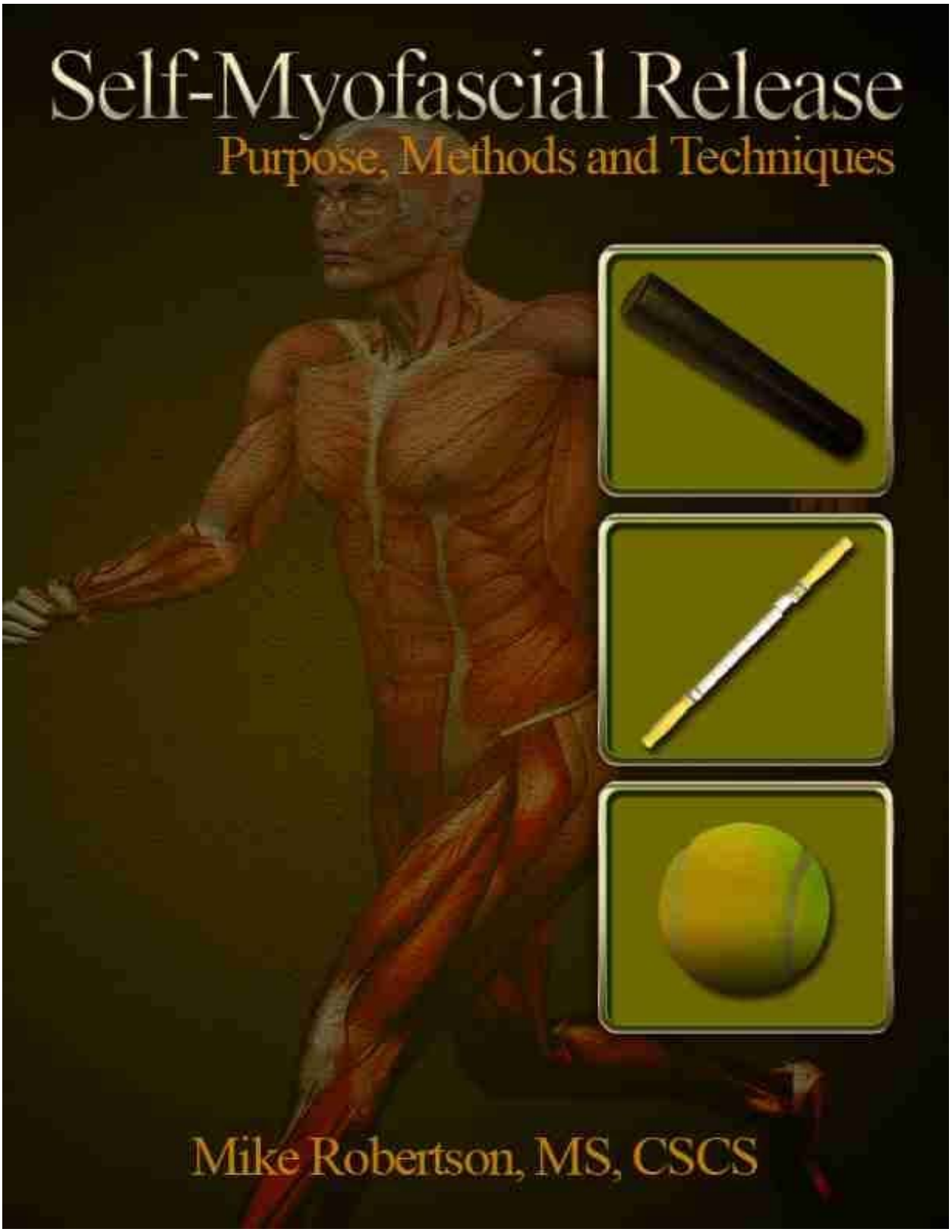

www.RobertsonTrainingSystems.com www.IndianapolisFitnessAndSportsTraining.com

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CHAPTER 1: INTRODUCTION

Foam rolling is quickly becoming a staple in training programs worldwide. From elite athletes to weekend warriors, you can walk into many training facilities and see people using a foam roller as part of their regimen.

As with any new modality, there are many questions regarding foam rolling. Here are just a few that I've seen posed:

- What benefits are derived from foam rolling?
- Is it safe and effective?
- When is the best/most optimal time to foam roll?
- Can foam rolling replace other soft-tissue therapies?

While I don't claim to have all the answers, I do hope to teach you the basics of self-myofascial release, along with ways you can integrate it into your current training regimen to elicit improved results.

SCIENCE

Unfortunately, science on the subject of foam rolling is seriously lacking. A search of the PubMed archives gives us the following results:

- "Foam Rolling" delivered seven results, none of which applied to using foam rollers as an SMR technique.
- "Foam Roller" delivered six results, none of which applied to using foam rollers as an SMR technique.
- "Self Myofascial Release" delivered three results, none of which applied to using foam rollers as an SMR technique.

Lack of good research is quite the conundrum, as it forces us to theorize and speculate on the perceived effects of any medium.

RATIONALE

The first question I get when showing someone how to foam roll is, "Why am I doing this?" If you've ever performed SMR on yourself, you know the first couple of times are generally quite uncomfortable!

Self-myofascial release (SMR) using a foam roller or other implement is possible thanks to the principle known as *autogenic inhibition*. While you've probably never heard of your golgi tendon organ (GTO) before, it's the key ingredient that makes foam rolling effective. The GTO is a mechanoreceptor found at the muscle-tendon junction; for lack of a better description, it tells us the level of tension within the muscle/tendon group.

When tension increases to the point of high risk of injury (e.g., tendon rupture), the GTO stimulates muscle spindles to relax the muscle in question. This reflex relaxation is autogenic inhibition. The muscle contraction that precedes the passive stretch stimulates the GTO, which in turn causes relaxation that facilitates this passive stretch and allows for greater range of motion. With foam rolling, you can simulate this muscle tension, thus causing the GTO to relax the muscle.

Essentially, you get many of the benefits of stretching and then some. It's also fairly well accepted that muscles need to not only be strong, but pliable as well. Regardless of whether you're a bodybuilder, strength athlete, or ordinary weekend warrior, it's important to have strength and optimal function through a full range of motion. While stretching will improve the *length* of the muscle, SMR and massage work to adjust the *tone* of the muscle.

Traditional stretching techniques simply cause transient increases in muscle length (assuming that we don't exceed the "point of no return" on the stress-strain curve, which will lead to unwanted deformities). SMR, on the other hand, offers these benefits *and* the breakdown of soft-tissue adhesions and scar tissue.

One need not look any further than the overwhelmingly positive results numerous individuals have had with Active Release Techniques (ART) or other deep-tissue modalities to recognize the value of eliminating adhesions and scar tissue. Unfortunately, from both a financial and convenience standpoint, we can't all expect to get ART or massage done on a frequent basis.

SMR on the foam roller offers an effective, inexpensive, and convenient way to both reduce adhesion and scar tissue accumulation, and eliminate what's already present on a daily basis. Just note that like stretching, foam rolling doesn't yield marked improvements overnight; you'll need to be diligent and stick with it (although you'll definitely notice acute benefits).

INDICATIONS

The following are some reasons you might want to include SMR techniques in your training:

- Improved mobility and range of motion
- Reduction of scar tissue and adhesions
- Decreased tone of overactive muscles
- Improved quality of movement
- Fill in the gaps between hands-on sessions of ART and/or deep tissue massage

CONTRAINDICATIONS

The following are several reasons you may not want to include SMR, or areas to avoid:

- Recently injured areas
- Circulatory problems
- Chronic pain conditions (e.g., fibromyalgia)
- Bony prominences/joints

CHAPTER 2: MODALITIES

GENERAL THOUGHTS

Like all things training related, we need to have a rationalized progression if we want to see continued progress. SMR techniques are no different—there are multiple ways we can change pressure, density, and other factors to get more bang for our training buck.

DENSITY AND PRESSURE

Before we discuss the specific modalities you can use, let's briefly review the concepts of density and pressure from a physics sense.

The formula for density is:

Density = Mass/Volume

Regarding density and SMR techniques, we have three options if we want to increase the density:

- Increase the mass
- Decrease the volume
- Increase mass and decrease volume

Typically, the easiest option is to increase the mass. This is seen when we progress someone from a tennis ball to a lacrosse ball, or from a lighter foam roller to a heavier foam roller. We don't necessarily increase the volume (size) of the object, but we most definitely increase the mass.

The formula for pressure is:

Pressure = Force/Area

Much like density, if you want to increase pressure, you either need to

- Increase the force
- Decrease the area
- Increase force and decrease area

As is the case with SMR techniques, force doesn't necessarily change all that much. If you want to increase the force, here are a few options:

- If you have both legs on the roller, take one off.
- If possible, stack one leg on top of the other.
- If you have a hand/foot on the ground for stability purposes, take it off (this will put more of the body's weight on the area being rolled).

Rather than trying to increase force, it's generally easier to decrease the area. This is accomplished by using progressively smaller (or more focal) implements. We'll discuss the different modalities below, starting with the largest surface area and working down to the smallest surface areas.

FOAM ROLLER

A foam roller is the largest implement we would use from a pressure perspective. The foam roller is very versatile, as you can work almost every muscle group using a foam roller alone. Rollers also come in varying densities, which allows for progression as well.

	
White Roller – Less Dense	Black Roller – More Dense

Foam rollers are best used for the big muscle/fascial areas like the gluteals, quadriceps, and IT band.

MEDICINE BALL

While not as popular as the foam roller, the medicine ball may actually be a more versatile tool for SMR purposes. Not only is it more focal when compared to the roller (the surface area being worked is smaller, which increases pressure), but it also allows you to work in a more three-dimensional fashion.

Virtually any muscle group that can be addressed with a foam roller can also be addressed with a medicine ball. Once the foam roller becomes comfortable, I generally progress my trainees to a medicine ball. The medicine ball can be progressed as well; simply moving to a smaller ball (and further decreasing surface area being rolled) will increase the pressure and intensity of the exercise.

Tennis Ball/Lacrosse Ball

A tennis ball is generally the smallest implement we would use for SMR purposes. It's very convenient for muscle/fascial groups with smaller surface areas (such as the plantar fascia, calves, and peroneals) as well as upper body muscles where the ball must be placed against a wall (such as the pecs and posterior shoulder capsule). Once the tennis ball becomes easy, move on to a lacrosse ball.

The Stick

The Stick is yet another convenient tool when it comes to soft-tissue work. While it's not necessarily better or worse than the other modalities discussed, it's narrow diameter allows you to work on some tendons (e.g., quadriceps, hamstrings) better than a medicine ball or foam roller would. As well, the Stick is a good option for the hamstrings, which generally don't respond that well to foam rolling since your hands/arms are supporting the majority of your body weight to hold yourself up.

The Stick

CHAPTER 3: TECHNIQUES

POSITIONING

Positioning while on the foam roller is critical for several reasons:

- Poor alignment may stress the supporting muscles and/or joints (e.g., if the elbow is too far away from the shoulder, instead of being placed underneath it, you could strain the muscle/joint).
- Improper placement can lead to excessive fatigue of the supporting musculature.
- Improper placement can lead to excessive pressure on the trained area, which decreases compliance. (If it hurts too much, you won't want to do it again!)

We will cover proper alignment and positioning for each specific drill in chapters 4 and 5.

DURATION

As a general rule of thumb, the amount of time necessary to get the derived benefits is directly related to your current tissue quality. In other words, if you have really terrible tissue quality or are unfamiliar with this kind of work, you'll need more work to bring it up to par. In contrast, the more familiar you become with the techniques and the easier it becomes, the less time you should need on the roller.

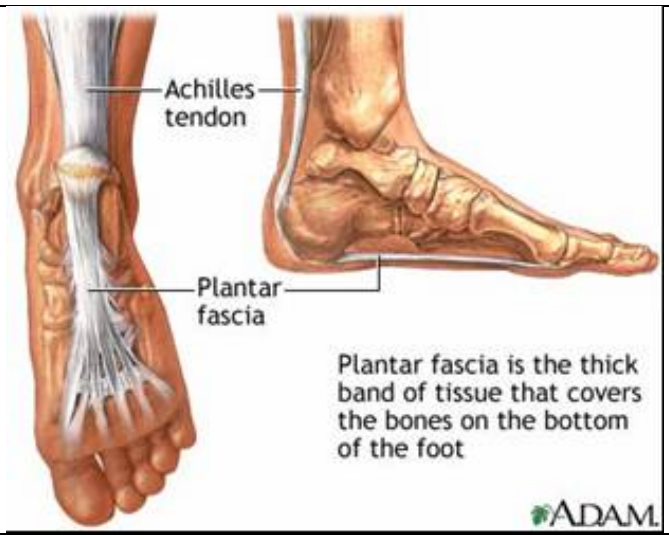
In the early stages of training, I generally like my clients/athletes to work on any given area between one and two minutes. If an area is particular tight, we'll spend longer on it. If it's not that bad, we'll spend less time on it. The key is to spend the most time on the tightest tissues.

As a client/athlete progresses, they should be spending gradually less and less time on the roller. This is the case for several reasons:

- High quality programming will work to improve length/tension relationships, naturally aligning the body and decreasing the likelihood of "overstressed" muscles.
- Tissue quality should naturally improve due to the inclusion of SMR techniques in the programming.
- The longer a client works with me, the harder I'm going to push for them to get hands-on manual therapies (e.g., Active Release Technique, deep tissue massage).

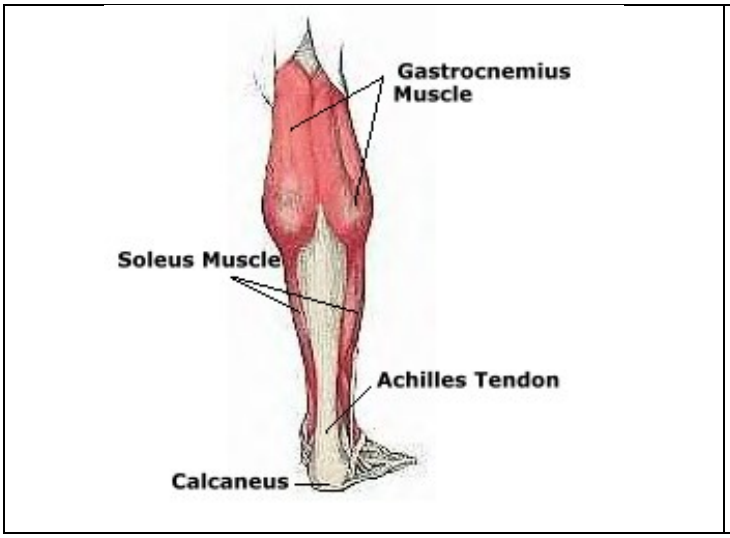
CHAPTER 4: LOWER BODY

PLANTAR FASCIA



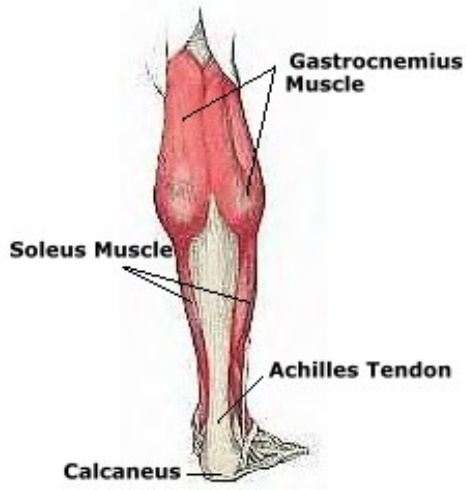
Anatomy and Function	▪ The plantar fascia is a band of connective tissue that connects the toes to the Achilles tendon. ▪ The plantar fascia works in conjunction with the Achilles tendon, gastrocnemius and soleus to produce propulsion of the foot/ankle complex (e.g., running, jumping).
Reasons to Treat	▪ Excessive tension in the plantar fascia can lead to pain on the bottom of the foot. ▪ Due to its fascial connections to the gastroc/soleus, hamstrings, and other posterior musculature, excessive tension in the plantar fascia can lead to restricted ROM into hip flexion and trunk flexion.
Set-up	▪ Take your shoes off, and place a tennis ball on the ground. ▪ Place the sole of one foot on the tennis ball with the other foot on the ground. ▪ Stand next to a wall, if needed, for balance.
Performance	▪ Put the majority of your weight on the foot with the ball underneath, and roll the ball back and forth along your plantar fascia. ▪ Roll for 30–60 seconds, and then switch feet.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

GASTROCNEMIUS



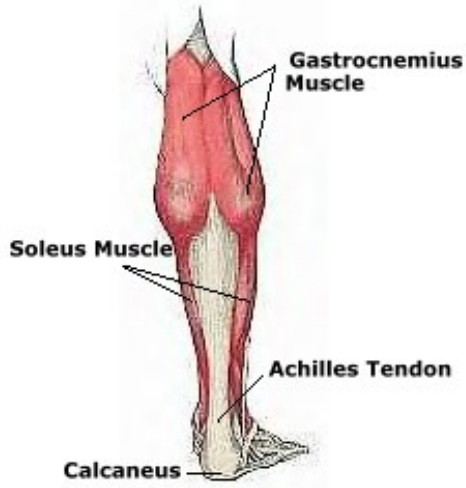
Anatomy and Function	▪ The gastrocnemius originates from just behind both sides of the knee and inserts onto the Achilles tendon. ▪ The gastrocnemius is responsible for plantarflexion of the foot and knee flexion.
Reasons to Treat	▪ Excessive tension in the gastrocnemius can cause pain at the site of injury, further down the kinetic chain (in the Achilles tendon or plantar fascia), or further up the chain at the anterior/posterior knee.
Set-up	▪ Sit on the ground with your legs straight and calves on top of the roller. ▪ Using your arms, press yourself up so that your buttocks are hovering over the ground.
Performance	▪ From the starting position, roll back and forth, keeping the knees *locked*. ▪ Focus the pressure on the medial and lateral portions of the calf to work the medial/lateral heads of the gastrocnemius. ▪ Roll for 30–60 seconds. ▪ To increase the pressure, try stacking one leg on top of the other and rolling only the bottom leg. ▪ To further increase pressure, actively dorsiflex the toes (pull them toward your shin) to place the gastrocnemius on stretch.
Alternate Modalities	▪ Use a tennis or lacrosse ball to increase the pressure. This method is generally easier on the arms and upper extremity since you don't have to hold yourself up.

GASTROCNEMIUS/SOLEUS



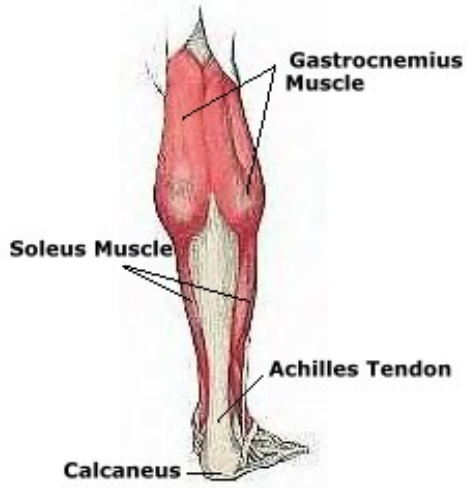
Anatomy and Function	▪ The gastrocnemius originates from just behind both sides of the knee and inserts onto the Achilles tendon. ▪ The soleus originates from just below the knee and inserts onto the Achilles tendon. ▪ The gastrocnemius is responsible for plantarflexion of the foot and knee flexion. ▪ The soleus is responsible for plantarflexion of the foot.
Reasons to Treat	▪ Excessive tension in the gastrocnemius can cause pain at the site of injury, further down the kinetic chain (in the Achilles tendon or plantar fascia), or further up the chain at the anterior/posterior knee.
Set-up	▪ Place one foot up on a low bench. ▪ Place the Stick along the posterior surface of your lower leg with your palms facing forward.
Performance	▪ From the starting position, roll the stick up and down the lower leg. ▪ To work more on the individual heads of the gastrocnemius, focus the pressure on the medial and lateral portions of the calf just below the knee. ▪ Roll for 30–60 seconds, and then switch legs.
Alternate Modalities	▪ None.

SOLEUS



Anatomy and Function	▪ The soleus originates from just below the knee and inserts onto the Achilles tendon. ▪ The soleus is responsible for plantarflexion of the foot.
Reasons to Treat	▪ Excessive tension in the soleus can cause pain at the site of injury, or further down the kinetic chain (in the Achilles tendon or plantar fascia).
Set-up	▪ Sit on the ground with your legs straight and calves on top of the roller. ▪ Using your arms, press yourself up so that your buttocks are hovering over the ground.
Performance	▪ From the starting position, roll back and forth, keeping the knees *unlocked*. ▪ Focus the pressure on the medial and lateral areas of the lower part of the calf, just above the ankle. ▪ Roll for 30–60 seconds. ▪ To increase the pressure, try stacking one leg on top of the other and rolling only the bottom leg. ▪ To further increase pressure, actively dorsiflex the toes (pull them toward your shin) to place the soleus on stretch.
Alternate Modalities	▪ Use a tennis or lacrosse ball to increase the pressure. This method is generally easier on the arms and upper extremity since you don't have to hold yourself up.

ACHILLES TENDON



Anatomy and Function	▪ The Achilles tendon connects the gastrocnemius and soleus to the calcaneus. ▪ The Achilles tendon aids the gastrocnemius/soleus in producing plantar flexion.
Reasons to Treat	▪ Excessive tension in the Achilles tendon can lead to issues further up (the gastrocnemius/soleus) or further down (the plantar fascia) the kinetic chain.
Set-up	▪ Sit on the ground with your legs straight and calves on top of the roller. ▪ Using your arms, press yourself up so that your buttocks are hovering over the ground.
Performance	▪ From the starting position, roll back and forth, using both a knees locked and knees unlocked position. ▪ Focus on rolling from the top of your heel to midway up your lower leg. ▪ Roll for 30–60 seconds. ▪ To increase the pressure, try stacking one leg on top of the other and rolling only the bottom leg. ▪ To further increase pressure, actively dorsiflex the toes (pull them toward your shin) to place the Achilles tendon on stretch.
Alternate Modalities	▪ Use a tennis or lacrosse ball to increase the pressure. This method is generally easier on the arms and upper extremity since you don't have to hold yourself up.

PERONEALS (FOAM ROLLER)

Anatomy and Function	▪ The peroneals originate from just below the outside of the knee and insert onto the bottom of the foot. ▪ Peroneus longus and brevis are responsible for plantar flexion and eversion. Peroneus tertius assists with dorsiflexion.
Reasons to Treat	▪ Excessive tension or adhesions in the peroneals can produce lateral knee pain, or compression of the peroneal nerve which can produce numbness and/or tingling in the lower leg and foot.
Set-up	▪ Lie on your side on the ground with the roller underneath the outside of one leg. ▪ Place the same side elbow and the opposite hand/foot on the ground.
Performance	▪ From the starting position, press up and roll back and forth over the outside portion of your lower leg. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To increase the pressure, try stacking one leg on top of the other and rolling the bottom leg.
Alternate Modalities	▪ Use a harder roller to increase the pressure. ▪ Use a tennis or lacrosse ball to increase the pressure.

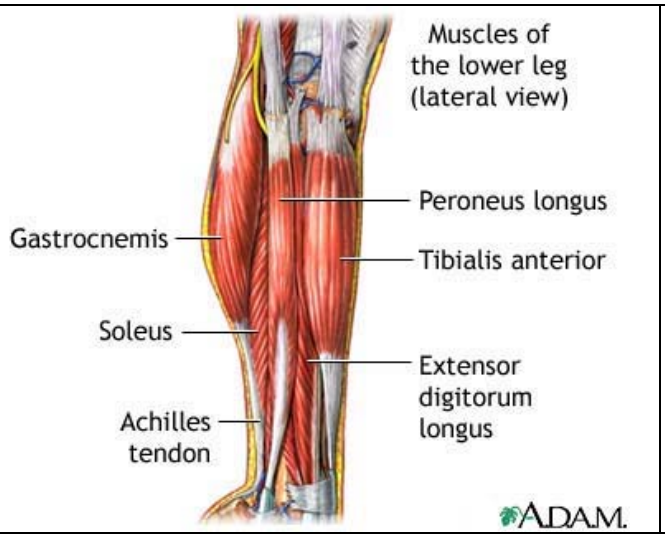
PERONEALS (TENNIS BALL)

Anatomy and Function	▪ The peroneals originate from just below the outside of the knee and insert onto the bottom of the foot. ▪ Peroneus longus and brevis are responsible for plantar flexion and eversion. Peroneus tertius assists with dorsiflexion.
Reasons to Treat	▪ Excessive tension or adhesions in the peroneals can produce lateral knee pain, or compression of the peroneal nerve which can produce numbness and/or tingling in the lower leg and foot.
Set-up	▪ Place your foot up on a low bench or chair. ▪ Place a tennis ball along the outside of your lower leg.
Performance	▪ From the starting position, roll the ball up and down along the outside portion of your lower leg. ▪ Roll for 30–60 seconds, and then switch legs.
Alternate Modalities	▪ Use a lacrosse ball to increase the pressure.

PERONEALS (THE STICK)

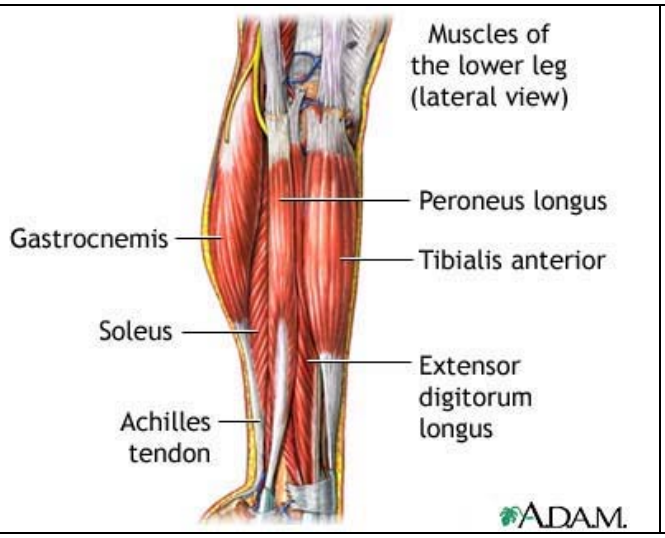
Anatomy and Function	▪ The peroneals originate from just below the outside of the knee and insert onto the bottom of the foot. ▪ Peroneus longus and brevis are responsible for plantar flexion and eversion. Peroneus tertius assists with dorsiflexion.
Reasons to Treat	▪ Excessive tension or adhesions in the peroneals can produce lateral knee pain, or compression of the peroneal nerve which can produce numbness and/or tingling in the lower leg and foot.
Set-up	▪ Place one foot up on a low bench. ▪ Place the stick along the lateral surface of your lower leg with your palms facing inward (towards your body).
Performance	▪ From the starting position, roll the stick up and down the lower leg. ▪ Roll for 30–60 seconds, and then switch legs.
Alternate Modalities	▪ None.

TIBIALIS ANTERIOR



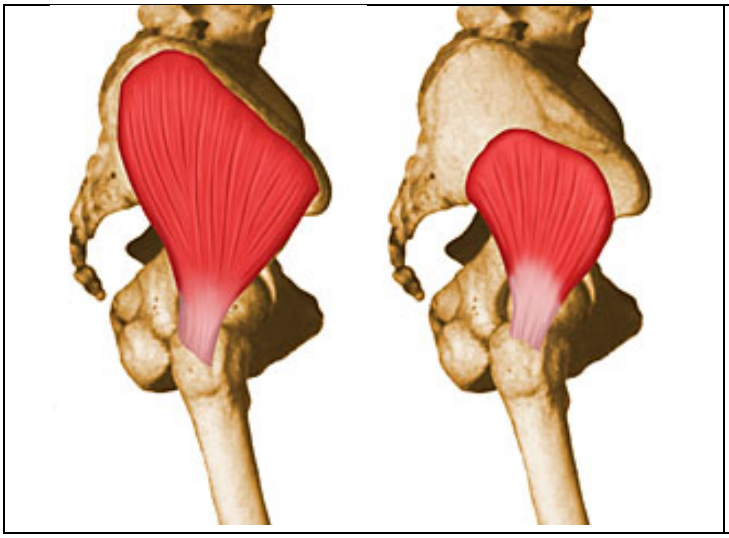
Anatomy and Function	▪ The tibialis anterior originates from the lateral condyle/shaft of the tibia and inserts onto the top of the foot. ▪ The tibialis anterior is responsible for producing dorsiflexion and inversion of the foot.
Reasons to Treat	▪ The tibialis anterior can often become scarred due to overuse in running and jumping activities/sports.
Set-up	▪ Place your foot up on a low bench or chair. ▪ Place a tennis ball along the front of your lower leg.
Performance	▪ From the starting position, roll the ball up and down along the front of your lower leg. ▪ Roll for 30–60 seconds, then switch legs.
Alternate Modalities	▪ Use a lacrosse ball to increase the pressure.

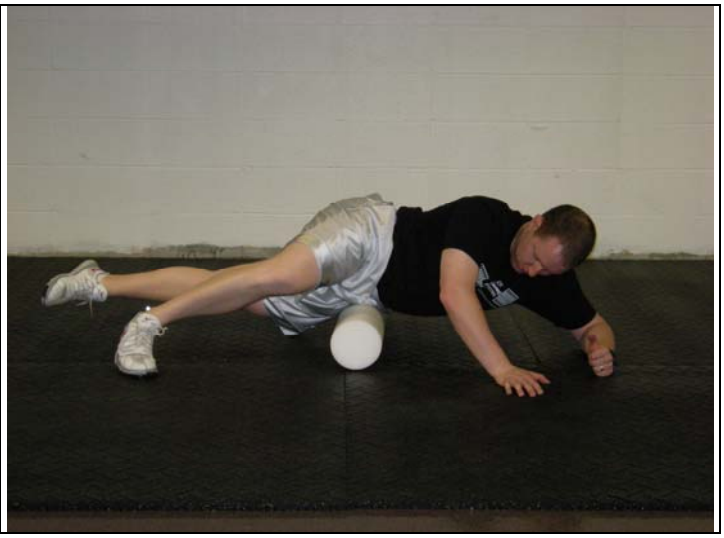
TIBIALIS ANTERIOR



Anatomy and Function	▪ The tibialis anterior originates from the lateral condyle/shaft of the tibia and inserts onto the top of the foot. ▪ The tibialis anterior is responsible for producing dorsiflexion and inversion of the foot.
Reasons to Treat	▪ The tibialis anterior can often become scarred due to overuse in running and jumping activities/sports.
Set-up	▪ Place one foot up on a low bench. ▪ Place the Stick along the anterior surface of your lower leg with your palms facing inward (toward your body).
Performance	▪ From the starting position, roll the stick up and down the lower leg. ▪ Roll for 30–60 seconds, then switch legs.
Alternate Modalities	▪ None.

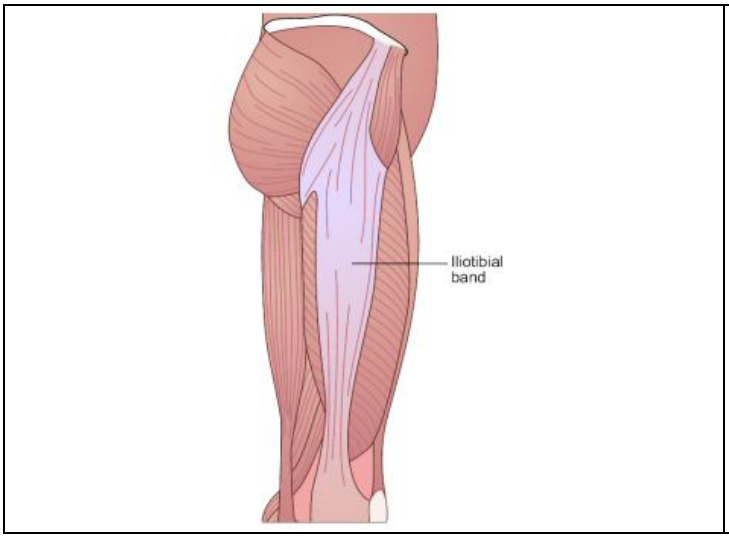
Tensor Fascia Latae, Anterior Gluteus Medius, and Gluteus Minimus





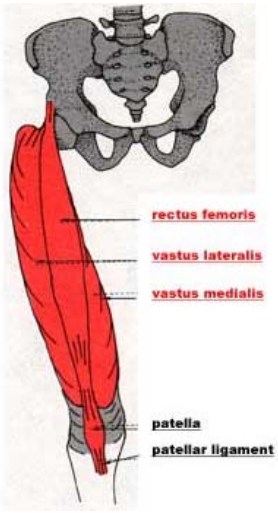
Anatomy and Function	• The anterolateral (front and side) hip musculature is collectively responsible for hip flexion, hip abduction, and hip internal rotation. • All three muscles, the tensor fascia latae (TFL), the anterior gluteus medius, and the gluteus minimus originate from the front/middle of the hip. The gluteus medius and minimus insert onto the greater trochanter (at the top of the femur). The TFL inserts on the iliotibial band (IT band).
Reasons to Treat	▪ The TFL can become overly tight, placing excessive strain on the IT band. This typically results in lateral knee pain. ▪ Excessive tension in the anterolateral hip musculature can cause muscle imbalances around the hip and knee, leaving you exposed to injury.
Set-up	▪ Lie on your side on the ground with the roller underneath the front portion of your hip. ▪ Place the same side elbow and the opposite hand/foot on the ground.
Performance	▪ From the starting position, press up and roll back and forth over the outside portion of your hip. ▪ To really hit the anterolateral hip musculature, adjust your body toward a face down position. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To increase the pressure, take your opposite leg off the floor.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

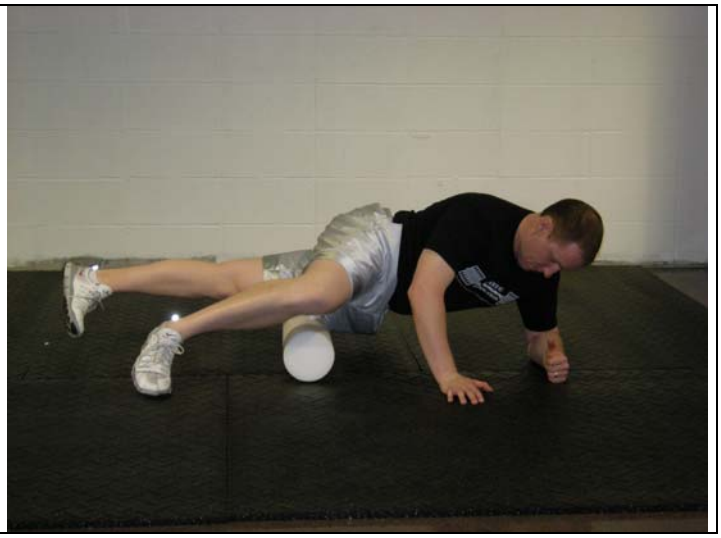
IT BAND



Anatomy and Function	▪ The iliotibial (IT) band connects the gluteus maximus and tensor fascia latae (TFL) to the tibia and fibula. ▪ The IT band aids the gluteus maximus and TFL in producing abduction and controlling movement at the knee.
Reasons to Treat	▪ The IT band is often excessively tight, which leads to lateral knee pain.
Set-up	▪ Lie on your side on the ground with the roller underneath the outside portion of your thigh. ▪ Place the same side elbow (or hand) and the opposite hand/foot on the ground.
Performance	▪ From the starting position, press up and roll back and forth over the outside portion of your thigh. ▪ It may help to work from the bottom of the hip to mid-thigh, reposition, and then work from mid-thigh to just above the knee versus using long, broad strokes to hit the entire IT band at once. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To increase the pressure, take your opposite leg off the floor or stack it on top of the opposite thigh.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

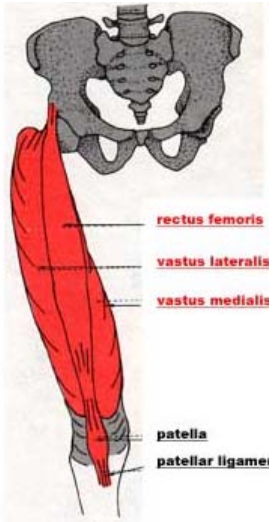
VASTUS LATERALIS





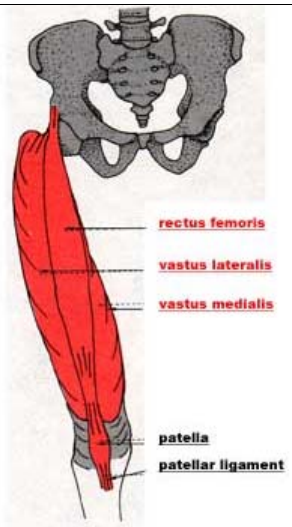
Anatomy and Function	▪ The vastus lateralis (VL) originates along the lateral surface of the femur and inserts on the common quadriceps tendon below. The quad tendon then inserts on the patellar ligament and the tibia. ▪ The vastus lateralis (coupled with the other quadriceps muscles) is responsible for knee extension.
Reasons to Treat	▪ An excessively tight VL can lead to lateral knee pain, much like a tight IT band will. ▪ The VL can also become adhered to the IT band, restricting the movement of both structures.
Set-up	▪ Lie on your side on the ground with the roller underneath the outside portion of your thigh. ▪ Place the same side elbow and the opposite hand/foot on the ground.
Performance	▪ From the starting position, press up and roll back and forth over the outside portion of your thigh. If the IT band is 0 and the front of your thigh is 90 degrees, try splitting the difference to really work on the VL. ▪ It may help to work from the bottom of the hip to mid-thigh, reposition, and then work from mid-thigh to just above the knee versus using long, broad strokes to hit the entire VL at once. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To increase the pressure, take your opposite leg off the floor.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

RECTUS FEMORIS (2 POSITIONS)



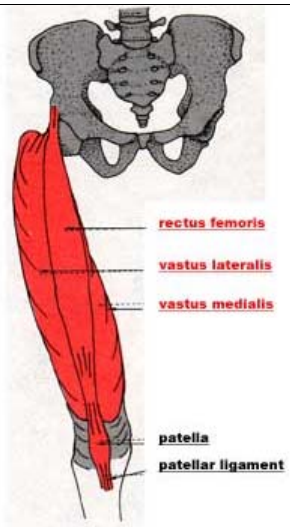
Anatomy and Function	▪ The rectus femoris (RF) originates from the front of your hip and inserts on the common quadriceps tendon. ▪ The RF is responsible for hip flexion and knee extension.
Reasons to Treat	▪ Excessive tension in the RF can lead to anterior knee pain. ▪ The RF is often overused when the gluteals and/or psoas are not working properly.
Set-up	▪ Lie on your stomach on the ground with the roller underneath the front of your thighs. ▪ Place your elbows on the ground underneath your shoulders.
Performance	▪ From the starting position, press up and roll back and forth over the front of your thighs with the knees straight (position 1). ▪ It may help to work from the bottom of the hip to mid-thigh, reposition, and then work from mid-thigh to just above the knee versus using long, broad strokes to hit the entire RF at once. ▪ Roll for 30–60 seconds. ▪ To increase the pressure, cross one leg over the other. ▪ To really increase the pressure, try flexing your knees—this will put the RF on stretch and really crank up the intensity (position 2).
Alternate Modalities	▪ Use a harder roller to increase the pressure.

VASTUS MEDIALIS



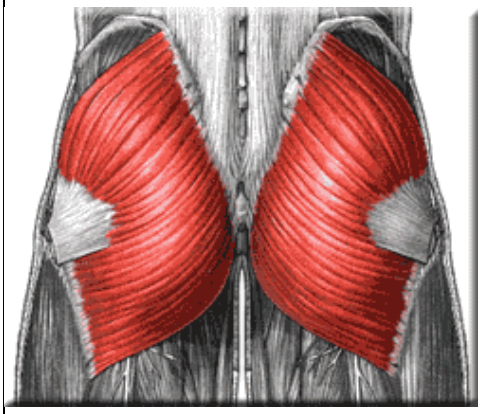
Anatomy and Function	▪ The vastus medialis (VM) originates along the medial surface of the femur and inserts on the common quadriceps tendon below. ▪ The VM (coupled with the other quadriceps muscles) is responsible for knee extension. The most distal portion (closer to the knees), the vastus medialis obliquus (VMO), is responsible for medial pull of the patella.
Reasons to Treat	▪ Like any of the quadriceps muscles, the VM can become excessively tight or adhered to surrounding muscles. ▪ An excessively tight VM can lead to medial knee pain.
Set-up	▪ Lie on your stomach on the ground with the roller underneath the middle of your thighs. ▪ Place the elbows on the ground underneath the shoulders. Externally rotate your hips (turn your knees/toes out).
Performance	▪ From the starting position, press up and roll back and forth over the inside portion of your thighs. ▪ It may help to work from the bottom of the hip to mid-thigh, reposition, and then work from mid-thigh to just above the knee versus using long, broad strokes to hit the entire VM at once. ▪ Roll for 30–60 seconds. ▪ To increase the pressure, try taking your opposite leg off the roller and placing it on the floor.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

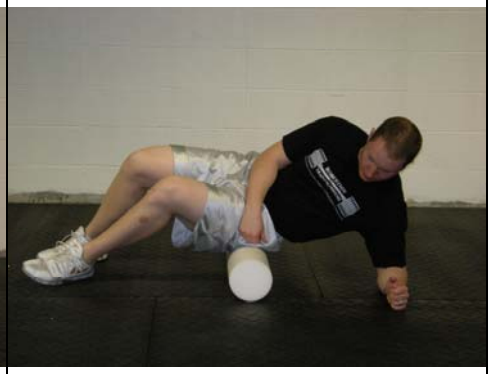
QUADRICEPS



Anatomy and Function	▪ The rectus femoris (RF) originates from the front of your hip, the vastus medialis (VM) originates along the medial surface of the femur, the vastus lateralis (VL) originates along the lateral surface of the femur, and the vastus intermedius originates along the anterior surface of the femur. All four quadriceps muscles insert on the common quadriceps tendon. The quad tendon then inserts on the patellar ligament and the tibia. ▪ All the quadriceps muscles are responsible for knee extension. Only the RF is involved in hip flexion.
Reasons to Treat	▪ Excessive tension in the quadriceps can lead to knee or hip pain.
Set-up	▪ Sit on a low bench or stool with the Stick across the front of your thigh. ▪ The Stick variations work well on the quadriceps as you can get closer to the patella, which allows you to work on the musculo-tendinous junction. This area can become tight or fibrotic due to overuse/overtraining.
Performance	▪ From the starting position, back and forth over the front of your thighs. ▪ To work on the rectus femoris, work on the middle of the leg. For the vastus medialis, move closer to the midline. For the vastus lateralis, move to the outside portion of the leg. ▪ Roll for 30–60 seconds, and then switch legs.
Alternate Modalities	▪ None.

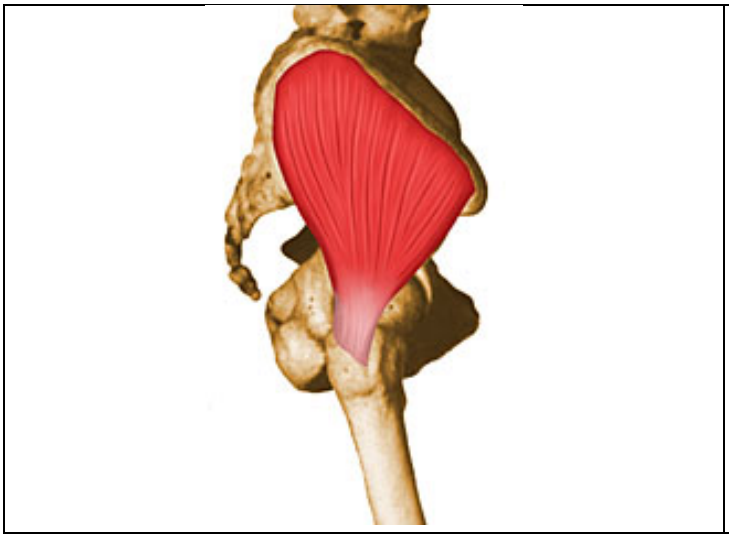
GLUTEUS MAXIMUS





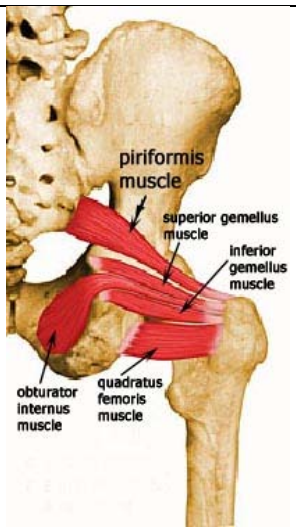
Anatomy and Function	▪ The gluteus maximus originates on the sacrum, ilium, and sacrotuberous ligament and attaches to the top of the femur and IT band. ▪ The gluteus maximus is responsible for hip extension, hip abduction, and hip external rotation.
Reasons to Treat	▪ Excessive stiffness when compared to the lumbar spine can force you into lumbar flexion with increasing hip flexion. ▪ Excessive tension in the gluteus maximus can lead to lateral knee pain via the IT band.
Set-up	▪ Sit on the roller with your hands behind you on the floor. ▪ Your feet should be on the floor throughout.
Performance	▪ From the starting position, roll back and forth over the gluteals. ▪ Roll for 30–60 seconds. ▪ Shift your weight to one hip or the other to increase the pressure.
Alternate Modalities	▪ Use a harder roller to increase the pressure. ▪ Use a medicine ball to increase the pressure.

GLUTEUS MEDIUS (POSTERIOR FIBERS)



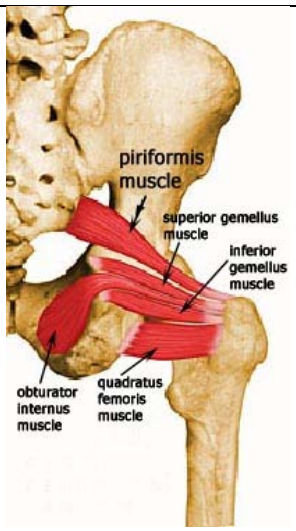
Anatomy and Function	▪ The posterior gluteus medius originates from the middle/back of the hip and inserts on the top of the femur. ▪ The posterior gluteus medius is responsible for hip extension, hip abduction, and hip external rotation.
Reasons to Treat	▪ The posterior fibers of the gluteus medius can become scarred or adhered, leading to an increase in external rotation at the hip.
Set-up	▪ Lie on your side on the ground with the roller underneath the back portion of your hip. ▪ Place the same side elbow and the opposite hand/foot on the ground.
Performance	▪ From the starting position, press up and roll back and forth over the outside portion of your hip. ▪ Try adjusting your body position to really hit the posterolateral hip musculature; you may need to move into a face up position and put your foot behind your body to really hit the area appropriately. ▪ Roll for 30–60 seconds, and then switch legs. ▪ Try taking your opposite leg off the floor, or stacking your legs on top of each other, to increase pressure on the hip.
Alternate Modalities	▪ Use a harder roller to increase the pressure. ▪ Use a medicine ball to increase the pressure.

PIRIFORMIS (FOAM ROLLER)



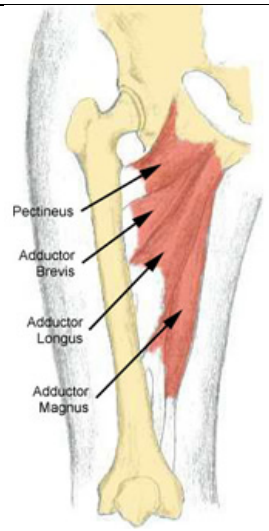
Muscle Anatomy and Function	▪ The piriformis muscle originates on the front of the sacrum and inserts on the top of the femur. ▪ The piriformis is responsible for external rotation of the hip below 60 degrees of hip flexion; above 60 degrees, it becomes a hip internal rotator.
Reasons to Treat	▪ Excessive tension on the piriformis can irritate the sciatic nerve. This may lead to pain or nerve irritation in the buttocks, hamstrings, lower leg, or foot. ▪ Excessive tension in the piriformis can externally rotate the hip, leading to poor movement in the frontal and/or transverse planes.
Set-up	▪ Sit on the roller with your hands behind you on the floor. ▪ Lean to your left side, taking your right hand off the ground. Place your left ankle on your right knee. ▪ Your right foot should be on the floor throughout.
Performance	▪ From the starting position, roll back and forth over the piriformis. ▪ Roll for 30–60 seconds, and then switch sides. ▪ Try altering your body position throughout to hit the piriformis from multiple angles.
Alternate Modalities	▪ Use a harder roller to increase the pressure. ▪ Use a medicine ball to increase the pressure.

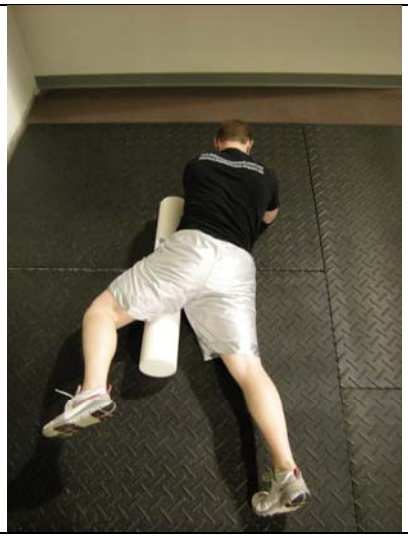
PIRIFORMIS (TENNIS BALL)

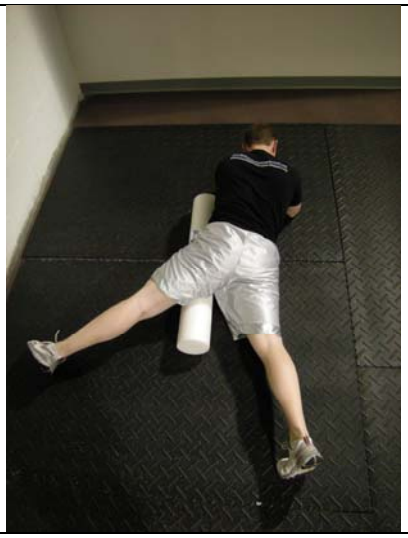


Muscle Anatomy and Function	▪ The piriformis muscle originates on the front of the sacrum and inserts on the top of the femur. ▪ The piriformis is responsible for external rotation of the hip below 60 degrees of hip flexion; above 60 degrees, it becomes a hip internal rotator.
Reasons to Treat	▪ Excessive tension on the piriformis can irritate the sciatic nerve. This may lead to pain or nerve irritation in the buttocks, hamstrings, lower leg, or foot. ▪ Excessive tension in the piriformis can externally rotate the hip, leading to poor movement in the frontal and/or transverse planes.
Set-up	▪ Place the tennis ball under one hip. ▪ Sit on the ball with your hands behind you on the floor.
Performance	▪ From the starting position, roll back and forth over the piriformis. ▪ Roll for 30–60 seconds, and then switch sides. ▪ Try altering your body position throughout to hit the piriformis from multiple angles.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

ADDUCTORS (2 POSITIONS)

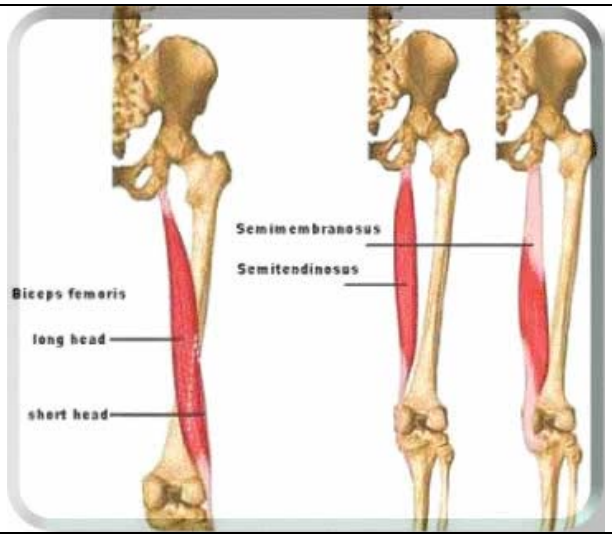






Muscle Anatomy and Function	▪ The adductors are a group of muscles that originate on the pubis and attach to various points on the femur and tibia. ▪ The adductors promote a variety of movements: hip adduction, medial rotation, and hip flexion. Adductor magnus can also extend the hip.
Reasons to Treat	▪ It is not uncommon for the adductors to be strained or adhered due to previous injury. Soft-tissue work can help break up adhesions, reduce muscular tension, and improve movement quality. ▪ Excessive tension in the adductors can lead to internal rotation of the femur/hip, which increases the risk of knee injury.
Set-up	▪ Lie on your stomach on the ground with the roller alongside and parallel to your body. ▪ Flex one hip/knee and place your inner thigh on top of the roller. ▪ Place the elbows on the ground underneath the shoulders.
Performance	▪ From the starting position, press up and roll back and forth over the inside portion of your thighs (position 1). This position will focus on the one-joint adductors. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To work on the two-joint adductors, extend the knee and continue rolling on the inner thigh (position 2).
Alternate Modalities	▪ Use a harder foam roller to increase the pressure. ▪ Use a medicine ball to increase the pressure.

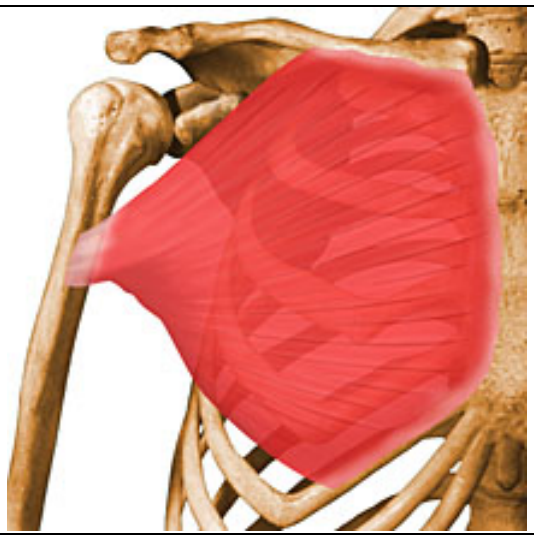
HAMSTRINGS



Muscle Anatomy and Function	▪ The hamstrings originate on the bottom of the pelvis and then follow separate paths; the semimembranosus and semitendinosus attach to the tibia, while the biceps femoris inserts on the head of the fibula. ▪ The hamstrings work together to flex the knee and extend the hip. Semimembranosus and semitendinosus are hip internal rotators, while biceps femoris is a hip external rotator.
Reasons to Treat	▪ The hamstrings can often become scarred or adhered following strains or repetitive overuse injuries. ▪ Scar tissue and adhesions in the distal hamstring segments can also produce posterior knee pain.
Set-up	▪ Place one foot up on a low bench. ▪ Place the Stick along the posterior surface of your thigh with your palms facing forward.
Performance	▪ From the starting position, roll the Stick up and down the posterior thigh. ▪ Roll for 30–60 seconds, and then switch legs. ▪ To work more on the individual muscles, work more medially (semimembranosus/semitendinosus) or more laterally (biceps femoris).
Alternate Modalities	▪ None.

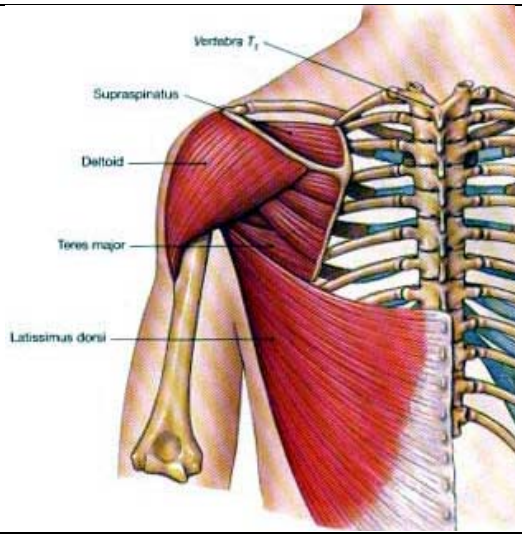
CHAPTER 5: UPPER BODY

PECS



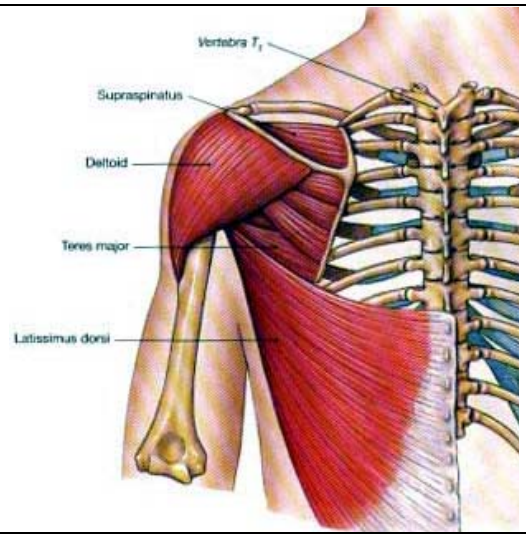
Muscle Anatomy and Function	▪ The pectoralis major originates on the sternum, clavicle, and costal cartilage and inserts on the humerus. ▪ The pectoralis major is responsible for horizontal adduction and internal rotation. The clavicular fibers flex the extended shoulder, while the sternal fibers extend the flexed shoulder.
Reasons to Treat	▪ The pectoralis major is typically short and stiff due to overtraining (too much chest training) and chronic poor posture. This lack of extensibility can lead to overuse injuries and/or poor mechanics in many lifts, even those not targeting the chest (e.g., squatting, Olympic lifts).
Set-up	▪ Stand next to a wall and place a tennis ball on the wall at chest height. ▪ Push your pecs into the ball to hold it in place.
Performance	▪ With the tennis ball pinned between your pecs and the wall, roll it back and forth. It may help to work in small sections as the tennis ball doesn't have a large circumference. ▪ Roll for 30–60 seconds, and then switch sides. ▪ To increase the intensity, horizontally abduct and externally rotate the arm to place the pectoralis major on stretch.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

LATISSIMUS DORSI (FOAM ROLLER)



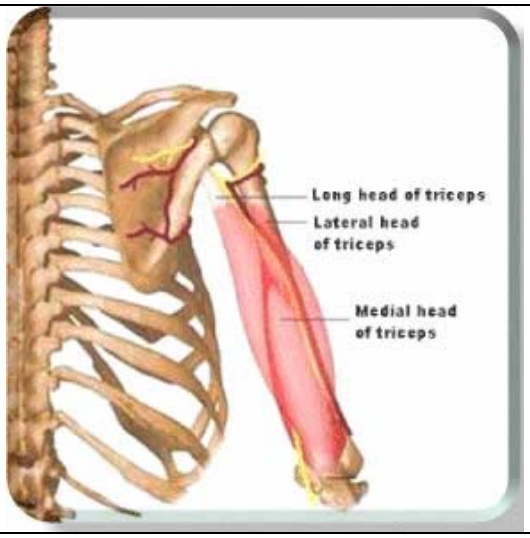
Muscle Anatomy and Function	▪ The latissimus dorsi originates from the spine, thoracolumbar fascia, and posterior hips, and attaches on the humerus. ▪ The latissimus dorsi is responsible for extension, adduction, and internal rotation of the arm.
Reasons to Treat	▪ Much like the pecs, the lats can become short and stiff due to overtraining. This lack of extensibility can lead to overuse injuries and/or poor mechanics in many lifts, even those not targeting the lats (e.g., squatting, Olympic lifts).
Set-up	▪ Lie on your side with the foam roller in your armpit. ▪ Externally rotate your arm to place the lats on stretch.
Performance	▪ Glide the roller up and down the outside portion of your back. ▪ Roll for 30–60 seconds, and then switch sides.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

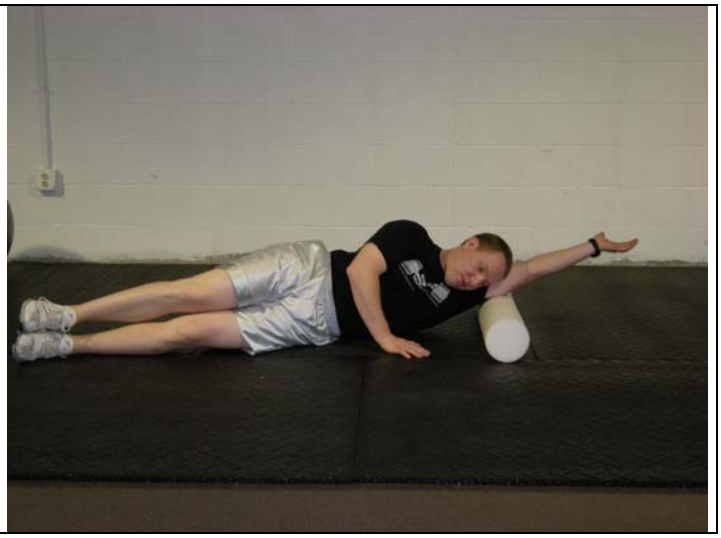
LATISSIMUS DORSI (TENNIS BALL)



Muscle Anatomy and Function	▪ The latissimus dorsi originates from the spine, thoracolumbar fascia, and posterior hips, and attaches on the humerus. ▪ The latissimus dorsi is responsible for extension, adduction, and internal rotation of the arm.
Reasons to Treat	▪ Much like the pecs, the lats can become short and stiff due to overtraining. This lack of extensibility can lead to overuse injuries and/or poor mechanics in many lifts, even those not targeting the lats (e.g., squatting, Olympic lifts).
Set-up	▪ Stand next to a wall with your arm outstretched overhead. ▪ Place a tennis ball just behind your armpit, in between your lats and the wall.
Performance	▪ From the starting position slowly roll the ball up and down along the outside of your armpit. Feel free to flex and extend your knees to increase the range of motion. ▪ Roll for 30–60 seconds, and then switch sides.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

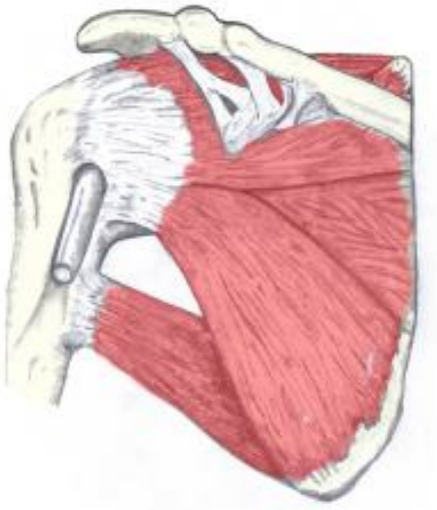
TRICEPS





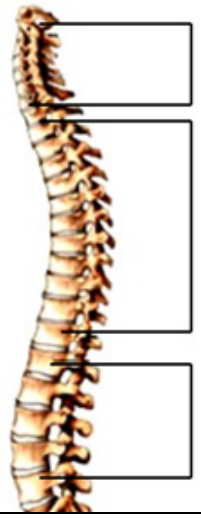
Muscle Anatomy and Function	▪ The three heads of the triceps originate from the superior humerus (upper arm bone) and scapulae. All three heads insert on the ulna, a lower arm bone. ▪ The triceps are primarily responsible for elbow extension, while the long head can help produce shoulder adduction.
Reasons to Treat	▪ The triceps can often become scarred or adhered due to chronic overtraining (too much work on the "beach" muscles).
Set-up	▪ Lie on your side with your arm outstretched overhead and place the back of your upper arm on the roller. ▪ Place your head on your arm to increase the pressure.
Performance	▪ Slowly roll the entire surface of your upper arm; it may help to slide your torso along the ground to get more range of motion. ▪ Roll for 30–60 seconds, and then switch sides. ▪ Try internally and externally rotating your shoulder to focus more pressure on the various heads of the triceps.
Alternate Modalities	▪ Use a harder roller to increase the pressure.

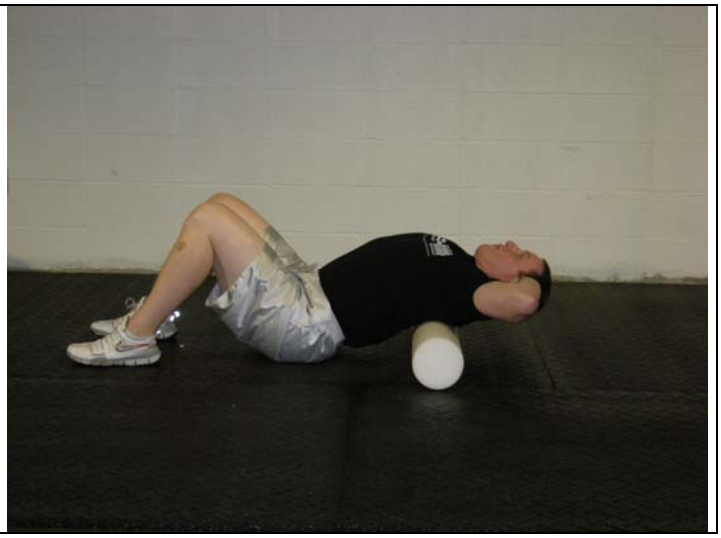
POSTERIOR SHOULDER CAPSULE



Muscle Anatomy and Function	▪ The posterior shoulder capsule encloses the back portion of the shoulder joint. ▪ The shoulder capsule provides passive stability to the shoulder joint, and helps lubricate the joint by secreting synovial fluid.
Reasons to Treat	▪ The posterior capsule is often scarred/adhered in overhead throwing athletes. ▪ A tight/stiff posterior capsule can lead to a loss in internal rotation.
Set-up	▪ Stand next to a wall and place a tennis ball on the wall at shoulder height. ▪ Push the posterior portion of your shoulder into the ball to hold it in place.
Performance	▪ With the tennis ball pinned between your shoulder and the wall, roll it back and forth. It may help to work in small sections as the tennis ball doesn't have a large circumference. ▪ Roll for 30–60 seconds, and then switch sides. ▪ To increase the intensity, pull your arm across your body using your opposite arm. You can also extend the shoulder and flex the elbow to place the posterior capsule on stretch.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

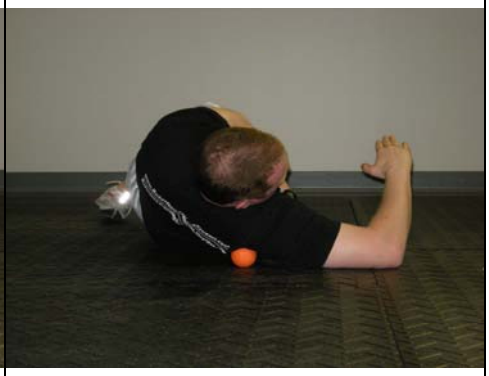
THORACIC SPINE





Muscle Anatomy and Function	▪ The thoracic spine are the middle 12 vertebrae in your spinal column.
Reasons to Treat	▪ Quite often, the thoracic spine is limited in both extension and rotation. Mobilizing the area with a foam roller is a great way to restore function. ▪ If the thoracic spine lacks mobility, the areas above (i.e., the neck) and below (i.e., the lumbar spine) compensate and can become injured. As well, the surrounding muscles can become either "locked-long" or "locked-short," which also causes pain in the front or back of the trunk.
Set-up	▪ Lie on your back with a foam roller placed in the middle of your back. ▪ Your feet and buttocks should be on the ground, with your hands placed behind your head.
Performance	▪ From the starting position, slowly extend the upper back. DO NOT extend the low back; it may help to think of "bracing" the stomach to ensure that the movement comes from the upper back. ▪ Slowly work the roller up and down the back, repeating the extension at the various spinal levels.
Alternate Modalities	▪ You can use a smaller PVC pipe if the foam roller is too big.

INFRASPINATUS AND TERES MINOR



Muscle Anatomy and Function	▪ The infraspinatus and teres minor run from the medial border of the scapula to the back of the humerus. ▪ The infraspinatus and teres minor are external rotators of the shoulder, and they are also responsible for decelerating internal rotation. They are two of the four rotator cuff muscles.
Reasons to Treat	▪ There are often trigger points and adhesions in the infraspinatus/teres minor which can decrease strength and restrict movement quality. ▪ Rotator cuff health is integral for many athletes, especially those participating in overhead throwing sports (e.g., baseball, volleyball, tennis).
Set-up	▪ Lie on your back with a tennis ball pinned between your shoulder blade and the floor. ▪ The upper arm should lie flat on the floor, with your lower arm at a 90 degree angle to it.
Performance	▪ From the starting position, slowly internally and externally rotate your shoulder (move your hand back and forth while keeping the elbow in place). ▪ Repeat for 8-10 passes, and then switch arms.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

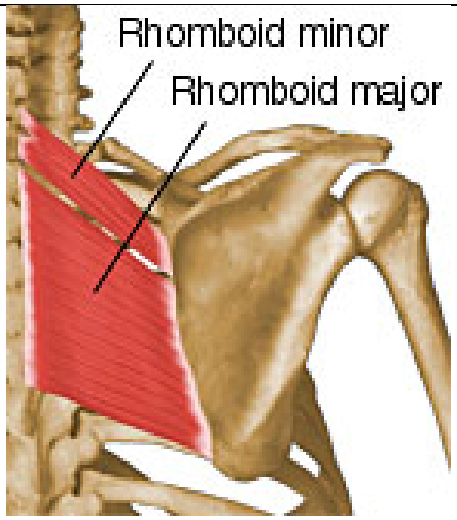
WRIST FLEXORS

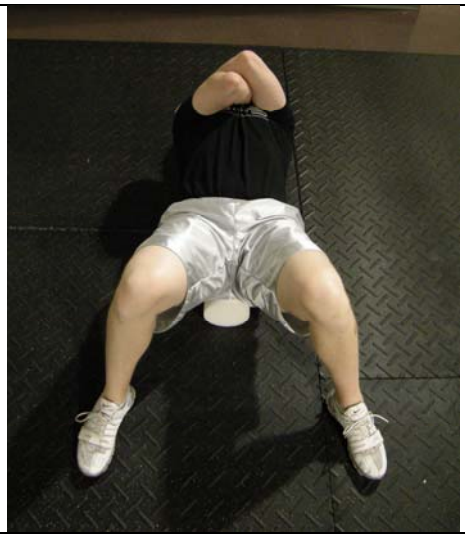
Muscle Anatomy and Function	▪ The numerous wrist flexor muscles originate from several locations on the humerous, ulna, and radius. They insert onto the palm of the hand and underside of the fingers. ▪ The wrist flexors are primarily responsible for flexing and adducting the wrist.
Reasons to Treat	▪ Due to repeated gripping activities, the wrist flexors can often become stiff.
Set-up	▪ Sit on a bench with a tennis ball in one hand. ▪ Press the tennis ball against the inside of your forearm with an open palm.
Performance	▪ With the tennis ball pinned against your forearm, roll it back and forth. It may help to work in small sections as the tennis ball doesn't have a large circumference. ▪ Roll for 30–60 seconds, and then switch arms. ▪ To further increase the pressure, actively extend the hand to place the wrist flexors on stretch.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

WRIST EXTENSORS

Muscle Anatomy and Function	▪ The numerous wrist extensor muscles originate from several locations on the humerus, ulna, and radius. They insert across the back of the hand and fingers. ▪ The wrist extensors are primarily responsible for extending and abducting the wrist.
Reasons to Treat	▪ Due to repeated typing and/or prolonged holds in an extended position, the wrist extensors can become short/stiff.
Set-up	▪ Sit on a bench with a tennis ball in one hand. ▪ Press the tennis ball against the outside of your forearm with an open palm.
Performance	▪ With the tennis ball pinned against your forearm, roll it back and forth. It may help to work in small sections as the tennis ball doesn't have a large circumference. ▪ Roll for 30–60 seconds, and then switch arms. ▪ To further increase the pressure, actively flex the hand to place the wrist extensors on stretch.
Alternate Modalities	▪ Use a harder ball to increase the pressure.

RHOMBOIDS





Muscle Anatomy and Function	▪ The rhomboids originate on the cervical and thoracic spine and insert on the medial border of the scapulae. ▪ The rhomboids are responsible for scapular retraction, and work synergistically with the levator scapulae to promote downward rotation.
Reasons to Treat	▪ The rhomboids are typically overactive/tight, especially when compared to the serratus anterior. ▪ Excessive tension in the rhomboids will lead to poor scapular alignment and restrictions into upward rotation. This typically leads to degeneration of the rotator cuff tendons and pain with overhead movements.
Set-up	▪ Lie down with the foam roller placed lengthwise along your spine. ▪ Cross your arms in front of you, resting each hand on the opposite shoulder to move the scapulae out of the way.
Performance	▪ Roll from the inside border of your scapula/shoulder blade to just outside your spine, working on the rhomboids. ▪ Roll for 30–60 seconds, and then switch sides.
Alternate Modalities	▪ Use a harder roller to increase the pressure. ▪ Use a medicine ball to increase the pressure.

CHAPTER 6: FAQ'S AND CONCLUSION

FREQUENTLY ASKED QUESTIONS

Below is a list of frequently asked questions (FAQ's) about self-myofascial release (SMR).

What benefits are derived from foam rolling/SMR?

SMR provides many of the same benefits as traditional massage, including:

- Improved mobility and range of motion
- Reduction of scar tissue and adhesions
- Decreased tone of overactive muscles
- Improved quality of movement

Is it safe and effective?

SMR is safe and effective for most populations, with only a few safety concerns that need to be addressed. Do not apply pressure to bony prominences or recently injured areas. Those with circulatory or chronic pain issues should only use these techniques if they have been approved by a doctor.

When is the best/most optimal time to foam roll?

This question has caused quite a stir lately; some will tell you immediately before a workout, some after a workout, and still others say that later in the day is best. Here's my take on the situation.

If someone is a relatively new trainee, or needs a postural/movement overhaul, I'm going to place foam rolling first in their training session. The goal for this client/athlete is not a record-breaking performance. Instead, the goal is to execute the movements for that day with precision and flawless technique. Foam rolling will decrease the stiffness of the tissues and help them to assume the body positions I want for them to strength train safely and effectively.

However, as a trainee progresses, I generally have them foam roll either post-workout or later in the evening, several hours after their workout. The reason for this is threefold:

First, if someone needs 10–15 minutes of foam rolling just to get into the right positions to strength train effectively, then they probably shouldn't be training or competing at a high level, because they're going to be at an increased risk of injury. We all know of elite athletes that are a wreck and "play through the pain," but that should be the exception versus the rule.

Second, with high level athletes you want their time in the gym to be focused on the training session at hand. With my highest level athletes, they may spend 90 minutes to 2 hours in the gym to complete a training session. If their tissue and movement quality is acceptable, I'd much

rather get them in and out of the gym and allow them to use foam rolling more as a recovery tool than a focal point of their training session.

Finally, while SMR is a valuable tool in everyone's arsenal, it simply can't be compared to high-quality work done by a skilled soft-tissue practitioner. The longer someone works with me, the more I'm going to push them to get some dedicated soft-tissue work done on their own. This will improve the quality of their movement, expedite their recovery, and increase the longevity of their training career.

Can SMR techniques replace other hands-on soft-tissue therapies?

I don't view soft-tissue work as an all-or-nothing proposition. I think it's largely dependent on what means you have available to you.

If someone has the money to get ART, deep tissue massage, and a host of other soft-tissue modalities done, they may not need to use SMR techniques at all!

In contrast, if someone cannot afford any other modalities, I would recommend using SMR techniques frequently. While they aren't as precise as a skilled practitioner would be, it's absolutely better than nothing.

Like most things in life, the answer is, "It depends." I don't view SMR as the be-all, end-all of soft-tissue methods. I do, however, view it as a viable and cost-effective tool that many can use to improve their movement quality.

CONCLUSION

While there's still much left to understand regarding SMR, I think the wealth of practical and empirical evidence on the topic leads us to believe it's a great tool to have in our toolbox.

The best thing you can do now is take the drills I've outlined in the previous chapters and try them out on yourself. Which areas are tender or problematic? If something is overly tight or tender, it probably needs some extra work. The next step for you is to find the underlying cause and address it via training and behavior modification.

I hope this e-manual has provided you with some insight into the purpose of SMR, along with various methods and techniques. I expect it to become a valuable resource. Best of luck with your future training!

Stay strong,

Mike Robertson

About Mike Robertson

Mike Robertson, MS, CSCS, USAW, is the President of **Robertson Training Systems** and co-owner of **Indianapolis Fitness and Sports Training** (I-FAST) in Indianapolis, Indiana. Mike received his master's degree in Sports Biomechanics from the Human Performance Lab at Ball State University. Mike is an accomplished athlete and coach in the sport of powerlifting. A widely published writer and invited speaker, Mike has rapidly emerged as an industry leader in the world of performance enhancement and injury prevention and rehabilitation. To learn more about Mike, visit his website at www.RobertsonTrainingSystems.com.

Indianapolis Fitness and Sports Training

is Indy's premiere fitness and sports performance facility. I-FAST is a facility for the serious fitness enthusiast who is dedicated and willing to take their performance and health to the next level.

Each and every client who trains at I-FAST is assessed to determine current levels of cardiovascular health, body composition, postural and joint balance, mobility, and strength/power. Once assessed, one of our coaches will develop an individualized program to help each client achieve his or her fitness goals.

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2008 Indianapolis Performance Enhancement Seminar

By Mike Robertson and Bill Hartman
www.IndyPerformanceSeminars.com

In this information packed seminar/DVD series, Bill Hartman and Mike Robertson give you up-to-the-minute information on how and why they train their clients in the ways that they do. Every major area of the body is covered (upper extremity, lower extremity, and core), along with individual presentations on topics such as program design, flexibility training, and assessment.

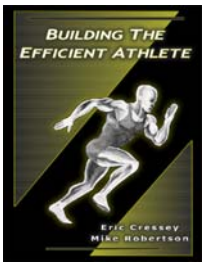
This DVD series includes:

DVD #1 – Introduction and 21st Century Core Training
DVD #2 – Creating a More Effective Assessment
DVD #3 – Optimizing Upper Extremity Biomechanics
DVD #4 – Bulletproof Knees
DVD #5 – Selecting the Optimal Method for Effective Flexibility Training
DVD #6 – Program Design and Conclusion

Bulletproof Knees

By Mike Robertson
www.BulletproofKnees.com

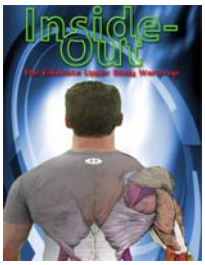
Bulletproof Knees is your first and last resource when it comes to developing long-term knee health. Created for the fitness professional, this manual and accompanying DVD outline all the steps necessary to help your clients achieve long-term knee health.
The contents are easily practiced by the end-user as well. With sample programming and detailed explanations of all training mediums, you'll not only know HOW to do things, but WHY you're doing them as well.



Building the Efficient Athlete DVD Series

By Mike Robertson and Eric Cressey
www.BuildingTheEfficientAthlete.com

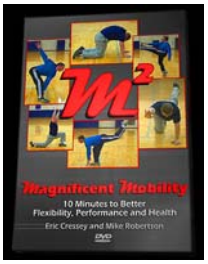
On July 22-23, 2006, 30 trainers, coaches, and athletes assembled in New York City for two days of professional and athletic development unlike any they'd ever seen before. From functional anatomy, to static and dynamic assessments, to corrective exercise programming, and troubleshooting common exercise techniques, these two days had it all—everything you need to build an efficient athlete. Here's your chance to "catch up" to these 30 lucky people; these two days are now available as an eight-DVD set.



Inside-Out: The Ultimate Upper Body Warm-up

By Mike Robertson and Bill Hartman
www.Inside-Out-Warm-up.com

Inside-Out: The Ultimate Upper Body Warm-up creates a paradigm shift in the way athletes and strength trainers prepare for their workouts. By improving biomechanical alignment, restoring balance, and activating the appropriate musculature, you'll be well on your way to workouts that not only keep you healthy, but consistently improve your performance as well!



Magnificent Mobility

By Mike Robertson and Eric Cressey
www.MagnificentMobility.com

Magnificent Mobility marks a revolution in the way athletes prepare for competition, training, and rehabilitation. Old-school methods of preparation, such as light cardio and static stretching, are things of the past. These ineffective traditionalist approaches simply won't prepare you for superior performance and they might even injure you! In addition to serving as a great warm-up, the drills contained in this DVD will improve joint mobility—an important, yet often-overlooked quality necessary for optimal health and performance. With over 30 exercises and the rationale for their use included, you're guaranteed to find drills to take your performance to the next level!

CREDITS

While I realize this isn't a novel or published book, I feel the need to thank a few people who have helped me along the way:

Lisa Holladay, for her continued support as an editor and go-to authority when it comes to improving my writing.

Bill Hartman and Eric Cressey, for constantly helping me refine my craft.

Jim "Smitty" Smith, for the cover design, and all the other work along the way as well!

Much of the hardcore anatomy came from the text *Anatomy of Movement* by Blandine Calais-Germain.

Justin Ware, for snapping some mean photos and always lending a hand whenever I need it.

Finally, to my lovely wife Jessica, who always puts up with my work habits!