

Stroke Recovery Training

Stroke Statistics

- Someone has a stroke every 40 seconds in the U.S.
- 7 million stroke survivors in the U.S.
- 5th leading cause of death in the U.S.
- Twice as many woman die from stroke then breast cancer.
- A stroke can happen at any age.
- It is the leading cause of disability in older people.
- Although statistics are high, studies show that up to 80% of strokes can be preventable.



What is a Stroke?

- A stroke is damage to the brain by interrupted blood supply
- A stroke can also be referred to as a brain attack.
- A stroke can also be referred to as a CVA, cerebrovascular accident.
- A stroke can be caused by a blood clots that block blood supply.
- A stroke can be caused by a blood vessel in the brain the bursts.
- Blood supplies oxygen and nutrients to the brain. When blocked it causes brain damage.
- A blockage is also known as an infarction or infarct.
- As in a heart attack, heart tissue dies. In a brain attack, brain tissue dies.

Signs of a Stroke

- Trouble walking.
- Trouble speaking, as in slurring words.
- Having a hard time understanding others – conversations.
- Paralysis or numbness of the face, arm and/or leg.



The F.A.S.T Test

- Identify a stroke by using the **The F.A.S.T Test**.
 - **FACE** Is their face drooping on one side? Can they smile normally?
 - **ARMS** Can they raise both arms, and keep them up?
 - **SPEECH** Speaking. Are they slurring in their speech?
 - **TIME** Any signs of a Stroke call 911 Immediately!
- 
- **Time is Brain** – It is crucial to get immediate medical attention with any sign of a stroke, even if it appears to be a mini stroke.

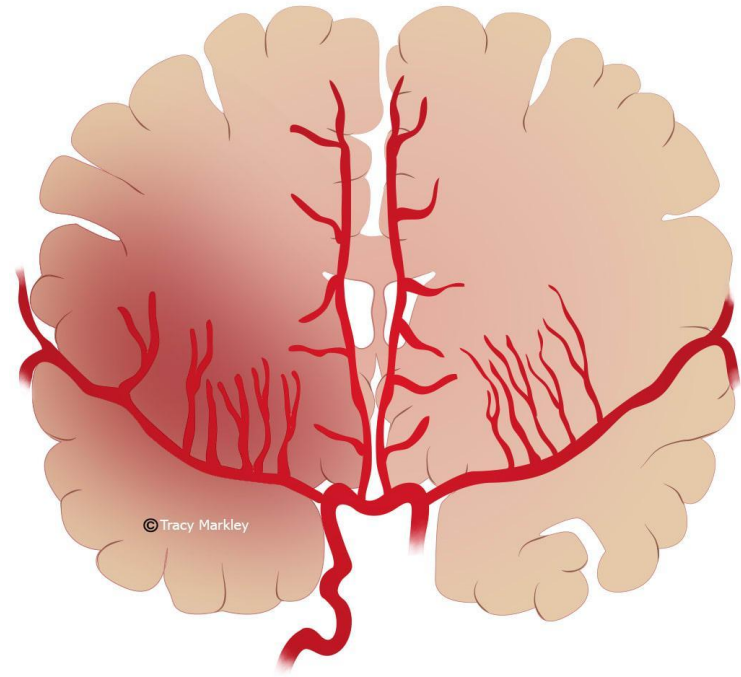
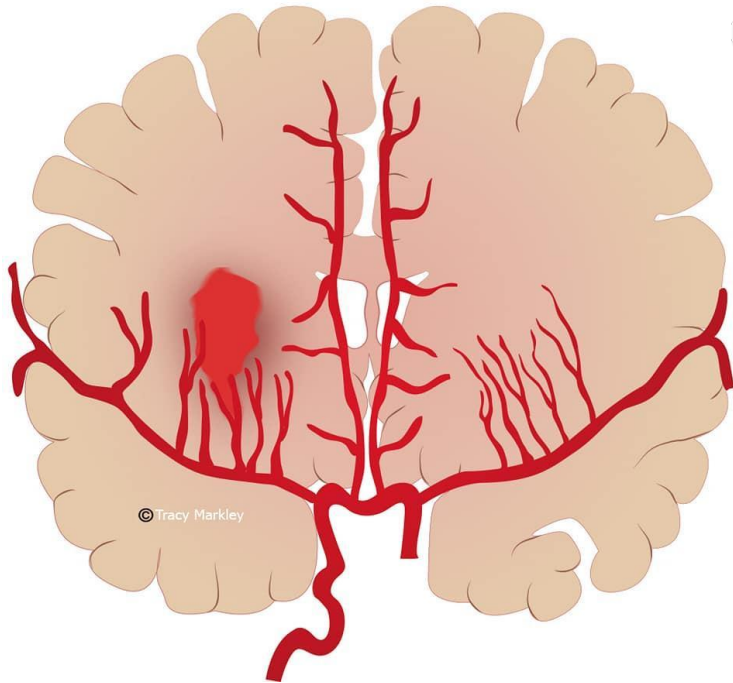
Types of Strokes

- The three main types of strokes are:
- Ischemic strokes
- Hemorrhagic strokes
- TIA Transient Ischemic Attack. “Mini Stroke” A warning sign.



Ischemic Stroke

Hemorrhagic Stroke



Ischemic Stroke

- Most strokes are ischemic strokes.
- About 87% of strokes are ischemic.
- Ischemic stroke happens when blood flow through the artery that supply oxygen-rich blood to the brain becomes blocked.
- Blood clots often cause the blockages that lead to ischemic strokes.



Hemorrhagic Stroke

- A hemorrhagic stroke happens when an artery in the brain leaks blood or ruptures.
- The leaked blood puts too much pressure on brain cells, which damages them.
- High blood pressure and aneurysms, balloon-like bulges, in an artery that can stretch and burst, are examples of conditions that can cause a hemorrhagic stroke.
- There are 2 types of hemorrhagic strokes:



2 Types of Hemorrhagic Strokes

- **Intracerebral hemorrhage** is the most common type of hemorrhagic stroke. It occurs when an artery in the brain bursts, flooding the surrounding tissue with blood.
- **Subarachnoid hemorrhage** is a less common type of hemorrhagic stroke. It refers to bleeding in the area between the brain and the thin tissues that cover it.



Transient Ischemic Attack (TIA)

- A transient ischemic attack (TIA) is sometimes called a “mini stroke”.
- A TIA is different from the major types of strokes because blood flow to the brain is blocked only for a short time.
- Blockage can be from a few seconds to 5 minutes.
- TIAs are short and usually won’t cause lasting damage.
- Still treat a TIA as an **emergency** and get care right away.
- A TIA is a warning sign of a future stroke.
- It is not always clear to know the difference between a major stroke and a TIA.
- Like ischemic strokes, blood clots often cause TIAs.



Transient Ischemic Attack (TIA) Continued

- More than a third of people who have TIAs, who don't get treatment, have a major stroke within one year.
- As many as 10%-15% of people will have a major stroke within 3 months of a TIA.
- It is common that some TIAs are unnoticed and undiagnosed.
- Most of the time, a doctor can see in a scan that a patient has had a TIA in the past.



80% of Strokes Can Be Prevented

- Know your blood pressure
- Check for Afib (Atrial Fibrillation)
- Don't smoke. Smoking doubles the risk of a stroke.
- Drink in moderation
- Manage cholesterol
- Manage diabetes
- Exercise
- Low fat and low sodium diet
- Watch circulation
- Call 911 at any symptoms of a stroke.



Many Factors Play a Roll in Stroke Recovery

- Time between having stroke and getting medical care
- Patience
- Sleep and getting plenty of rest, if possible
- Other health conditions or injuries a survivor may have
- Motivation
- Emotional well being
- Cognitive skill struggles
- Age can make a difference
- Stress and/or lack of Stress



Many Factors Play a Roll in Stroke Recovery

- Proper physical therapy
- Neurological exercises
- Being consistent and repetitive in movements daily
- A healthy diet
- Proper hydration for the body and the brain
- Mindset
- Support system
- Intensity of the brain damage from the stroke

Emergency Care – Time Sensitive

- The longer the brain goes without blood supply the more damage will happen.
- Specific medications and/or treatments can be done within three hours of having a stroke that will prevent the intensity of brain damage.
- It is crucial to get medical attention ASAP.
- **Don't wait, even if you are unsure. Get checked anyway.**



No Stroke Survivor is the Same

- Every stroke survivor will be different.
- This is important to know.
- Most sources state that there are over 650 named skeletal muscles in the human body, although some figures go up to as many as 840
- The human brain alone contains over 100 billion nerve cells, and each nerve cell can have up to 10000 connections to other nerve cells
- We don't know exactly which one nor how many of the muscles and nerves are not responding.
- The more we know the natural movement and function of the body, the better chance we can rebuild the body properly, if the individual's brain can make the changes needed. Some damage can be permanent.

Don't Fake it for A Client

- Limited knowledge will limit the recovery of a Stroke Survivor
- A survivor's recovery affects the rest of their life
- Ask questions to peers and those with knowledge
- Refer out to a therapist or fitness professional with Stroke Recovery Experience
- Seek out knowledge

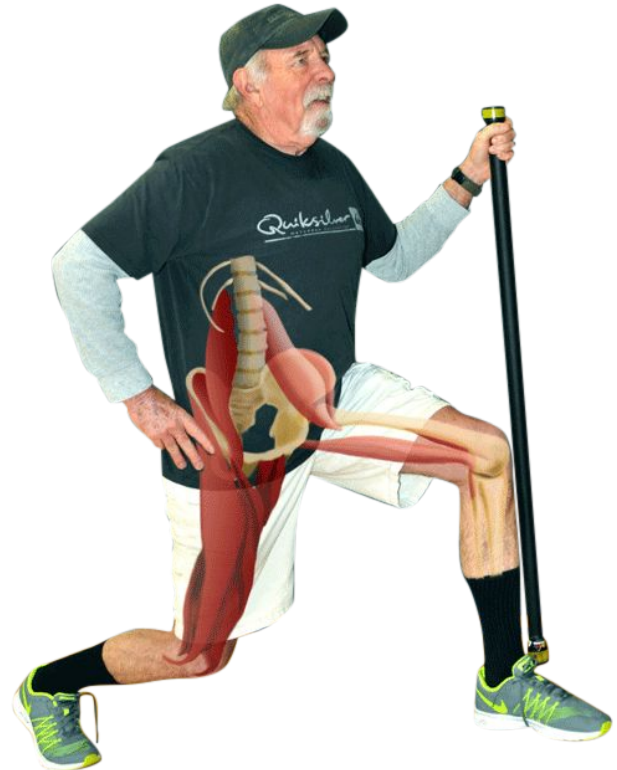


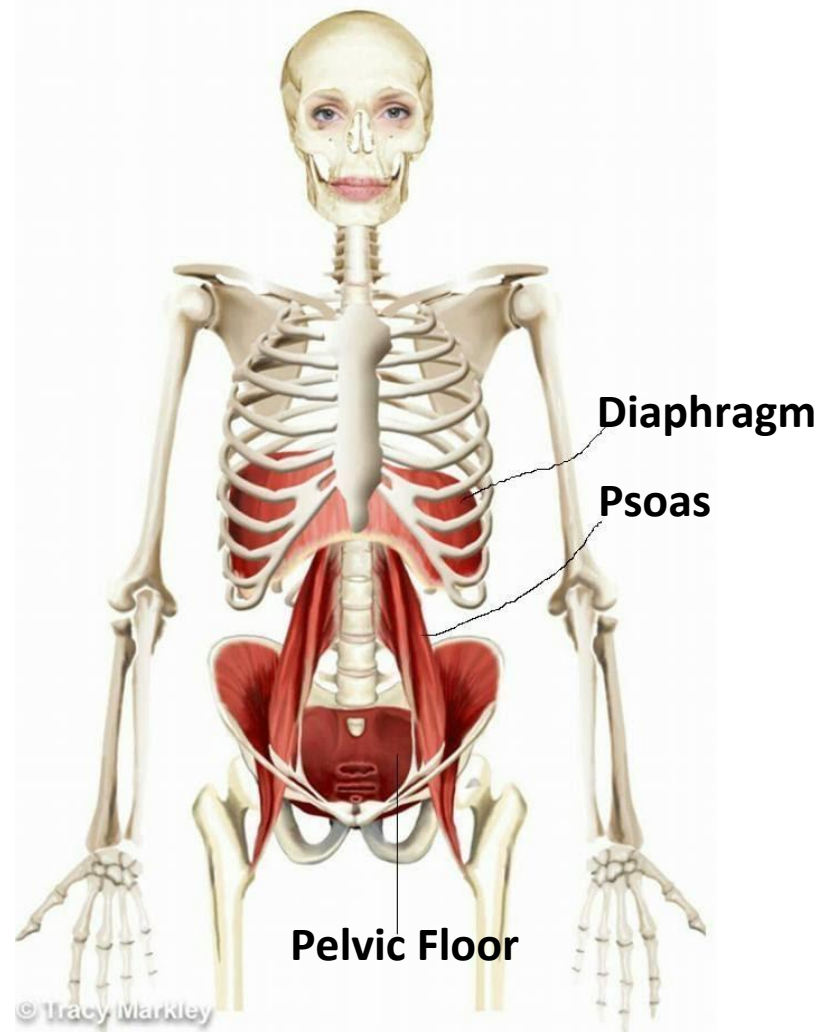
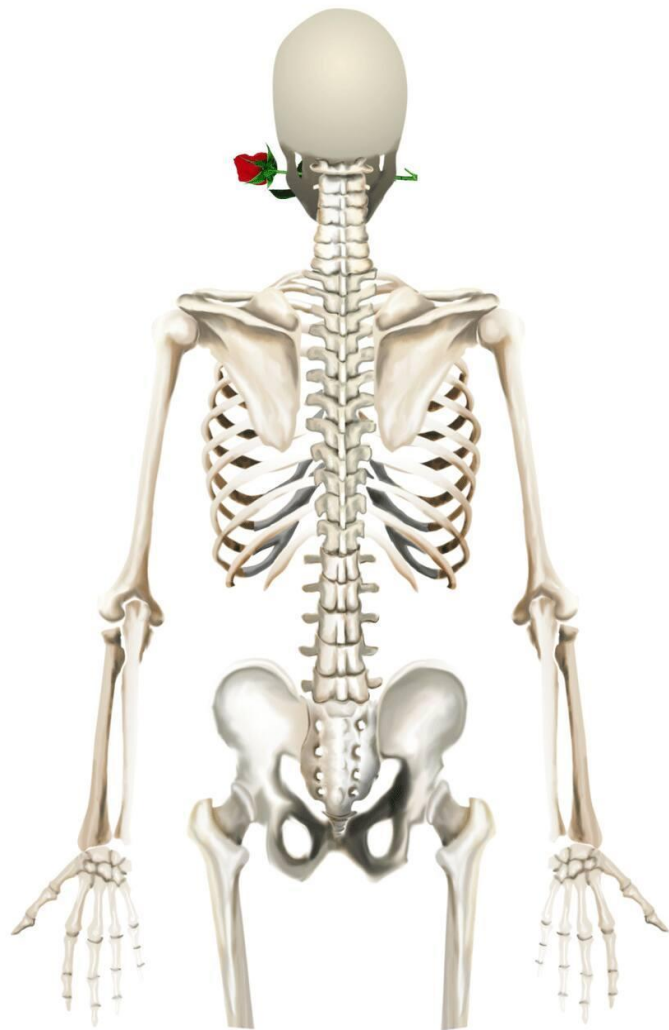
Know Muscles & Biomechanics of the Body

- After a stroke the body needs to be put back together for movement
- The brain is having a hard time getting messages to the nerves, muscles, and fascia to move the body.
- The more knowledge a professional has about muscles and their individual and group performance the body relies on for specific movements, the better you can help rebuild a body.

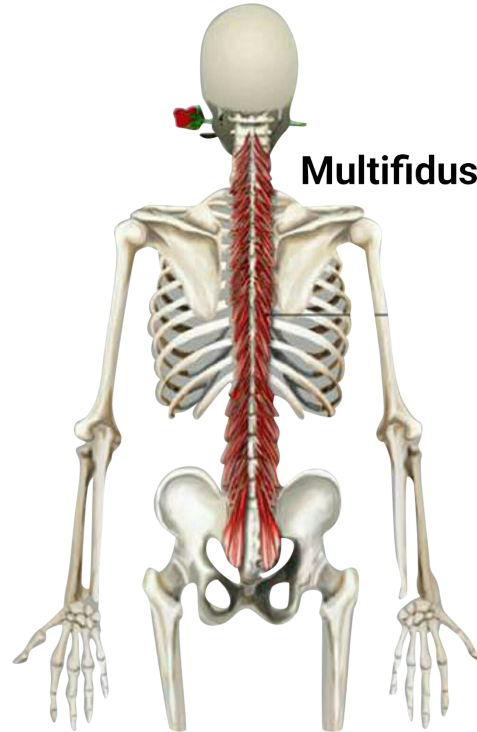


Know the Muscles for each Movement Goal





Multifidus



Multifidus

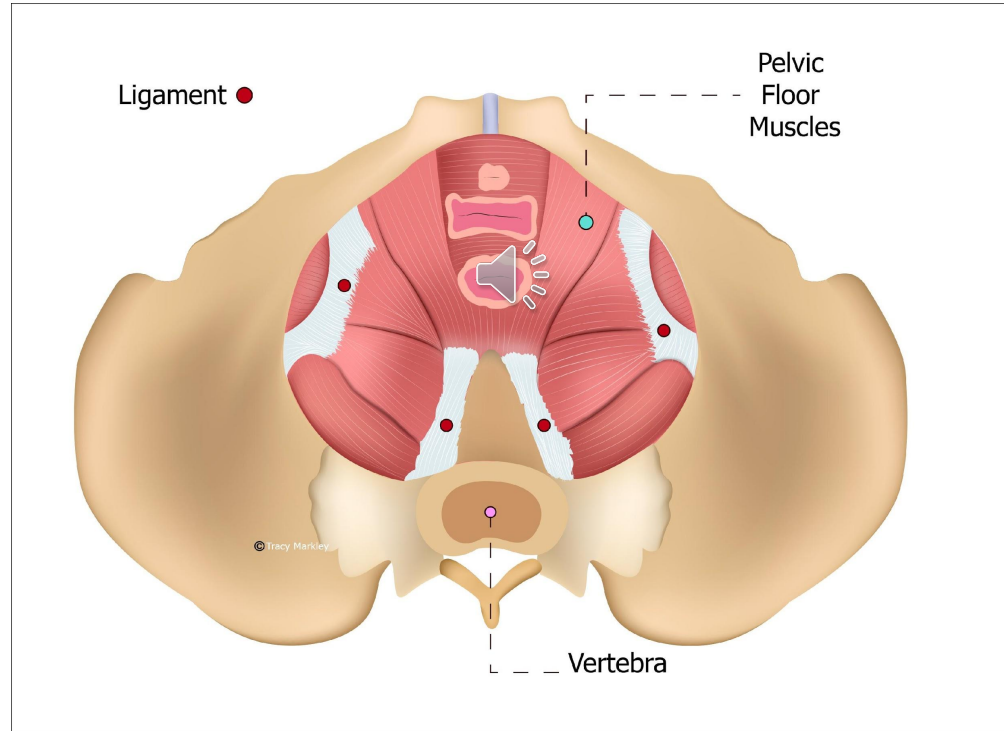
Transverse Abdominal Muscle



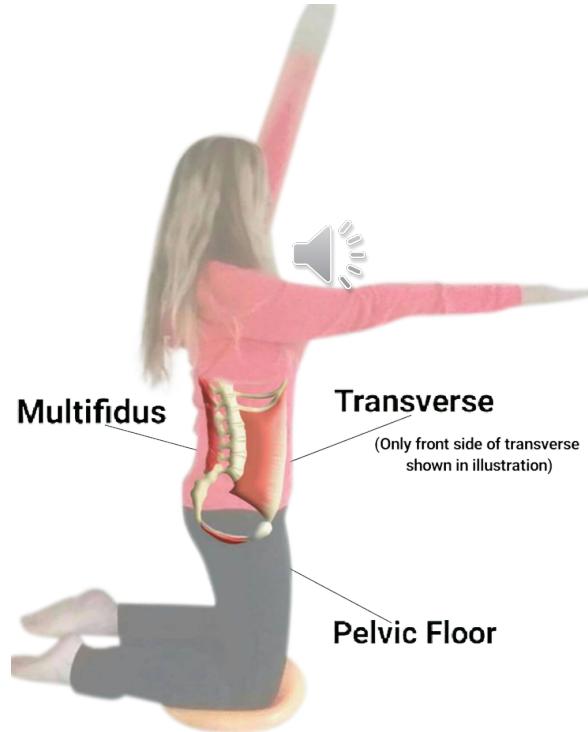
Standing on Balance Disc – Transverse Muscle
Visualize “Zipping Up Girdle”

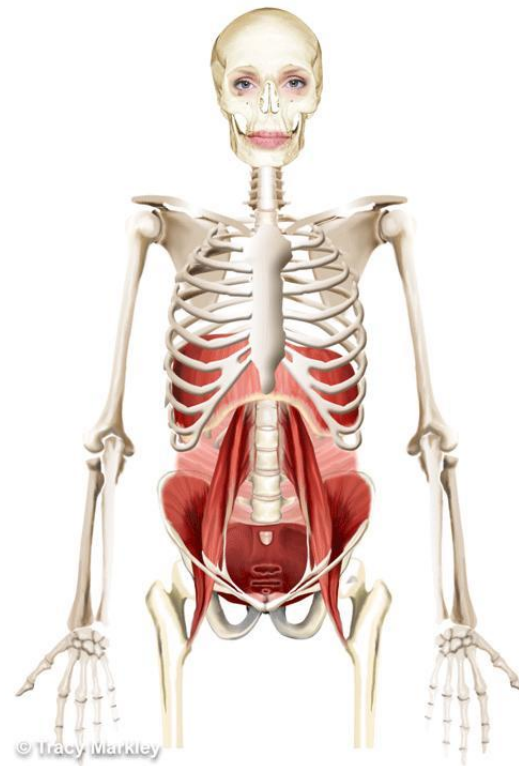
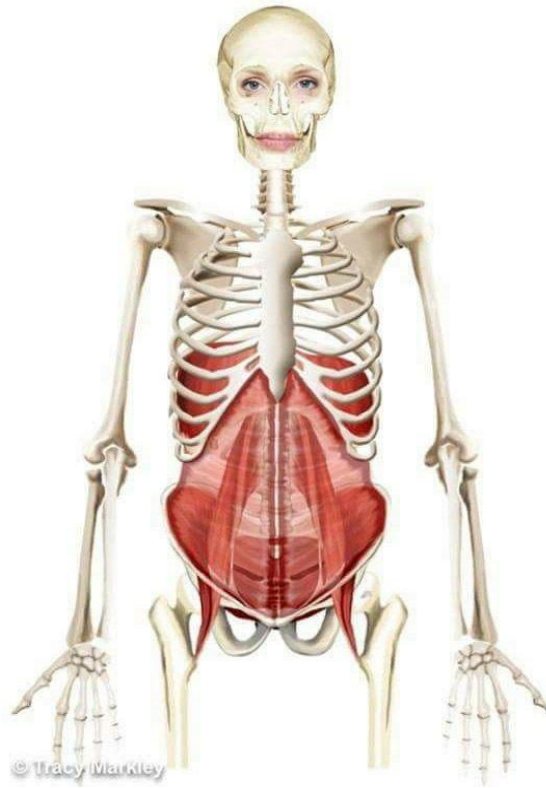


PELVIC FLOOR MUSCLES

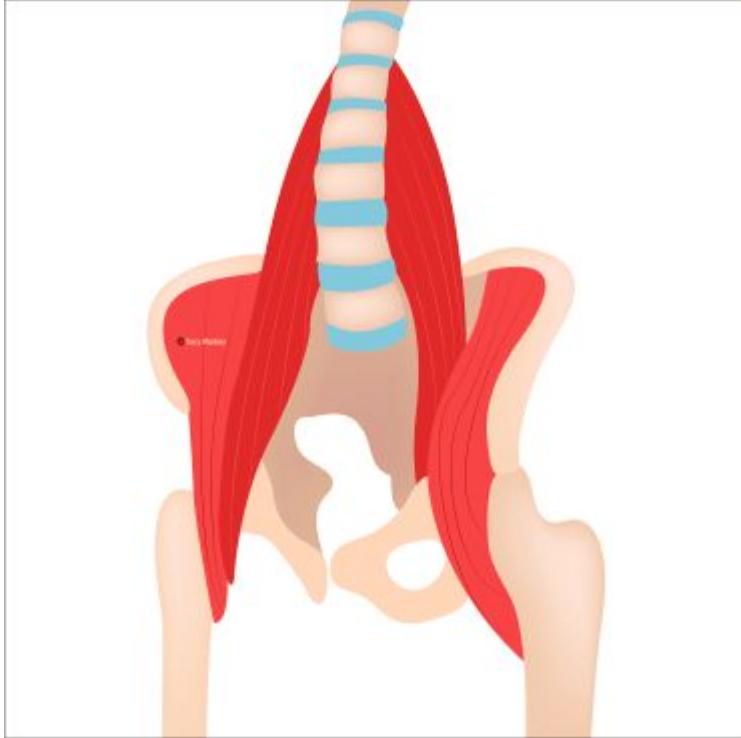


Multifidus -Transverse -Pelvic Floor
on the same Neuromuscular Loop

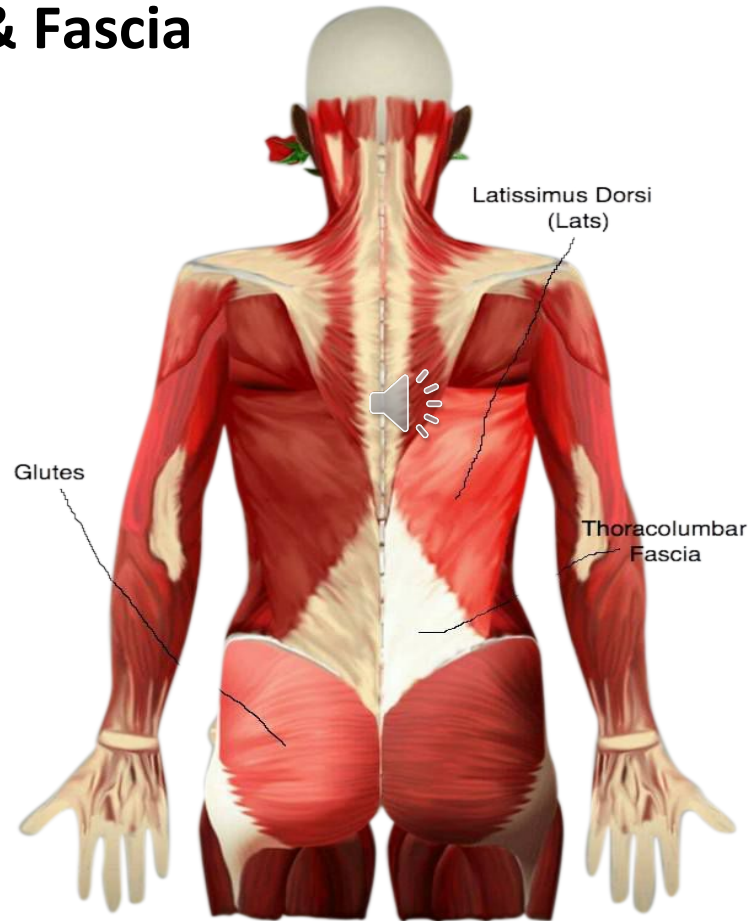


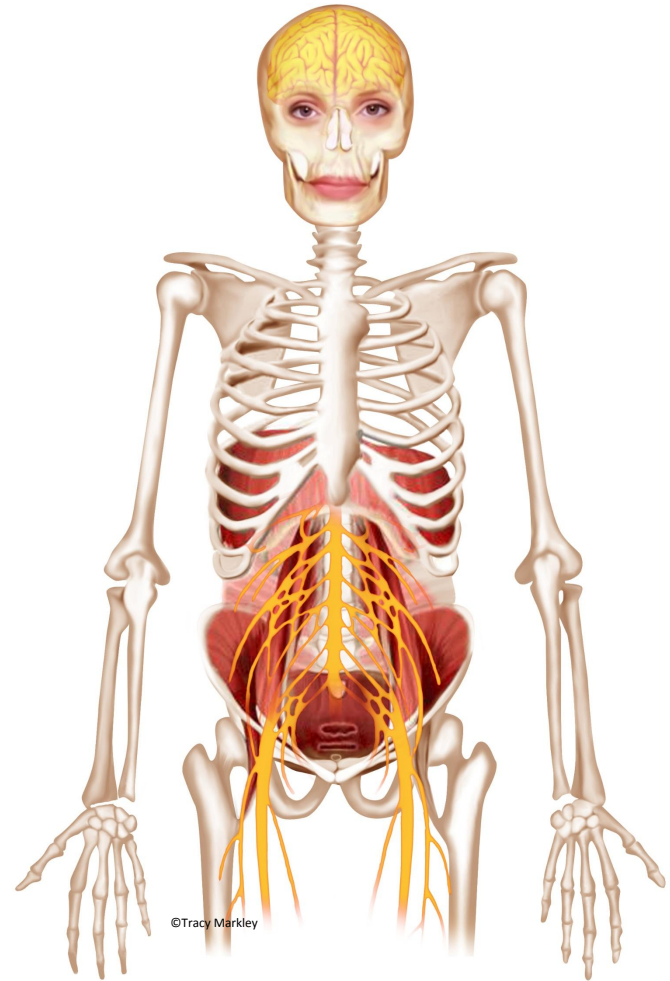
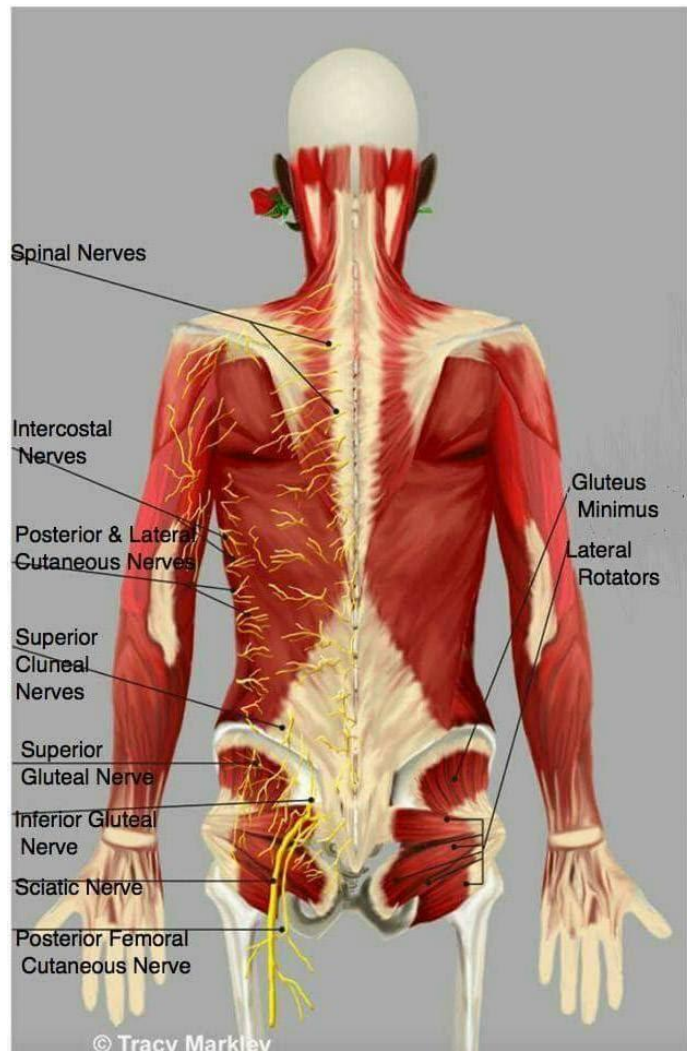


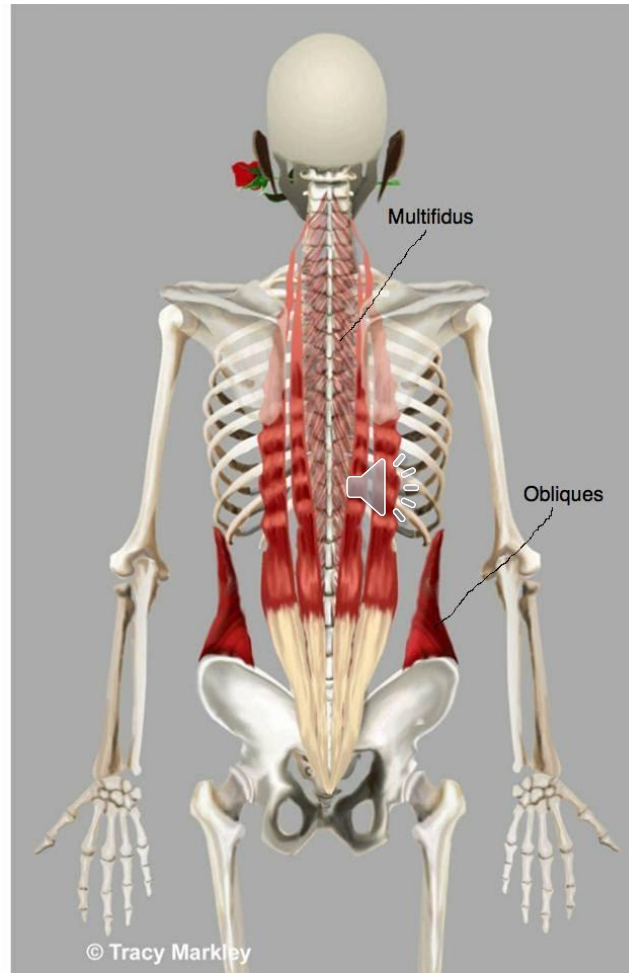
Psoas



Muscle Fibers & Fascia







**Thoracolumbar
Fascia**



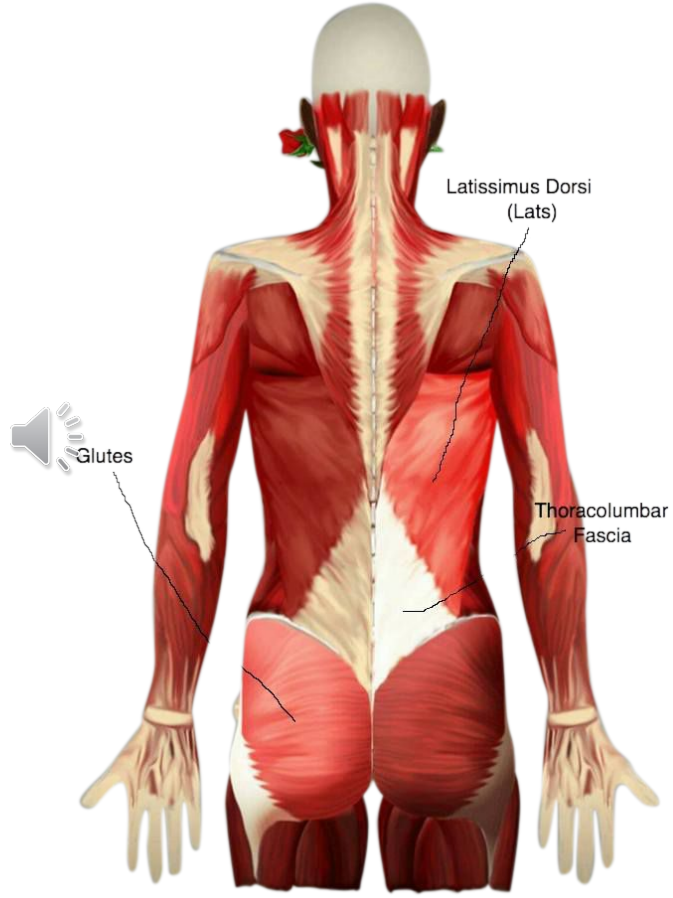
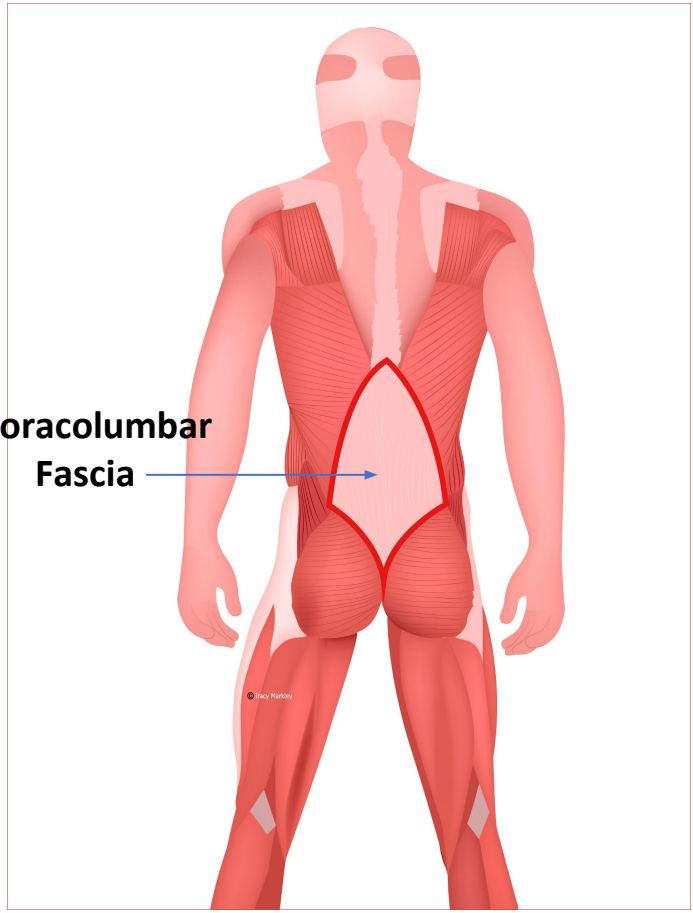
© Tracy Markley



Glutes

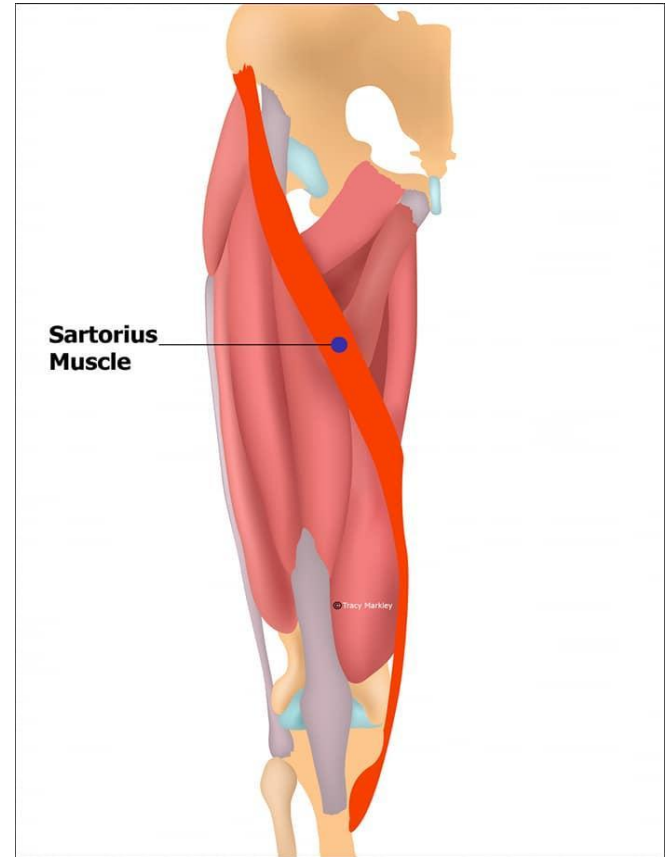
Latissimus Dorsi
(Lats)

Thoracolumbar
Fascia

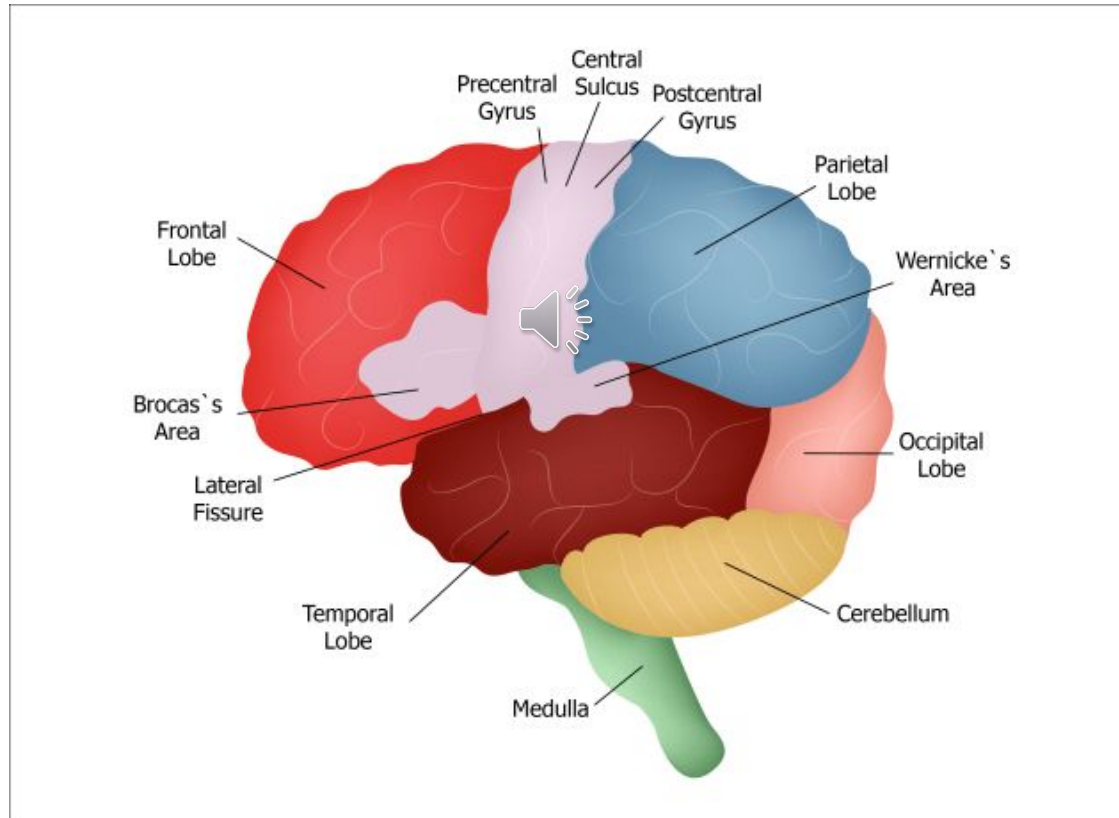


As an Example: Sartorius Muscle

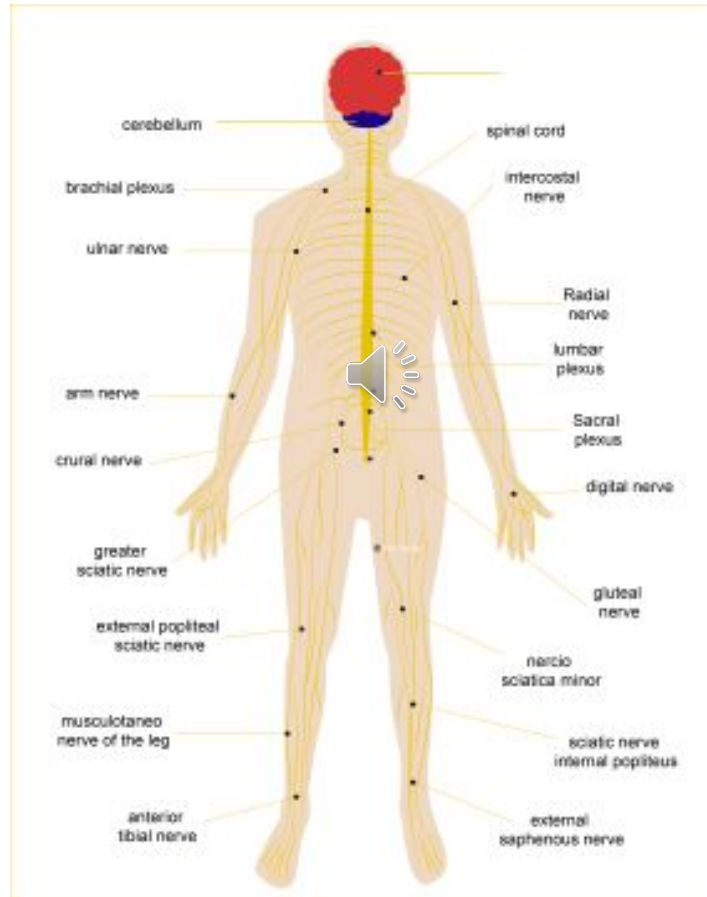
- Longest muscle in the body
- The Sartorius is attached to the front of the ilium, crosses over the medial side of the thigh and, from the knee, to the front of the tibia.
- Although an anterior muscle, it inserts into the tibia from behind the knee.
- It flexes the foreleg.
- Assists in flexing the hip
- When the knee is flexed, sartorius medially rotates the leg
- Flexes, abducts, laterally rotates thigh at hip



THE BRAIN



The Nervous Systems



Here is an example of a client who told me she thinks her balance is getting worse because the disc seems harder when she is at home. I had her to show me how she does it. She was standing off to the right and rolling out the right ankle. Once she connected to the correct foot placement, she quickly returned to feeling she is making progress.



Chair Heights



A client struggling when standing up will have a harder time lifting themselves up from a shorter chair.

Pay Attention to Chairs and Bench Heights





**Engage Abs
like you're
putting on
a
girdle.**

**Face and
hold onto
a bar,
if needed.**

**Keep feet
Horizontal.
Don't let
heels or
toes touch
the ground.**

**Wear
shoes or be
barefoot.**





- Focus from head to toe if possible.
- Hold onto a bar if needed
- Shins and back angled at the same degree
- Abdominals are engaged
- Lower down into a squat
- Do not drop below the knees
- Only lower far enough where the muscles feel the work, but not the knee joints
- Engage the abs and the glutes as standing back up from the squat
- Stand completely up, stacking the shoulders over the hips
- Standing up tall between each squat will help the psoas to be longer and stronger, instead of short and tight.
- The more a survivor can focus on all the set up in an exercise from head to toe, the better change the brain can re-learn to multitask the muscles needed for movements again

The Center of the Body Must Be Strong!



Making the connection to the Core.

**Having a client speak the
directions as they are trying
to connect to their body
often helps.**

**Here is a short video example
of a client repeating my
directions as he focuses on
the movements helping him
to stand up tall.**



Posture Improvements Better for Balance & Rotator Cuff - Injury Healed



Bouncing a Basketball on a BOSU® Ball

