

MotherTouch™

Advanced Bodywork Training for Women's Health

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MODULE II: POSTURAL & MUSCULAR ADAPTATIONS DURING PREGNANCY



NOTES ABOUT THIS TEXT

NOTE: This text is excerpted from my book: Nurturing Massage for Pregnancy. If you have the book or want to get it, you may read Chapter 3 instead of this pdf. **Please scan through this pdf however for updated information-- highlighted by this orange text!**

Green indicates that detailed information can be found in other Online Courses.

Yellow or Bold text highlights information that I particularly want to emphasize!

Red indicates cautionary information.

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OVERVIEW

This text examines pre-pregnancy muscle tone and the muscular strains that develop during pregnancy due to weight gain, hormones. We will look at how postural adaptations to pregnancy and resultant muscular strain can cause the common complaints of pregnancy including back, sacral, and neck pain, and uterine ligament spasms, headaches, and leg cramps. We explore ways to improve a woman's experience of pregnancy with postural adjustment, as well as examine the condition of diastasis recti. By combining this knowledge with skilled bodywork and client education, you will learn to effectively address specific pregnancy discomforts.

POSTURE and PREGNANCY

Within the 9-month gestational period, a woman normally gains **between 20 to 35 pounds of extra weight**. This weight is distributed in the placenta, baby, uterus, additional breast tissue, fat, extra fluids and blood. While a mother may flourish with extra blood flow, increased oxygen intake, hormonal boosts, and the energizing enjoyment of a secret world developing between herself and her growing child, her musculoskeletal system is adjusting to accommodate the extra load. A woman's posture must shift bringing with it new or unusual aches and pains. These adjustments become more dramatic by the latter part of pregnancy, when a woman is **gaining nearly 1 pound per week, most of it on the anterior side of her body**. The muscles most affected by this gain include those that support the weight of the abdomen: **the abdominals, iliopsoas, paraspinals, spinal erectors, adductors, lateral hip rotators, and pelvic floor group**. The muscles supporting the increasing weight and size of the growing, and soon-to-be lactating breasts are also affected, including the rhomboids, pectoralis, subscapularis, scalenes, and levator scapula.

In response to the extra weight and anterior expansion of the belly and breasts, a woman's posture changes. As the abdomen stretches, the spine naturally compensates by developing more curvature in the lumbar area. This can cause **low back pain due to compression of the lumbar nerve roots and strain to the deep lumbar and paraspinal muscles**. As the abdominals stretch, the connective tissues of the thorax, shoulders, and throat area are also affected, pulled caudally (toward the feet) with gravity, causing strain to the spine as it attempts to support an erect posture. Excessive lumbar lordosis and consequent low back pain increase drastically as each muscular area supporting the pelvis responds to the rapid structural changes. If the pelvis tilts excessively anterior, a common pregnancy posture might develop to compensate.

If a woman has weak musculature and pays little attention to her posture, she may develop a variety of discomforts or dysfunctions, including low back, shoulder, neck, and upper back pain, brachial plexus syndrome, leg cramps, diastasis recti, sacroiliac joint dysfunction, headaches, and shortness of breath. The client may avoid these conditions by increasing postural awareness and correcting her posture as needed through each day, along with receiving therapeutic massage and taking part in regular exercise to help diminish stresses as they occur.

CONTRIBUTING FACTORS TO POSTURAL SHIFT

The following factors have strong effects on posture during pregnancy:

Gravity

The continual growth of the uterus and baby along with the effects of gravity can cause the forward and downward pull of the growing uterus, increasing lumbar lordosis and stressing the abdominals. Improved self-awareness about posture helps avert the constant influences of gravity.

Hormones

Posture is also influenced by the effects of the hormone, **Relaxin**, which **relaxes the connective tissue and ligamentous structures of the body, especially in the pelvic region**. Relaxin also has a variety of effects that help support labor, as well as inhibiting uterine contractions before childbirth is due, and opening and softening the cervix.

Size and Position of the Baby

Some babies rest close to the mother's spine, whereas others lie forward, making the mother's belly pendulous, with the weight extended anteriorly. If the baby is exceptionally big, or if your client is carrying multiple babies, the belly may become quite large, necessitating subtle or dramatic shifts in her posture to find balance.

Self-Esteem

Esteem can be a strong or minimal influence, but a woman with low self-esteem may carry her new weight less efficiently than a woman who feels healthy and empowered. Providing communications that foster positive self-esteem will help your client more easily incorporate suggestions for improved posture.

Musculo-Skeletal Adaptations

- A shortened *psaos* pulls on the anterior lumbar spine.
- The *quadratus lumborum (QL)* and *erector spinae complex* pull the sacrum and iliac crests up toward the thoracic spine.
- Shortening of the *lumbar intervertebral muscles*, such as the multifidi, decreases the spaces between the vertebrae, pulling them tighter and increasing lordosis.
- *Rectus* and *transverse abdominus*, in a constant stretch from the growing abdomen, become weaker, unable to fulfill their role of pulling the pelvis posteriorly and supporting the abdominal contents and back.
- The *gluteal muscles* help stabilize the pelvis and extend and medially rotate the hip. If these are weak, lumbar lordosis and lateral hip rotation increases.
- The *hip flexors iliacus, tensor fasciae latae, sartorius, rectus femoris, and quadriceps* shorten as the pelvis rolls forward toward them.

- The **hamstrings** are in constant stretch, weakening and decreasing their ability to stabilize the pelvis posteriorly at the ischial tuberosity.

Ligaments

Ligaments and muscles help humans stand comfortably erect, but during pregnancy, **women cannot depend on the newly lax ligaments softened by the hormone, relaxin**, to adequately support them. Muscles take on a more prominent role in stabilizing joints and, unlike ligaments, become fatigued, possibly leading to strains and spasms. **Elastic or cloth abdominal support binders that wrap around the belly and support its weight during the later stages of pregnancy may be effective in mediating some of these hormonal effects.**



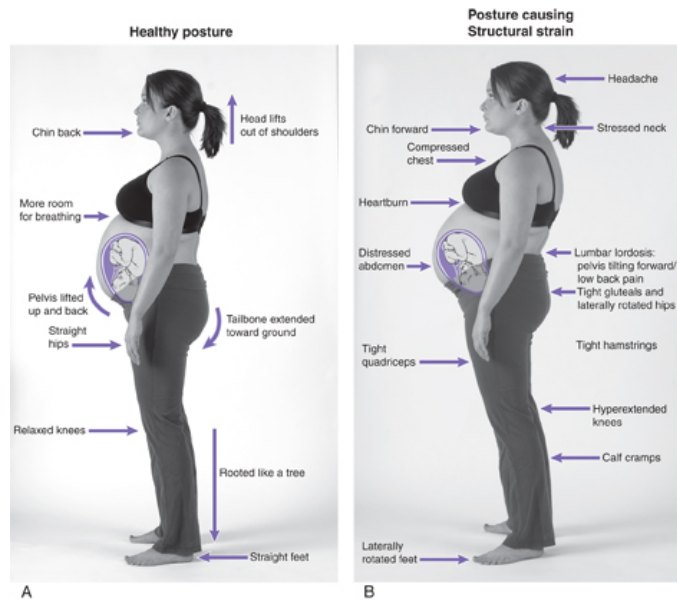
Muscle Tone and Tension

Poor muscle tone also affects a woman's ability to hold herself erect during pregnancy. Imagine trying to maintain your normal daily activities while carrying 28 pounds of solid weight on your belly with a thin, stretchy fabric (your abdominal muscles) for support. The cloth would stretch in front, the weight would bear down, and the strain in your back would increase as your muscles attempted to hold the weight closer to the center of your body. Pain-producing posture can develop when weak primary muscles cannot support the structural changes of pregnancy; when this occurs, secondary muscle groups become shortened and strained in their effort to compensate for the lack of support from others.

Pelvic stabilizing muscles that may need strengthening include the gluteals, hamstrings, perineals, and hip adductors. The quadratus lumborum, psoas, and lateral hip rotators are notoriously tight and often are a source of discomfort in pregnancy. A woman may develop a kyphotic-type posture in the upper back as the medial or internal shoulder rotators tighten, pulled forward by the anterior weight of the breasts. **Lengthening** these muscles can help improve postural balance.

ASSESSING POSTURE

Look at these photographs depicting supportive posture (A), and posture that will inevitably cause discomfort (B). It is not uncommon to see variations of Posture B during pregnancy, compensating for the anterior pull of the belly and the posterior counter pull of the upper back. The psoas shortens and anteriorly tractions the lumbar spine. The tight erector spinae complex and quadratus lumborum pull up on the sacrum and iliac crests. The quadriceps and other hip flexors shorten, pulling down anteriorly on the pelvis. The minor stabilizing effect of the hamstrings and adductors decreases as they are stretched by the anterior pelvis. Addressing posture and these muscles with massage can help relieve some of the discomforts associated with these muscular actions.



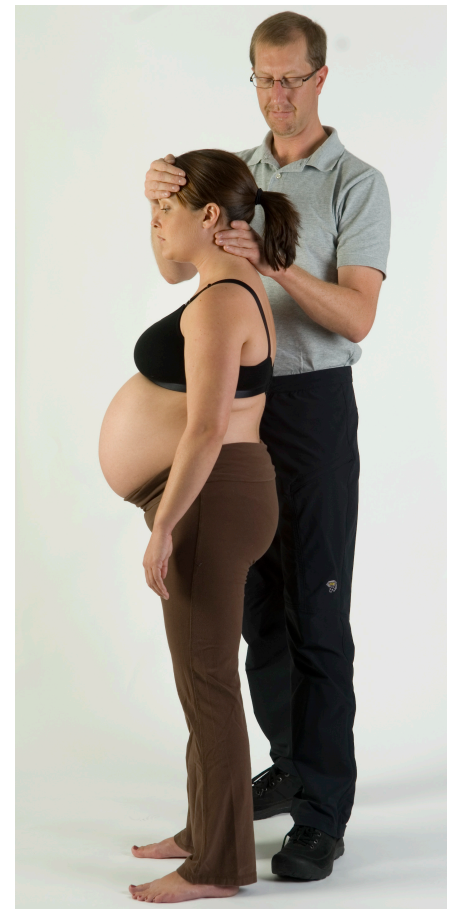
Adjusting Posture

Keeping posture supportive and dynamic requires conscious attention. Strengthening or stretching the muscles of support may be necessary. The abdominal muscles must be strong enough to support the abdominal contents and keep the pelvis balanced, and the psoas needs to be supple and long enough to avoid a strong anterior-inferior tug on the lumbar spine. The adductors support the pelvis when the feet are balanced and grounded, receiving energy from contact with the ground, and lifting the body toward the sky. Until this is achieved and maintained, consider helping your client practice and develop the stance of solid, well-balanced posture using the following Tree Posture exercise.

TREE POSTURE

1. Have your client stand with her feet facing mostly straight forward, hip-width apart. Ask her to relax her knees slightly-- not hyperextended. Allow her sacrum and buttocks to naturally relax and possibly drop some. As she stands with feet apart and parallel, gently encourage her to envision her body aligning as she takes some deep breaths, feeling her feet on the ground.

2. Have her find balance in her feet by bringing her weight evenly between the heels and center of the sole of each foot. Press your hands on top of her feet at the base of each tibia to help give her a sense of grounding through the foot into the earth.



3. Now move behind her and squeeze and press down on the back of her heels, rooting her further onto the floor/earth.
4. Place your hands on the back of both legs just above the Achilles tendon, and run your hands up the back of the legs to her sacrum, and from her sacrum up the spine to reach under her occiput. Encourage her to breathe up her spine as you do this.
5. With your thumb and forefingers under her occiput, hold the occipital ridge and steady her forehead with your other hand. Apply slight traction upward at the base of the occiput. Do this while suggesting that she inhale and imagine herself as a tree, rooted in the ground through her feet and reaching up to the sky with branches that extend through her spine, neck, and head. You might have her envision that she is bringing water up the tree trunk through the roots in her feet. Have her lift her spine out of the pelvis and up through the occiput, still rooted to earth, knees soft, pelvis dangling and loose. In yoga, this position is similar to Mountain Pose, or Tadasana, which implies standing rooted and firm as a mountain and which brings clarity and fortitude to those who practice it.
6. Invite another deep breath, allowing the shoulders to widen and fall back naturally, without effort, as the chest expands and the breath flows in like an ocean tide. This practice will give her the sensate experience of length, strength, and ease. It will help her realign and walk with this imagery impressed in her mind. She may she says she feels ‘regal’, which is a great image to hold as a pregnant mother—she IS regal!
7. Allow her time to settle into this taller stance. She may be standing a couple inches taller than she was a moment ago. Of course, it is easy to be forgetful of one’s posture and sink down again under the seductive lure of gravity! But with regular tactile reminders of how to return to a tall and spacious posture, supported by massage that encourages opening and lengthening, a healthy posture can become her natural stance.

Sitting Posture

Problems develop for pregnant women who sit for long hours. The flow of blood from the pelvis to the legs can be impeded by belly compression on the groin. Positive posture can be practiced in the chair if she remembers to rock her pelvis forward so she sits on the ischial tuberosities, lifting the torso up from the hips, and placing the feet on the floor or footrest so that knees are at least at a 90-degree angle to the floor, and not dangling from the chair. This can help prevent the development of problems such as varicosities, pelvic congestion, hemorrhoids, edema, and leg cramps. Your client also may want to find a way to extend her legs frequently to relieve some of the congestion in her pelvic area.

I review posture with my clients at every session, helping them notice their habitual patterns, and asking them to notice what happens when she stays attentive to her posture. If I remind her again when she leaves the session, she can be practicing while walking to the car, getting in and out of the car, and driving home again. I may refer clients to a physical therapist if they have serious postural habits that need more attention than I can give in a session.

The UTERUS--PELVIC FLOOR--ABDOMINAL MUSCLES DURING PREGNANCY

As described earlier, specific muscle groups are particularly stressed during pregnancy. Minor muscular strains are not an uncommon experience. It may be useful to remind your client who is complaining of frequent aches and pains, that **regular exercise can help decrease incidents of muscular discomfort, while having the additional benefits of cultivating a higher tolerance for pain during birth and generally improving birth outcomes.** Activities that are particularly beneficial during pregnancy, if beginning a new exercise regimen, include low-impact or non-weight-bearing activities such as swimming, walking, yoga. Strengthening and stretching regularly also will help your client improve her posture. **Be aware that exercise without using excellent postural adjustment and support can aggravate many pregnancy complaints.**

The muscles most highly involved and affected by pregnancy—including some at the core of postural support—and the consequences of the stress they endure are explored below: the uterus and its ligaments, perineals, abdominals, psoas, and quadratus lumborum.

THE UTERUS

The uterus is a reproductive organ, but it is also the strongest muscle for its size in a woman's body. Before pregnancy, the uterus typically weighs about 2 ounces. By the end of a full-term pregnancy, the uterus alone, minus its contents, typically weighs about 2 pounds. It has increased its volume capacity by 1000 to 4000 times and is four to six times larger than it was before the pregnancy. The actual number of uterine muscle cells increases through the first trimester of pregnancy; then, the cells begin to enlarge and, eventually, in the second trimester, stretch until they are 10 times longer than their original size. The uterine muscle undergoes the most dramatic adaptations to pregnancy, and its strained ligamentous support can sometimes cause discomfort.

Uterine Ligaments

Six primary ligaments, along with the endopelvic fascia and other connective tissue, support and suspend the uterus. During pregnancy, any of these ligaments can spasm and refer pain to areas in the back, legs, or groin.

The **two round ligaments** are mostly a continuation of the uterine smooth muscle and originate on the anterior surface of the uterus below the fallopian tubes. They traverse the broad ligament to the lateral abdominal wall. There they pass through the inguinal canal to attach to the inner aspect of the labia majora of the vagina.

The **two uterosacral ligaments** arise from the posterior uterus and cervix, just inferior to the utero-cervical juncture. They attach to the periosteum of the anterior mid-sacrum and near the sacroiliac joints.

The **two broad ligaments** spread out like a sheet from the lateral aspects of the uterus sinking into the fascia of the iliac fossa, the walls of the pelvic cavity, and into the connective tissue of the pelvic floor. Within the broad ligament are suspended the ovaries and round ligaments.

Bands of ligamentous tissue called the **ligamentum transversalis colli, transverse cervical ligaments or cardinal ligaments**, support the cervix and uterus. They arise from the lateral

aspects of the cervix and traverse the broad ligament to insert into the anterior sacrum and lateral pelvic wall.

Uterine Ligament Strains and Referred Pain

The uterine ligaments stretch extensively during pregnancy, and it may be 6 months post-delivery before they, along with all the body's ligaments, return to their former non-pregnant state. As they lengthen, these uterine ligaments can spasm causing low back pain, groin pain, and pelvic discomfort. More severe ligament spasms may be misinterpreted as muscle spasm, sciatica or uterine contractions.

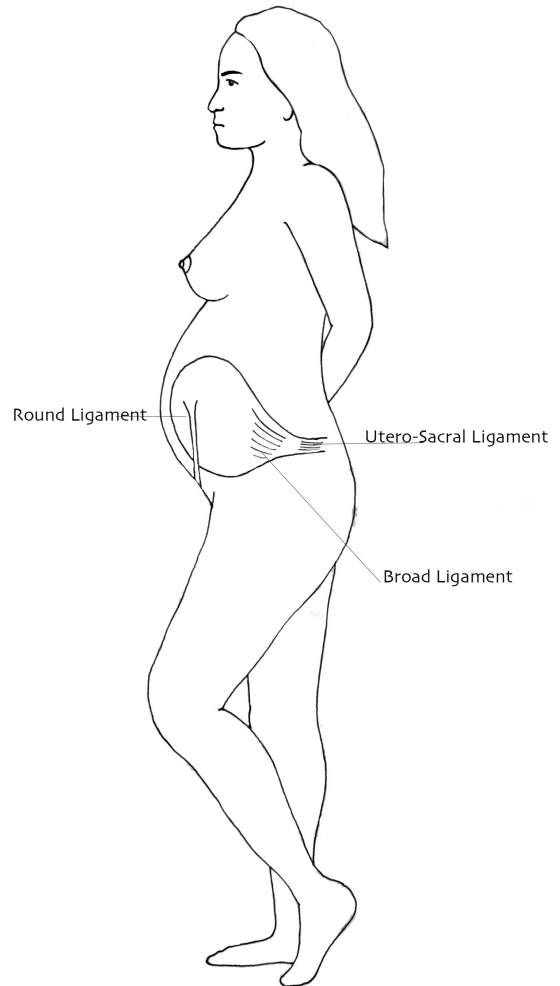
Uterine ligament spasms and referred discomfort:

* The **round ligament** when in spasm will pull in the pelvic area and **cause pain in the lower pelvis, anterior leg, or most commonly, sharp pain in the groin.**

• The **broad ligament** attaches in the wide area of the pelvis and causes **discomfort in the low back and buttocks** when in spasm.

• The **uterosacral ligament** attaches from the posterior uterus to the sacrum and can cause **pain in the sacrum, sciatic-like pain down the back of the leg, sacroiliac joint pain, and diffuse low back pain.**

UTERINE LIGAMENTS



**Massage Therapist Tip:
PREVENT ABDOMINAL & UTERINE LIGAMENT STRAIN**

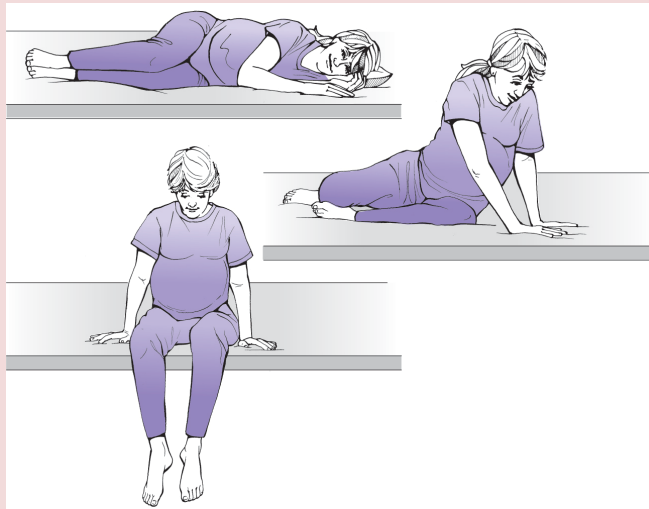
Pregnant women on the massage table may need to reposition several times and possibly get up in the middle of a session to use the restroom. **It is particularly important to position your client with adequate abdominal support, so the uterus is not pulled by gravity on one side and to educate the client to use care when moving from the lying to the sitting position.** These actions will help prevent uterine ligament pain and abdominal strain that could lead to a separation of the rectus muscle along the linea alba (Diastasis Recti). Teach appropriate body mechanics for sitting up and changing positions on the table, so that ligaments are not strained. Whether on a massage table, in bed, or on a couch, she can use this method to sit up:

1. In your office, first be certain to properly position client on the massage table in a way that adequately supports the uterus.

(Learn this in [MotherTouch Pregnancy Positioning & Draping Online Course!](#))

2. Support the client's growing belly with a small pillow or rolled towel in the sidelying position to prevent strain on uterine ligaments.

3. When client needs to sit up: First remove any pillows between or under her legs. She should roll to her side first if she is not already lateral. Bending her legs, she will then use her arms to push her upper body up to a sitting position. Finally, she will swing her legs over the side of the table, keeping her knees together. This prevents straining of the abdominals and uterus when sitting up. She should always sit for a moment on the edge of the bed or couch for a moment before getting up, to avoid instability due to dizziness from potential **postural hypotension**.

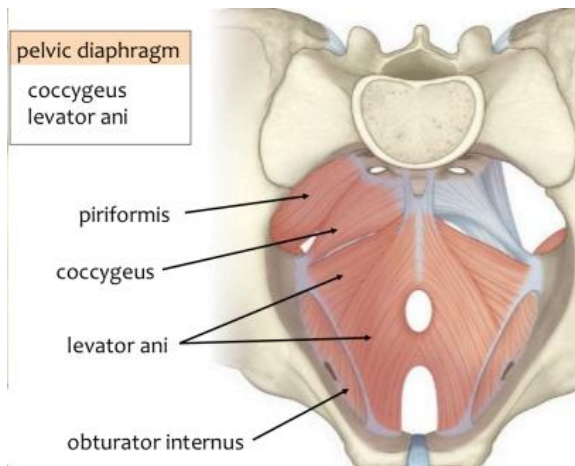


4. Suggest the use of an abdominal binder to help relieve backache caused by ligament pain

5. Teach your client to relieve round ligament pain by flexing the hip of the affected side and applying direct fingertip or palm pressure to the painful area near the groin.

PELVIC FLOOR MUSCLES ** Updated section from *Nurturing Massage for Pregnancy Textbook*.

The pelvic floor or perineum refers to the muscles that hang like a hammock between the ischial tuberosity, the symphysis pubis, and the coccyx. These are generically and collectively known as the *perineal muscles* or *pelvic floor muscles*. The perineals include the levator ani group, coccygeus and the obturator internus and play a critical role in a woman's health, as they help support the weight of the abdominal contents, including all the organs and the baby-filled uterus. The levator ani also wraps like a figure eight around and controls the three sphincters of the perineum: the urethra, the vagina, and the anus.



During birth, the perineal muscles must stretch and are sometimes cut or torn during delivery, weakening them. After this extreme stretching, the perineal muscles can lose tone. Imagine a hammock, heavily loaded with weight, sagging toward the ground. The looser the hammock is woven and the heavier the load, the further it sags. Similarly, when the perineal muscles are imbalanced or lacking tone, the weight of the abdominal contents may cause the muscles to sag. Women who have not processed their birth experience often continue to feel energy leaking from their pelvis, until they are given the opportunity to “close the bones” and call their spirit, heart, and pelvic energy back inside again.

Many women in the United States experience problems caused by weak perineal muscles after age 55 and many of these pelvic floor dysfunctions have had their roots in pregnancy and giving birth. This includes symptoms of vague back/pelvic aches and heaviness, fatigue, vulvar varicosities and rectal hemorrhoids, urinary stress incontinence (urinating when coughing, sneezing, laughing, or straining), continual leakage of urine, and uterine or bladder prolapse (when the organ slips down toward or literally drops out of the vagina). Kegel exercises or “jade egg exercises” are sometimes an effective method for helping improve these complaints by toning the muscles and improving circulation, however they should be **done only after having a pelvic muscle assessment by a women's health practitioner who can help determine if the muscles are engaging properly, effectively and in balance.**

Massage Therapist Tip: PELVIC FLOOR MUSCLE AWARENESS

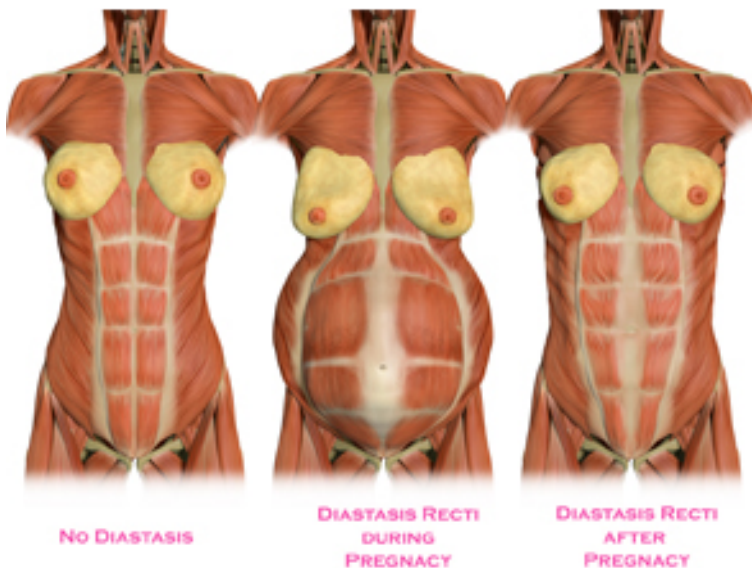
Weak and alternatively, “too tight” perineal muscles are a possible cause of some common complaints of dull, aching low back and pelvic discomfort. Passing on to your client information about pelvic floor health during pregnancy and postpartum, and the importance of postural awareness could be a great service to her. Awareness of perineal support to the torso can be increased by combining client-activated perineal muscle contractions along with muscle-release techniques in the low back, hip rotators and adductors, enhancing the effectiveness of muscular release through bodywork. For instance, when working on quadratus lumborum, or gluteals and piriformis, ask her to contract her pelvic floor muscles (“Do a kegel squeeze.”) and then relax again. Due to the synergistic connection between the pelvic floor muscles and the abdominals, QL, and piriformis, contracting and relaxing the pelvic floor muscles can help the others to relax as well.

ABDOMINAL MUSCLES

The abdominal muscles help maintain the position of the inner organs and uterus, stabilize the low back, and control the angle of pelvic tilt—all important jobs during pregnancy. They also assist with breathing and are activated with any trunk flexion, pulling, straining for bowel movement, coughing, laughing, and pushing a baby at delivery. They are lined and covered by connective tissue that joins together at the linea alba between the xiphoid process and the pubic symphysis.

Four layers of abdominal muscles cross the anterior torso, vertically, horizontally, and diagonally, and are often described as being like a corset, with the rectus abdominus as a front vertical panel, the transverse abdominus crossing horizontally and the external and internal obliques overlapping each other on the sides.

Pregnancy Concern: Diastasis Recti Abdominus (DRA)



By the end of pregnancy, the abdominal muscles have stretched considerably. If they are weak, the abdominals will not provide the necessary upward and interior support. As they stretch, the fascial linea alba where the rectus abdominus inserts, begins to thin and stretch as well, causing the abdominal muscles to spread apart from the linea alba. It is normal to have a slight separation during pregnancy: some diastasis recti develop in the second trimester while **most occur in the third trimester or while pushing during labor.**

Statistically, most separations tend to occur at or **above** the umbilicus, but in personal practice, I have found most either just below the navel or above And below.

If the abdominals separate an inch, or 2+ finger-widths apart, the condition **is known as a diastasis recti. With 3- to 4-fingerwidths separation, low back pain increases as abdominal support decreases.** A severe diastasis recti can impact a woman's pregnancy and birth and cause **long-term back discomfort even after birth.**

“Jackknifing” forward from a supine or sidelying position to a seated position can also cause strains and spasms to uterine ligaments, and also contribute to diastasis of the rectus abdominus.

CAUTION: Please encourage proper body mechanics for getting on and off your massage table to help avoid undue strain to the abdominals.

See Massage Therapist Tip: PREVENT ABDOMINAL & UTERINE LIGAMENT STRAIN

When Diastasis Occurs

Many women do not know when or if their abdominals have separated. I see postpartum women regularly, even years after birth, who have a diastasis and had no idea they had it! There is often no obvious sensation or sign when it occurs; it may happen over a period of time, and it is not generally painful to the abdominal muscles. However, a woman with a diastasis of 3 or more finger-widths will lack the anterior support for carrying the weight of the baby. Without the normal abdominal support, the posterior spinal muscles will compensate and become strained and shortened as they attempt to maintain a woman's posture without anterior assistance. The woman may complain of nagging low backache and may notice a strange bulging somewhere along her linea alba when her belly is flexed, as the abdominal contents are pushed through the opening. In extreme cases of diastasis recti, the bulge of the baby may be seen distinctly protruding through the opening. (I've seen this!)

When to Assess for Diastasis Recti (DRA)

Assessment for diastasis recti should be done **when beginning work with a client in the first trimester who has had previous births** (and therefore may have a diastasis already) and **who you expect to see throughout pregnancy**. It should also be done with every postpartum client.

This will help you ascertain risk for and cause of some back discomforts, and establish the need for corrective exercises. An assessment can be done anytime there is reason to think a separation may have occurred. Remember that if this is a woman's second or more baby, she may begin this pregnancy with a separation which developed in a previous pregnancy and she may be totally unaware of it.

Massage Therapist Tip: DIASTASIS RECTI PREVENTION

In many parts of Latin America and South America, women in traditional cultures wrap a cloth shawl around their abdomen during the second part of pregnancy. This cloth usually wraps beneath the abdomen several times and ties in the back. It acts as a support for the stretched abdominal muscles, holding the weight of the uterus and relieving stress to the low back. With this type of anterior support and constant pressure against the low back, certain postural issues may not develop as intensely as they might for a woman who has a large belly, weak abdominals, and no external support. **Search web for images of "Reboso" or "Faja".**

- Ask your client whether she has experienced diastasis recti. If so, suggest that she consult a physical therapist about preventative and corrective exercises during pregnancy. Many women find that prenatal pilates and yoga classes, which focus on developing this core abdominal strength, can be helpful, **however if done improperly, they may cause more problems than they fix.**
- Offer proper support for the pregnant belly in the second and third trimesters when positioning the client sidelying.
(Learn more in **MotherTouch: Pregnancy Positioning and Draping Online Course**).
- Teach the client proper body mechanics for rising from lying to sitting. (See "Massage Therapist Tip" above: **PREVENT ABDOMINAL & UTERINE LIGAMENT STRAIN**)
- Suggest the use of abdominal support binder in late pregnancy for women with especially large abdomens.

In the late second and through the third trimester, when the abdomen is large, corrective exercises are more difficult to do. Done incorrectly they could actually aggravate or worsen her condition if she already has a significant separation. While the Massage Therapist may not diagnose this condition, you can assess muscles and make referrals to a physical therapist if you think necessary. This is especially important if she has predisposing factors (see text box below) toward separation or she is complaining of chronic backache. If a diastasis is found, she can discuss with her prenatal care provider about the benefits of using an abdominal support girdle and about possible referral to a physical therapist who might be able to assist her in preventing further separation of the rectus during the final stages of her pregnancy.

Pregnancy Risks Factors Leading to Diastasis Recti Abdominus

- Large baby for the mother's size
- Multiple pregnancy (twins or more)
- Excessive amniotic fluid (polyhydramnios)
- Multiple births without sufficient recovery time between
- Pushing hard at birth with weak muscles
- Relaxin and estrogen softening and weakening connective tissue

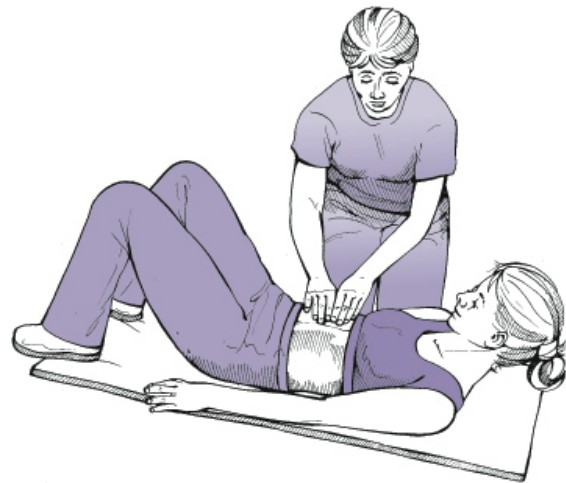
General Risks Leading to Diastasis Recti

- Obesity
- General weakness due to lack of exercise
- Straining due to constipation
- Previous hernias or diastasis recti
- Improper body mechanics when repositioning from lying to sitting or standing

How to Assess for Diastasis Recti

Essentially, to activate the abdominals to assess for a diastasis, the client must do a modified abdominal crunch. The following is a method for a client in her first trimester. I recommend you take my live course in order to learn how to do DR assessment correctly!

1. Have client lie supine with knees bent.
2. Place your fingers just below and above her navel in the center of abdomen.
3. Have the client exhale while slowly raising her head off ground. This will activate her abdominals.



CAUTION: Ensure that the client exhales during the head lift muscle activation. Breath-holding with exertion will increase intra-abdominal pressure and could increase the diastasis.

4. With her abdominals contracted, press lightly on the linea alba and slide your fingertips lat-

erally until you feel the edge of the abdominals. The should feel rigid. If there is no gap, your fingers may not move at all before touching the muscular edges. If there is a gap, your fingertips may slide out laterally 1 or more inches. Measure in fingerwidths by extending your fingers together between the edges of the abdominal wall.

CAUTION: It is much easier to assess for a DRA during the first trimester and especially in the postpartum time. If you assess this during late second trimester or during the third trimester, the separation may be **visually apparent as a bulge in the linea alba. Do not press your fingers into the abdomen, but instead observe for this bulge just above and/or below the navel.** A slight gap of 1 to 2 fingers is considered normal. Three fingers or more indicates the need for corrective exercises. Even without a gap, preventative exercises taught by a physical therapist should be started in the first trimester and continued through the pregnancy. The good news about diastasis recti is that minor separations of less than 2 fingerwidths tend to correct themselves in the first year postpartum even without specific exercise. Larger ones are generally correctible with exercise.

THE PSOAS

The iliopsoas is a primary hip flexor that helps support the low back, the fetus, and the abdominal contents. It orients the tilt of the pelvis, helps hold the body upright, and stabilizes the spine and pelvis. In pregnancy, as the ligaments that normally stabilize the low back and pelvis are stretched and softened by relaxin and estrogen, they become less reliable; the psoas then must work harder. When your client is standing, a tight psoas may pull down on the anterior lumbar vertebrae; this action will cause shortening of the lumbar spinal muscles and lead to an increased anterior pelvic tilt and lumbar lordosis that causes back pain.

A circular problem develops: when the psoas tightens, the anterior pelvic tilt increases; when the anterior pelvic tilt increases, the uterine weight shifts forward. With the weight fallen more forward, the abdominals stretch and lose tone, causing an even greater increase in pelvic rotation. In addition, if the psoas is tighter on one side than the other, pelvic alignment will shift, causing strain and discomfort on the entire side of the body that is trying to compensate for the imbalance. **A tight or spasmed iliopsoas will often be experienced as low back pain, sacroiliac pain, anterior thigh pain, sciatica sensations, and sometimes as pain in the iliacus area.** It may also cause concomitant dysfunctional adaptations with the hips, knees, upper back, lower back, neck, feet, and ankles.

To address this issue, the psoas can be stretched and toned to release tension on the lumbar spine and to allow the pelvis to support the spine most efficiently. I usually do this as an activated and supported stretch off the end of my table, or with stretch-release activation in sidelying position. Postural education is also an important tool to assist the psoas in supporting a properly balanced pelvis. **You will learn both these treatments in the [MotherTouch Prenatal Bodywork Certification Live Courses](#).**

CAUTION: Generally, the psoas should not be massaged with direct hand or finger pressure during pregnancy when the risk of miscarriage is high, or after the first trimester when the baby is in the way. While the psoas can be accessed during the first trimester without touching the

uterus, it is typically avoided, since deep abdominal massage is generally contraindicated during the first trimester. (This is discussed in more detail in **Precautions and Contraindications for Bodywork During Pregnancy Online Course**.)

Despite this contraindication, if useful and if agreeable to the client, gentle myofascial work just inside the iliac fossa, without going deep into the abdomen, may be appropriate, even in the first trimester. In addition, there are chiropractors and other advanced practitioners who feel confident to do psoas work. They may actually move the baby/belly to the side during the late stages of pregnancy to work on the psoas in order to reposition a breech or mal-positioned baby. I recommend this Only for those with very advanced skills and experience with pregnancy, and are ready to address a client's concerns.

QUADRATUS LUMBORUM (QL)

The quadratus lumborum is an important stabilizer of the low back that assists spinal extension when it bilaterally contracts, helps the trunk flex laterally with one-sided contraction, and fixes the 12th rib during respiration. It extends from the posterior iliac crest to the lower border of the 12th rib and attaches on the lumbar transverse processes. During pregnancy it becomes shortened due to anterior pelvic tilt and lumbar lordosis. Many women may experience soreness, spasm, or general aching in the quadratus lumborum during pregnancy; others are unaware of its specific tension and relation to their low back discomfort until it is touched with massage. Due to a mother's increased hip and waist size, it can be difficult, yet still important, to access this muscle during pregnancy and help it release with massage and stretches.

Massage Therapist Tip: CONSIDERING THE QUADRATUS LUMBORUM

- For specific ways of working with the QL consider the **[Massage Techniques for Pregnancy Online Course](#)** or the **[MotherTouch Prenatal Bodywork Certification Live courses](#)**.
- Passively stretch the QL while the client is in the sidelying position, by using a wedge or pillow under her waist, extending her QL on her upper side.
- Encourage the client to explore comfortable ways of stretching the QL herself.

PREGNANT CLIENT CASE STUDY

I have many third trimester pregnant clients who arrives waddling into my office holding their back and complaining of back and hip pain. It is not an uncommon sight! Let's imagine a client who is 38 weeks gestation, 4th pregnancy, with 3 young children. From her health intake form and through questions during the initial interview, I learn that she has been having generalized back pain for the past month of her pregnancy, and has found little relief. She describes the pain as a general aching across her low back and in the sacro-iliac area and places her hand just above her posterior ilium along the quadratus lumborum and just lateral to the sacrum. At times she feels twinges of pain down her left leg. She has felt general tension in her neck and shoulders and is tired of being pregnant. Her doctor told her these were normal pains that she could expect from being pregnant. She otherwise had had no abnormal or high-risk conditions and no other discomforts, apart from some morning sickness in the first months. She states that she is carrying 25 pounds extra that she gained during the last pregnancies and had not lost before this one.

I ask her to stand in a relaxed posture for a moment to observe her stance. Often I see that hips, knees, and feet are laterally rotated. She may have a tendency to hold the low back with one hand, and arch back to support the weight of the abdomen. **The size of a woman's belly at any particular stage of pregnancy is dependent on the size of the baby, the position the baby tends to favor in utero, the number of previous term pregnancies, and the tone of her abdominals.** Considering she has other young children, it is very unlikely that this client is getting focused exercise, but instead is in constant motion, lifting and tending to young children.

After ensuring that she has discussed her discomforts with her care provider, and **has confirmed that she is having a low-risk pregnancy**, I would consider the following factors contributing to back pain:

1. **Mother of young children:** This entails frequent lifting, leaning over with the weight of a baby or child to put him or her in a car seat, and carrying children on one hip, shifting posture to the side to carry the child.
2. **Fourth pregnancy:** The more pregnancies and deliveries a woman has had, the more risk she has for loss of abdominal tone, hypermobile ligaments, and diastasis recti.
3. **Lack of exercise:** Without recovery strengthening exercise from previous pregnancies, this client is even more at risk for developing stresses and strains during and after pregnancy.
4. **Excess weight:** If there has been extra weight gain beyond normal pregnancy gains, this client now also has increased her risk of diastasis recti and low back pain.
5. **Poor posture:** Watch for poor posture, exacerbated by weak muscle tone, which will also increased the strain on all muscles.
6. **Large breasts:** Large breasts, that are now even larger preparing for lactation, influence posture as well, causing medial rotation of the shoulders, and some kyphosis, resulting in upper back and neck pain.

How I proceed: I would do the postural assessment and Tree Posture discussed above. This is often eye opening for a client who has not paid any attention to how she is sitting and standing, because there is often immediate relief to some of her complaints. Of course this awareness must become habitual in order to build the muscles that support this posture.

Once on the massage table, if she were earlier in her pregnancy, I might assess the client's abdominals for a DR in the supine position, as discussed above, avoiding supine position for longer than the few moments necessary to assess. However, at this late stage of 38 weeks, I would probably instead encourage her to have her muscles checked during the postpartum time. If I find a DRA or I suspect it but am still unsure, I would refer her to a PT who works with these concerns during pregnancy.

During the massage, I focus on creating **Length and Space**, opening chest and pectoralis, addressing intercostals, stretching quadratus lumborum, working with gluteals, lateral hip rotators, and probably the pelvic floor attachments where externally accessible on medial ischial tuberosity and ramus. And of course I'd give her lots of yummy relaxing massage as any mother of young children will need!

SUMMARY

Primary musculature is stressed by pregnancy due to weight gain and necessary postural adjustments to support the anterior weight of a growing baby. The psoas, quadratus lumborum, pelvic floor muscles and the abdominals are core muscles that support and stabilize the pelvis during pregnancy. With more understanding of the muscular strains and the importance of postural awareness during pregnancy, use the information in this chapter to help your clients have a sensory understanding of appropriate posture for her stage of pregnancy. By reviewing her posture at each massage session or least once each trimester, along with suggesting local or online resources for learning to stretch and strengthen primary muscles, you will give your client tools to aid her search for comfort and stability.

Check out other Online MotherTouch courses to learn specific bodywork techniques and particular ways to address these core-stabilizing muscles.

**And DON'T FORGET THE POSTPARTUM CLIENT!
Postpartum women need specialized and focused care—
they are not just like a non-pregnant client!**

**Consider taking the MotherTouch Live course :
Bodywork for the New Mother**