy. Benjamin found in 2014, that specific abdominal exercises prior to pregnancy may decrease the risk and severity of developing DR while pregnant. Chiarello found in 2005, that 90% of non-exercising pregnant women exhibited DR, while only 12.5% of exercising women had the condition. A case study by Litos in 2014, involving the treatment of a woman with severe DR (11.5 cm inter-recti distance at the umbilicus that extended 9 cm vertically along the linea alba), found that with 18 visits of physical therapy focusing on muscular re-education, core stabilization and strength exercises with progression to functional activities, the individual's DR was reduced to a 2-cm width. Not only did this individual present with improved inter-recti distance, she also demonstrated improvements in functional strength and could successfully perform activities involving transfers of load including standing, walking, jogging and carrying her child. Another study found that there was no significant difference between women who started a core stabilization program focusing on reducing DR after delivery than women who performed the program during pregnancy (Sharma, 2014). Acharry in 2015, looked at the efficacy of abdominal exercise in conjunction with bracing on reducing DR in women within one month of delivery. Using the individual's hands to perform bracing during specific

exercises, it was found that over the course of two weeks, participants reduced the inter-recti distance by one finger width. In the past, plank exercises have been considered contraindicated in individuals with DR. However, a recent study by Walton, et al, 2016, found that a specific abdominal stabilization exercise program that included a traditional prone on elbows plank with the use of abdominal bracing was effective in reducing DR in individuals who were 3-36 months' post-partum with presence of DR. It should be noted, the control group that included an abdominal crunch with bracing and had a more significant improvement in inter-recti distance than the experimental group that included a plank. It was concluded that although the control group demonstrated a greater reduction in inter-recti distance, the women in the experimental group did not have adverse results with incorporating a traditional plank exercise. The inclusion of a plank exercise should be closely monitored in individuals with DR to ensure proper transverse abdominis activation and limit strain through the linea alba and rectus abdominis.

The goal of treating individuals with diastasis recti should be not only to strengthen the deeper abdominals, but also to restore function in the rectus abdominis and obliques. Initial activation of the rectus abdominis should emphasize strengthening without increasing intra-abdominal pressure. One exercise involves performing a modified crunch in which the head alone is lifted with exhalation and your client uses her hands in a crossed position over her abdominals to bring the two sides of the rectus together as the head is lifted (Noble, 2003). As your client is able to progress and effectively contract her abdominals without straining the linea alba and exacerbating the DR, she will be able to perform more traditional core exercises. Lindsay Brin is an invaluable source for basic core stabilization exercises and the progression of comprehensive abdominal exercises.

As health care or fitness professionals, it is our responsibility to re-educate our patients/clients in the correct methods of core strengthening and activation. Although research into the most appropriate treatment methods for DR reveals varied results, general consensus supports specific, guided core exercises focusing on specific activation and strengthening of the transverse abdominis and avoiding positions/activities that load the rectus abdominis. Inclusion of external bracing, hand/sheet support for rectus abdominis activation and taping would benefit from further research.

Clinical/Personal Experience (aka… my 2 cents ☺)

It is encouraging to me as a woman, mom and physical therapist that there is a recent upswing in research regarding diastasis recti. It is such a common issue, and there has been very little information on best practice for treating and resolving this condition. In my experience, it is overlooked until an individual begins to illicit signs of pain or functional limitations, and even then, it is not always appropriately addressed.

I had the most amazing OB/GYN through both my pregnancies. He is absolutely phenomenal. However, he did not once assess me for DR. I have dozens of friends from providers all over the country who were not checked for DR either. Whether DR is so common that MD's do not check and assume it is present, or they are unsure what the best treatment practice is, I do not know. This lack of assessment and the overwhelming tendency of women/moms' willingness to overlook their own physical complaints can create non-optimal compensatory strategies and dysfunction that if left unresolved can significantly impact their function and ability to enjoy normal and recreational activities. As health care or fitness professionals, we get amazing opportunities to help these women (and sometimes men) who may or may not be struggling with pain to resume normal activities and improve overall body image satisfaction.

In my PT practice, core stabilization is an absolute necessity. Most of my patients, whether they are pregnant or post-partum, male or female, and regardless of their primary complaint, receive some aspect of core stabilization as part of their home exercise program. I do not currently have a substantial prenatal group of patients, but am working to increase the awareness in my community of moms and MD's that there are treatment options available for prenatal and postpartum women. These individuals should not just "suck it up" and deal with the pain and dysfunction they are experiencing. For example, my neighbor was 34 weeks pregnant and suffering from severe back and buttock pain that was preventing her from walking for >5 minutes and from picking up her two-year-old daughter. I encouraged her to make an appointment for an evaluation so that she could successfully complete her pregnancy without hobbling around. She saw me for 2 visits, focusing on gentle manual therapy and initiating a TA stabilization program. While she had a mild case of DR (just over 2 finger widths), she made significant progress in only 2 visits. She was sleeping through the night, able to walk without pain for >20 minutes and could pick up her daughter in less than two weeks.

Core stabilization, re-education and strengthening exercises are essential and need to be progressed appropriately. In the beginning, the focus must be on gravity eliminated positions in supine, side lying and possibly prone/quadruped to allow for appropriate and selective muscle activation. However, as an individual's strength and body awareness improve, they should progress to more functional positions. We are mobile creatures and must be able to successfully perform our normal and recreational activities.

Lindsay Brin is an excellent source of information and a wealth of knowledge. I can attest to the benefits of following her programs and recommendations. After my first child, I returned to running far too early and did not perform my transverse abdominis stabilization exercises as faithfully as I should have (I know… tsk..tsk… and I'm a physical therapist!) I had issues with incontinence and pelvic pain. Finally, I followed the advice I so liberally give my patients and committed to faithfully performing appropriate core exercises in addition to other Mom's Into Fitness workouts. And guess what? I can laugh,

snort, sneeze and jump without peeing my pants, and I have not had pelvic pain for the past four years (with the exception of when I was within weeks of delivering my 2nd). My recovery after having my 2nd child was much more successful and happened more quickly than with my 1st. Now… I do have to mention that I was very fortunate to not have had DR with either of my pregnancies. I feel for those women who struggle with significant DR after pregnancy. But, there is hope! We can help these women!

As fitness professionals, you can make a huge impact on your clients' lives. If you find that they are unable to effectively and accurately perform core stabilization exercises or have more issues than your scope of practice can address, please refer them to a physical therapist who is educated in women's health. I encourage you to go and introduce yourself to the women's health PT's in your area. It is a great way to form relationships with these providers who may be able to assist you in caring for your clients. Our clients/patients will benefit enormously from a team approach. We all have a common goal and can help our clients/patients achieve these goals together.

Summary

Diastasis recti is a very common condition that commonly occurs during pregnancy and can extend into the post-partum period and affect women and men in varying stages of life. There has been a recent upswing in research regarding the prevalence, risk factors and best treatment practice for DR. DR has a significant impact on the structural integrity of the abdominal wall and can lead to issues with back/pelvic pain, poor posture, incontinence, pain with intercourse and an overall decrease in satisfaction with body image. Specific abdominal exercises, regardless of whether they are started before, during or after pregnancy have been shown to decrease the risk, severity and improve the overall reduction of DR. As healthcare professionals, we have a unique opportunity to provide our patients/clients with tools to successfully retrain their abdominal muscles, address posture, prevent/correct compensatory strategies and provide tools for these individuals to successfully return to normal life and recreational activities.

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