

Front and Center Pilates as Injury Prevention

By Megan Shuffle Shepherd



As a tall, lanky, hypermobile kid who loved musical theater, I decided it would be advantageous to learn to dance if only to supplement my ever growing jazz hand habit. So at age 14, I auditioned and was accepted to the dance training program at my high school in southeast Texas. I chalked up my admittance in near entirety to just those things: tall, lanky, hyper-mobile, and VERY theatrical. I also liked to be in the front row.

I knew right away that I was behind. Terminology was not only confusing, but I had little to no clue how to get my body to do the things that was being asked of it. The biggest confusion was finding your “center”. I honestly thought this was a concept that everyone else not only understood but was able to summon on a moment’s notice, like calling for Tinker Bell. I aimed to work harder and longer than everyone else in hopes that I could catch up — that by trying really really hard, I would get it. I would get “my center”.

It should surprise no one that tight hip flexors, low back pain, subluxated ribs, stress fractures and rolled ankles followed. I kept barreling along and while I slowly started to build strength and a bit of control I continued to be peppered with the occasional rolled ankle, slipped rib and SI joint flare up. While manageable for the most part, these “annoyances” never fully went away. The worst part was I thought that injury was part of the price you had to pay to be good at something...a badge of honor. To combat this, I did a million sit ups and worked my hamstrings until they were more elastic than Stretch Armstrong. I was convinced I was doing more than enough.

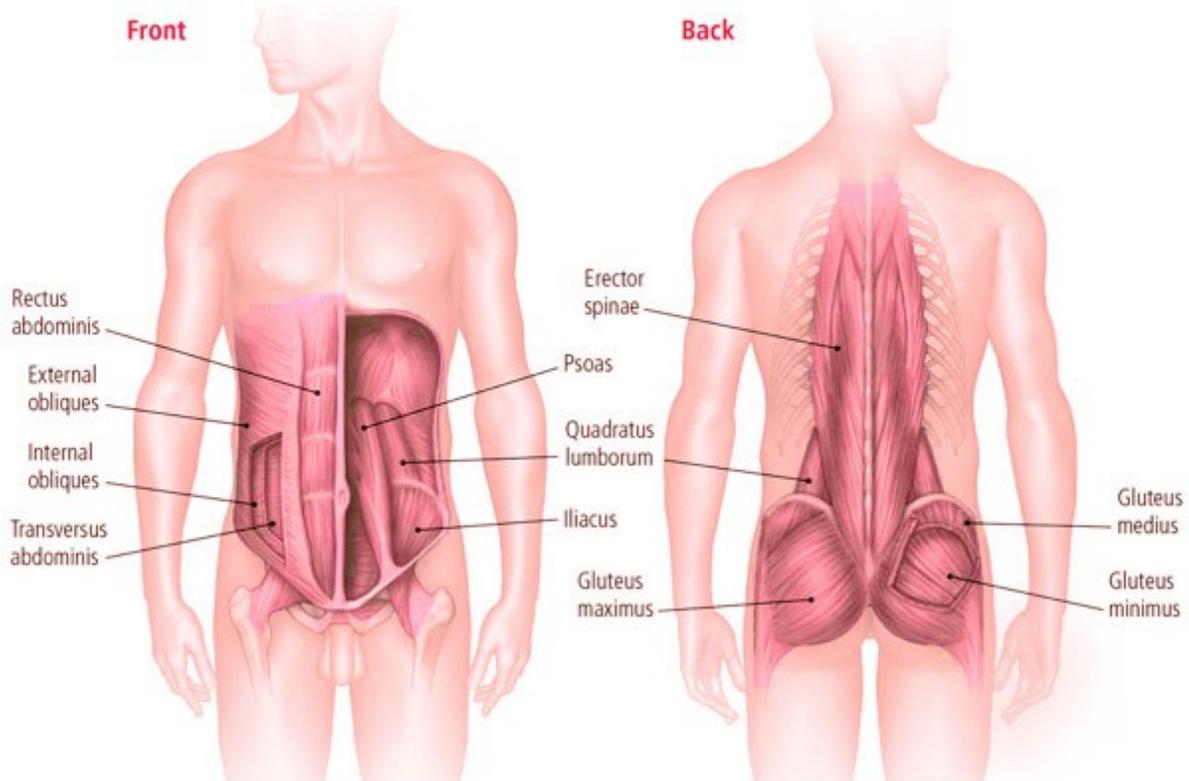
Towards the end of my college dance career I was introduced to both Pilates (by my sister), and a full on anatomy and physiology course by my college professors. I went into both as most dancers might; convinced that I knew my body, that I was strong and flexible and smart. To a certain degree, I was all of those things. The thing that I wasn’t, however, was able to access any of my core muscles when called upon to do so or even name what my core was let alone other major muscles or bones. Only through patient, knowledgeable teachers and a willingness to realize I didn’t know everything, did I let go enough to find how to access the strongest part of my body and begin to change the way I was moving.

Time and time again, we see studies of core stability and its relationship to avoiding overuse injuries.

- “There is a clear relationship between trunk muscle activity and lower extremity movement. Current evidence suggests that decreased core stability may predispose to injury and that appropriate training may reduce injury.”
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- © 2005 by the American Academy of Orthopaedic Surgeons
- Core Stability and Its Relationship to Lower Extremity Function and Injury
- [John D. Willson](#), MSPT, [Christopher P. Dougherty](#), DO, [Mary Lloyd Ireland](#), MD and [Irene McClay Davis](#), PhD, PT

Pilates is a practice that functions primarily on these 6 key principles: breath, concentration, center, control, precision, flow. The point is to move and to move balanced.

Let’s chat about the elusive “center” and how to improve core stability through a handful of Pilates exercises.



I love how the authors of Pilates Anatomy describe the center:

What is it?

When we talk about the center, we are talking about the body's center of gravity. The body's center of gravity is the single point about which every particle of its mass is equally distributed—the point at which the body could be suspended and where it would be totally balanced in all directions.

...

The core, or center, consists of the abdomen, lower back, and pelvis. The abdominals and the lower spinal extensors are considered particularly key to the concept of the powerhouse. In addition, the concept of the core includes the pelvis and, in general, the primary muscles that influence the movement and stability of the pelvis.

**excerpt from [Pilates Anatomy](#) by Rael Isacowitz and Karen Clippinger*

How do I find it?

Each person is built differently and has an individual center of gravity. Where the center of gravity lies distinctly affects how an exercise feels and how difficult or easy it is to execute. Therefore it is a mistake to assume a person lacks strength if he cannot execute an exercise successfully. Lack of success may have more to do with how the person is built and the distribution of body weight.

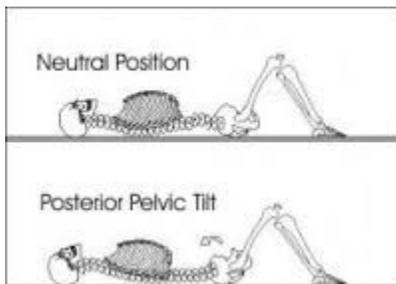
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When standing upright with the arms down by the sides, the center of gravity of the average person is located just in front of the second sacral vertebra and at about 55 percent of the person's height. However, significant variances can be observed within, as well as between, genders.

**excerpt from [Pilates Anatomy](#) by Rael Isacowitz and Karen Clippinger*

In other words, knowing where your physical center is can lead to a better understanding of how to access it through focused and isolated exercise giving the dancer the ability to find full and controlled range of motion.

Pilates Exercises to Integrate into Daily Training



1. Neutral (toe taps in neutral pelvis)

Lie on your back with your feet on the ground and knees pointed towards the ceiling. Adjust your pelvis to make sure that your ASIS, the bony front points of your hips, and Pubis are on the same frontal plane. I like to tell my clients that if I were to place a marble between your bellybutton and pubic bone and two hip points, it shouldn't roll anywhere. Most people will have a slight arch in their lumbar spine (lower back) which is part of the natural curve

of your spine. The heads of your femurs, or thigh bones, should be able to rest comfortably in your acetabulum (hip socket) and release your hip flexors from gripping.

(knee folds/toe taps)

Once you find your neutral pelvis, take an inhale.

On the exhale, pull up from your pubic floor and draw your belly into your spine without moving your pelvis as you lift the right leg into tabletop. If this is too grippy on your hip flexors, release your heel to your glutes.

Keeping the leg the same shape and without moving your pelvis, tap your toe to the ground and bring it back up on the exhale.

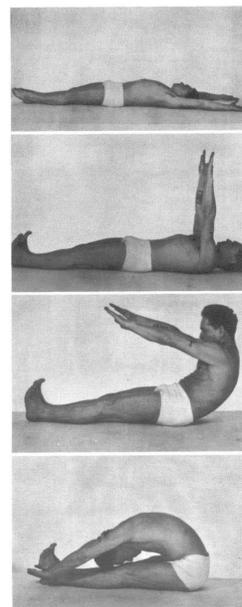
Repeat this 6 times and switch to the other leg.

Added challenge: You can also do alternating legs by starting with both legs in tabletop or even add a partially deflated ball (an over ball works great) under your sacrum for added challenge. (Over balls are the soft balls used in pilates and other exercise classes.) Remember, the goal is core stability. Use your breath and exhale on the contraction.

Flexion (roll up)

1. Extend your knees so that your legs are lying flat on the ground.
2. Bring your arms up overhead with your elbows in line with your ears. Again, watch that your ribs are not “popping out”.
3. On the exhale, float your arms forward followed as you tuck your chin in towards your chest. Let the rest of your upper body peel up and off of the mat and continue reaching forward past your toes. Imagine that there is a beach ball sitting on top of your thighs to find a full “c curve” starting from your pelvis and continuing through the top of your head.
4. Take an inhale. On the exhale, tuck the pelvis and begin imprint your entire spine back onto the mat one vertebrae at a time.
5. Let the arms float back to up your ears.
6. Repeat 6 times.

Added challenge: Hold onto a magic circle or theraband as you roll up and down.

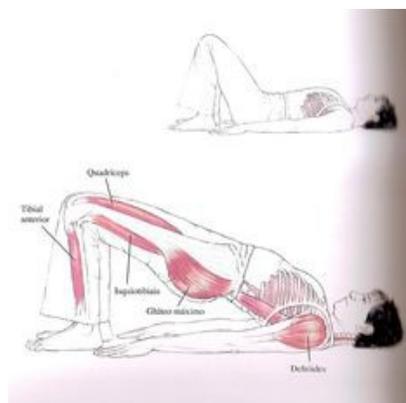


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Image via Return to Life

Extension (bridge)

1. Find neutral pelvis with arms are down by your side on the floor or mat, tuck your pelvis and imprint your low back onto the mat.
2. Lift the hips in the air making an isosceles triangle with your body. Natural tendency is for the ribs to pop out. Let the ribs be heavy into the mat and concentrate on lifting only from the hips while pulling your bellybutton towards your spine.
3. You can stay here for several breaths and on an exhale, let the spine articulate down vertebrae by vertebrae onto the mat until your return to neutral pelvis.



Added challenge: Place a block or ball between your things to activate your adductors (inner thigh muscles). You can also add toe taps to your bridge (without the block) by bringing the leg up to tabletop and tapping it down and bringing it back up. Take it a step further by extending the knee of the lifted leg and lower and lift the leg 6 times. Switch to the opposite side. Keep the hips even and the pelvis stable.



Lateral Flexion + Rotation (side bridge and twist)

Image via bodyandsoul.com.au

1. Go into side bridge making sure that hips are stacked on top of each other and your bottom hand is pushing against the floor to activate the upper back. If wrists are weak, you can rest on the forearm as shown above. The opposite hand is reaching towards the sky.
2. Using the obliques, lift the hips and twist from the spine reaching the hand under the body.
3. Take the arm back up to the side and bring your hips level.
4. Repeat 4 times and switch sides.

Added challenge: Before the twist, lift the top leg away from the supporting leg. Think about connecting your supporting arm to your lifted leg and visa versa. Set the leg back down before you twist.

Bonus Exercise (pilates push ups)

1. Begin standing in anatomical position (toes forward, palms facing front)
2. Nod the chin in towards the chest, swing the rib cage back and slowly roll down to reach your hands to the floor. Let your knees gently bend at the last moment.
3. Walk your hands out to the push up position.
4. You can choose the amount of push ups that you do here, but I like to start with 5.
5. Walk your hands back to your feet and slowly roll back up.
6. Repeat 4 more times, decreasing the number of push ups to 4, then 3, then 2 then 1 with each set.

Added challenge: Put a block between your ankles or thighs to increase inner thigh engagement.

This entire set should take no longer than 10-15 minutes. Encourage your dancers and each other to move through the exercises with the 6 key principles in mind: breath, concentration, center, control, precision, flow. **The biggest challenge I see in most dancers is that they think that the biggest ROM (range of motion) means that they are doing an exercise correctly.** Ask them to begin to think about the subtleties of their bodies (moving from their bones or, bony alignment) and how the muscles follow. See how practicing this 3-5 times a week changes their movement quality and occurrence of injury over time.

Happy moving!

Megan Shuffle Shepherd is a Pilates professional living in Brooklyn, New York with a background working in performance, dance business and corporate fitness. Megan loves to share how the practice has changed her life through writing, teaching and leading workshops for young and pre-professional dancers. .