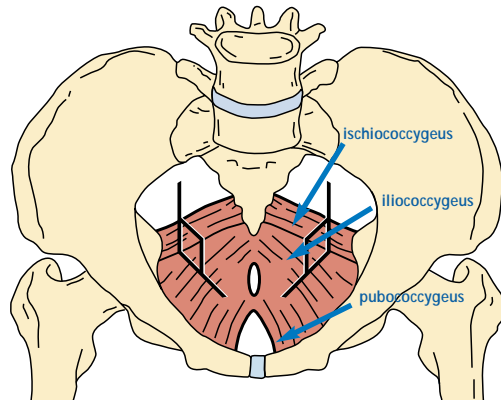


The muscles of your pelvic floor are critical for optimal function of your low back, pelvis, uterus and bladder. Yet 50% of women do not know how to contract these muscles when given either a verbal or written command.

This finding is not surprising since every vaginal birth causes some soft tissue damage to the muscles of the pelvic floor and damage to their nerve supply in 80% of women.

However, through the use of Real Time Ultrasound Imaging, it can be seen that even women who have not had children often have difficulty effectively contracting this muscle group.



is nutated or tilted forward at its superior aspect. The amplitude of sacral nutation is controlled by co-activation of the pelvic floor muscles and the sacral multifidus. These two muscle groups act as a force couple and when the sacrum is slightly nutated by the proper activation of these two muscles, the pelvis and the lumbosacral junction are more stable.

The muscles of the pelvic floor and the deep fibers of the multifidus are part of the inner unit or local system of muscle stabilizers for the low back and pelvis. These muscles are commonly called the “core” stabilizers for the lumbopelvic region and function in conjunction with the diaphragm and transversus abdominis. A group of scientists investigated the co-activation pattern of the

or lower extremity. This requires proper activation of the muscles which stabilize the lumbopelvic region, including the transversus abdominis, multifidus and pelvic. Several compensation strategies have been noted when stabilization of the lumbopelvic region is lacking. Some of these include abdominal bulging, breath holding, rotation of the pelvis and/or thorax and an inability to maintain lateral costal breathing while loading. The ASLR test can be used to identify these strategies. Further examination of the core muscles is required should any of these strategies be observed. Although the ASLR may suggest that the pelvic floor is weak, a physical therapist’s confirmation is required by either palpating the efficacy of the muscle’s contraction vaginally or visualizing the impact

**Conclusion**

This has been a brief introduction into the scientific evidence regarding the pelvic floor. It is a hidden muscle group, that is hard to see, difficult to feel and rarely addressed as often as it should be. When you are doing or teaching any exercises you or your client should not feel a descent of the pelvic floor or feel that the uterus or bladder are being forced inferiorly. Because there is no external way of testing the strength of the pelvic floor muscles, a therapist who specializes in the assessment and treatment of pelvic floor function and dysfunction should be consulted if you suspect any difficulties connecting to this muscle. Remember, 50% of women who think they are contracting their pelvic floor, are not and it is impossible to strengthen the pelvic floor with

# Helping Your Clients Connect

BY BETH EVANS

Although it is difficult to identify whether or not a client is engaging the pelvic floor, relying on STOTT fundamentals will help. The following cues for core stabilization should be done before any other STOTT PILATES exercise.

- Have your client sit tall and lean forward slightly. Have them focus on pulling up the front of their pelvic floor as though they are trying to stop the flow of their urine.

- Have your client lie supine. Have them maintain a neutral pelvis and lumbar spine, and again contract their pelvic floor.

- You could also ask the client to imagine their pelvic floor contracting like an elevator lifting up inside themselves. The idea is not to contract the muscle as hard as possible. If there were five floors altogether, the elevator would just be going to the second floor. Many people will feel their transversus abdominis contract simultaneously.

- Finally, have the client coordinate the contraction of the pelvic floor with the breath and the contraction of the transversus abdominis. Have the client inhale in a relaxed manner. Have them exhale feeling a gentle contraction of the pelvic floor and transversus without moving the spine out of neutral.

This should always be the initial stabilization that happens before any other movement in any STOTT PILATES exercise.

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Always provide clients with proper cues to help them effectively contract the pelvic floor.

# Are You Really Contracting your Pelvic Floor?

BY DIANE LEE, PHYSIOTHERAPIST

**Anatomy**

For a complete description of the anatomy of the pelvic floor the interested reader should consult “*The functional anatomy of female pelvic floor and stress continence control system*,” a study by Howard Ashton-Miller. Briefly, the pelvic floor is comprised of two muscle groups: the levator ani (puborectalis, pubococcygeus and iliococcygeus) and the ischiococcygeus. Anteriorly, the puborectalis and pubococcygeus attach to the body of the pubis and the anterior part of the obturator fascia. The puborectalis runs posterior, lateral to the urethra, vagina and rectum to unite with its counterpart and forms a muscular sling at the anorectal flexure. There is no posterior osseus attachment. The pubococcygeus runs posterior, inferior to the puborectalis, and attaches to a midline raphe behind the rectum. Through this raphe, fibers unite and continue posteriorly from the anorectal flexure to attach to the anterior aspect of the last two coccygeal segments. The iliococcygeus arises from the posterior part of the arcus tendineus fascia, which is a thick white line of fascia overlying the obturator internus. Fibers from this muscle complete the posterior pelvic floor and attach to the anterior aspect of the coccyx. The ischiococcygeus arises from the ischial spine, blends with the sacrospinous ligament and attaches to the

sacrum at its lateral border from S3 to S5. It forms the posterior wall of the pelvis and lies in the same plane as the piriformis muscle.

**Function**

The muscles of the pelvic floor play a critical role in both urinary and fecal continence as well as stabilization of the joints of the pelvis. It is known that load transfer through the pelvic girdle is more effective when the sacrum

pelvic floor and abdominals using needle EMG for the abdominal wall and surface EMG for the pelvic floor. They found that the abdominals contract in response to a pelvic floor contraction and vice versa. They also found that a submaximal contraction of pubococcygeus elicited the greatest response in transversus abdominis. This research suggests that the pelvic floor can be facilitated by co-activating it with the transversus abdominis and vice versa.

Imbalance between the muscles of the pelvic floor is not uncommon for clients with low back or pelvic pain. When the pubococcygeus is weak and the ilio and ischiococcygeus are overactive, the pubic symphysis is poorly supported inferiorly and the sacroiliac joints are overly compressed inferiorly. This can occur unilaterally or bilaterally and can also be associated with or without dysfunction of the multifidus and the transversus abdominis.

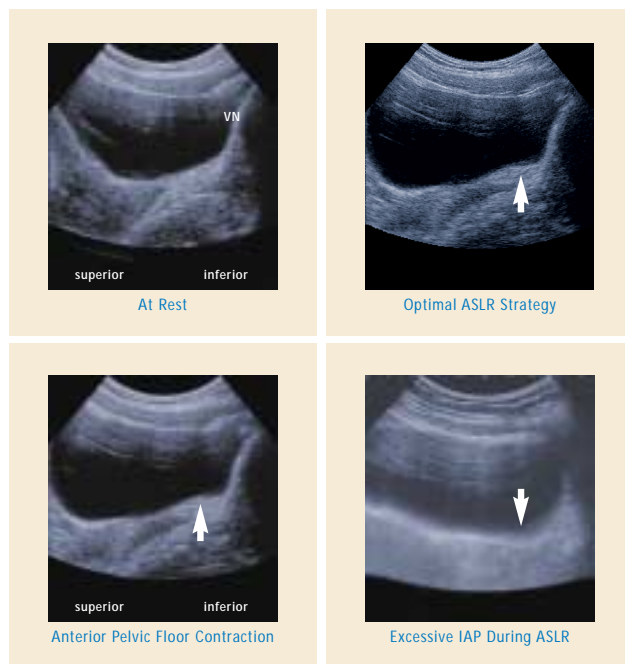
**Assessment**

So how can you tell if you are using your core muscles correctly? The Active Straight Leg Raise Test (ASLR) has been validated as a clinical test for measuring effective load transfer between the trunk and lower limbs. When the lumbopelvic region is functioning optimally, the leg should rise effortlessly from the table and the pelvis should not move relative to the thorax

of a proper muscle contraction via Real Time Ultrasound Imaging of the bladder.

Real Time Ultrasound Imaging (RTUS) has been used both as a diagnostic and a biofeedback tool in the motor control analysis and training of the core stability muscles. Using RTUS has shown that some patients with pelvic and low back pain cannot control the position of their bladder during an ASLR. The bladder descended inferiorly as they raised their leg and when compression was applied to the pelvis during the ASLR, this descent was controlled. This suggests some clients use a bracing strategy to transfer load through the pelvis either with a valsalva with breath holding and abdominal bulging or co-contraction rigidity of the global trunk muscles (i.e.: the oblique abdominals, rectus abdominis and erector spinae muscles).

Both of these strategies dramatically increase the intra-abdominal pressure and create a strong downward force on the bladder. The impact that a repetitive increase in intra-abdominal pressure has on bladder position control can be demonstrated with RTUS. Optimally, the bladder should not descend during an ASLR. Repetitive downward pressure on the bladder and uterus will eventually stretch the fascial slings which support these organs and a downward movement of the bladder during the ASLR is seen with RTUS. Prolapse and incontinence will likely follow.



Real Time Ultrasound Imaging provides a visual representation of the Active Straight Leg Raise Test and common bracing problems.