Training for Your Best 5k

A Sensible and Educational Approach
by Chris Morin

Fitness Walking/Running

SELF BODY ANALYSIS

Summary of self analysis

- I would suggest going over our self body analysis before you start a fitness walking/run program. These are some of the common tests I perform on people looking to start a run program. It will help you pin point areas that you may need to work on (see first page):
- Highlights:
  - * Having a healthy BMI will make you less prone to injury and a better runner (page).
  - * Understand your feet and determine if they are flat or if you over pronate (see feet). * Understand your knees and determine if if you are bow legged or knocked knee (see knees). It could become problematic if you any of these conditions, especially if you ever have existing feet or knee problems. If you have I would highly suggest conditioning your feet, ankle, knees, and hips as well as the core.
  - * Perform single leg squats as a test and in your training; it is both a test of strength and balance and it a great exercise that strengthens your core and your gluteals (see single leg squat)
  - * The lunge tests is essential, which is a test of ankle mobility (see test).Lack of ankle mobility has been shown to lead to injury.
  - * Make sure you have good hip extension by doing the hip extension test (see test). Limited hip extension will limit Triple Extension, which is essential in propulsion (see importance of Triple Extension).
  - * Tight and Weak Hip Flexors can limit hip extension and decrease your ability to propel yourself (see test and exercises for hip flexors).
  - * The Gluteals (aka Glutes) are an important Core Muscles. The glutes are key in propulsion, because they are key muscles in Triple Extension, which occurs during both walking and running. They are also important in protecting the knee and back (see tests and exercises).
  - * What is the Core? The easiest explanation is the musculature above the knee and below the chest, which includes to glutes. A developed core allows you to transmit forces throughout your body better. If you want to be a better runner or athlete or just be plain fit develop your core. The lateral Core is Essential for Running: It keeps the hip up, which assures knee and hip alignment. Side Bridges and Lateral Leg Lifts/Walks works the Lateral Core. See tests and exercises for the lateral core. See core training page for more information.
  - * Your lower leg, which include the calves and dorsiflexors (muscles next to the shin bone) are important in quality pain-free running. See tests and exercises.
  - • Understand pain: this is an important point ! The most frequently identified risk factor in running related injuries is a previous injury. Therefore, prevention of this first injury is very important so you should do strength and conditioning to improve performance and prevent injury. You also need to understand pain and not work through it. Pain is a sign of dysfunction.It is a sign that something is wrong.Working through it will cause more problems and more pain. Fatigue is not the same as pain. When you exercise and you have pain stop and examine.

Self Body Analysis

1. Novice Runners should Determine BMI; it should be between 19 and 26 before you start a serious running program. Determine BMI. See review

Less Body Weight = < Impact and > Speed in most cases.

Very Low BMI <19 associated with stress fractures.

Experienced runners with no injury history actually may have a higher BMI according to research, but I do not suggest.

Self Body Analysis
2. Examine your feet

<u>Lets look at your Feet</u>

<u>Standing</u>

Look at your feet first while standing and then while running.

Standing shoulder width apart and look down at your feet. Does there seem to be an equal size arch on each foot and does the second toe line up with the knee cap; this is considered normal. If the arch drops and where it is flat to the ground then you may have flat feet (pes planus).

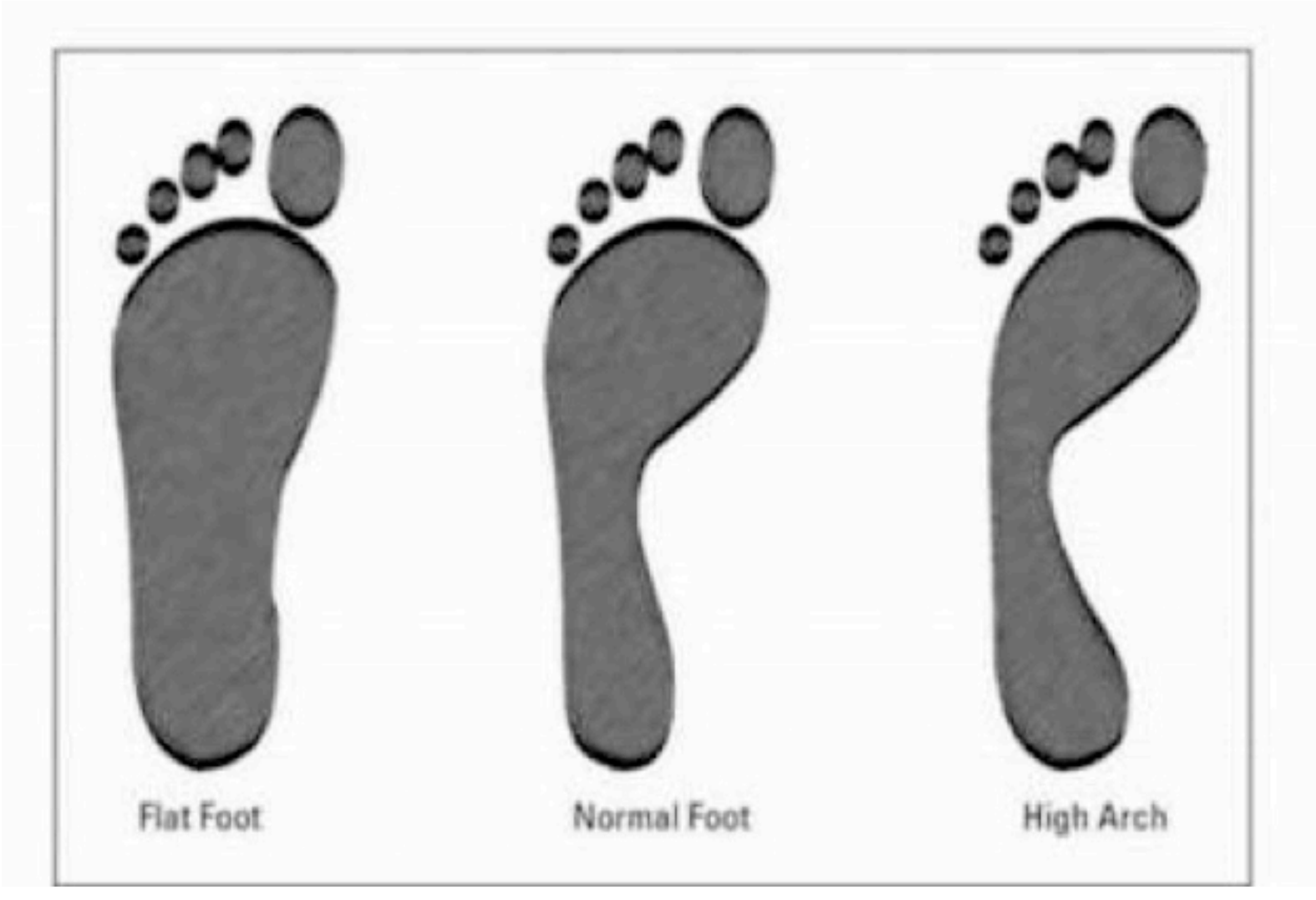
Opposite to this is where there is a high arch; where you feel the weight of your body on the outer aspect of the foot (pes cavus). Look at your arch while you run.

Both conditions make you more susceptible to injury, but corrective shoes may not be the answer (<u>read more</u>), rather foot, ankle, knee, hip, and core conditioning exercises may be.

If you are a runner and had no issues then it is not a concern. If you do have flat feet let me watch your form.

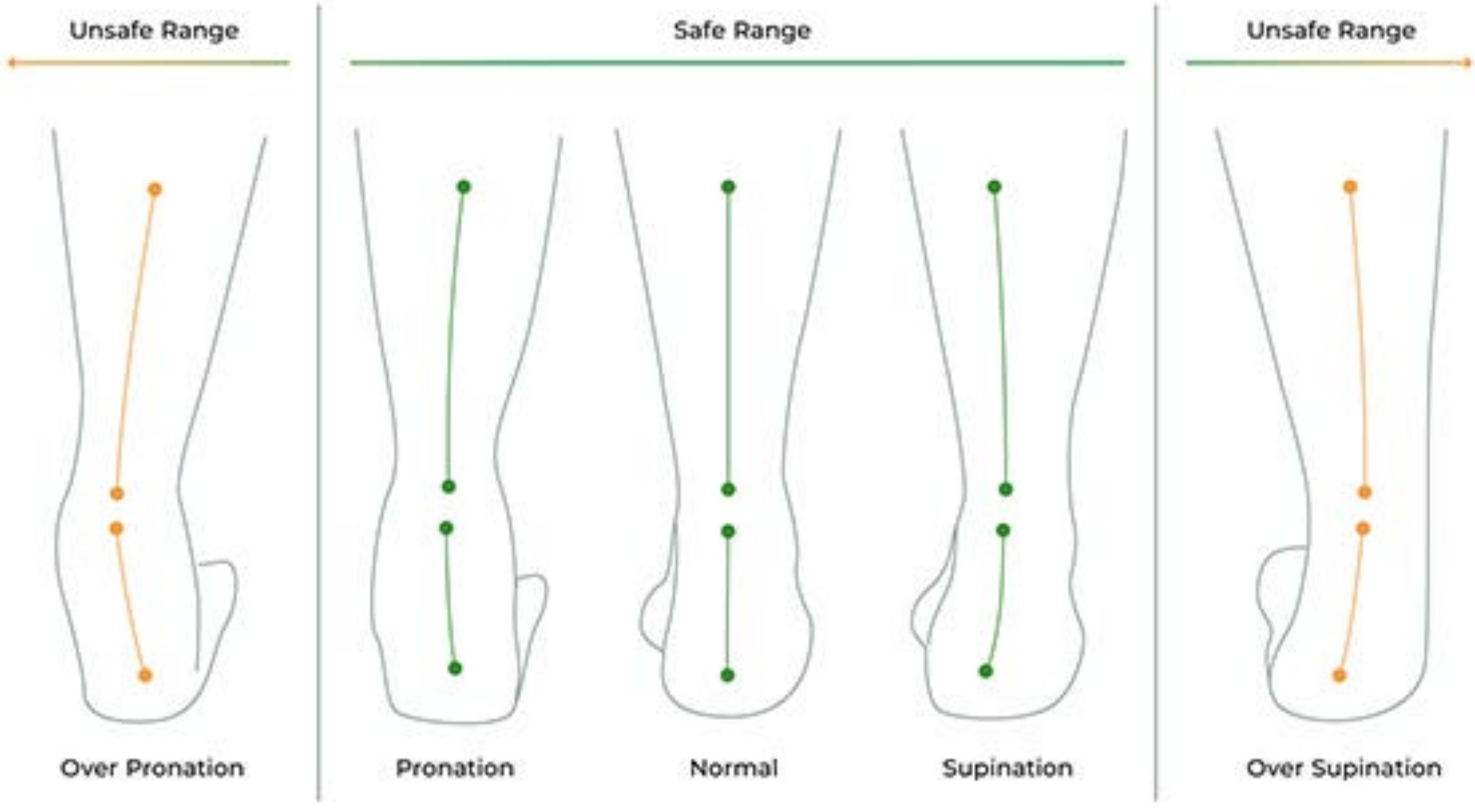
Wet Test

Another easy way to understand your feet is to wet the bottom of one foot and then step onto a flat surface. A flat foot will leave a fat, almost complete footprint. A normal foot will show about half of the arch. You can use the same technique while walking and running to see if the problem exists moving



Take a picture from the rear of your heel cord

If you are in an unsafe zone and new to running it might be a good idea to get your shoes at a running store where you are sized and fitted. Again the literature on motion control shoes and reducing injuries in runners is not supportive. More importantly are shoes that feel comfortable and supportive as well as conditioning your foot and ankle.



Side Lesson
Running Shoes
101

Running Shoes and your Feet: When it comes to running shoes reported comfort is currently the best advice we can give regarding shoe choice for decreasing running related injuries when it comes to inserts and shoes. In other words you have to find a shoe or insert that is comfortable for you versus the shape of your foot or your foot's mechanics (See my article).

DO YOU/CAN YOU DO THIS?
Short Wellness Self-Checks

Do You Have Use Motion Control Shoes
Do You Over Pronate

From Newsletter

When it comes to running shoes reported comfort is currently the best advice we can give regarding shoe choice for decreasing running related injuries when it comes to inserts and shoes. In other words you have to find a shoe or insert that is comfortable for you versus the shape of your foot or your foot's mechanics (See Study). I have often suggested motion control shoes for those who over pronate or under pronate. The Use of these Type of Shoes might be UnHelpful for some. A study showed that our current approach of prescribing in-shoe pronation control systems on the basis of foot type is overly simplistic and potentially injurious (See Study). Another study backs this. This prospective study demonstrated that assigning shoes based on the shape of the plantar foot surface had little influence on injuries even after considering other injury risk factors (See Study). Shoe manufacturers market motion control, stability, and cushioned shoes for plantar shapes defined as low, normal, and high, respectively. This assignment procedure is presumed to reduce injuries by compensating for differences in running mechanics. This study suggest that it does not help. Another study support this where foot pronation was not associated with increased injury risk in novice runners wearing a neutral shoe (See Study). The results of this study contradict the widespread belief that moderate foot pronation is associated with an increased risk of injury among novice runners taking up running in a neutral running shoe. **The authors suggest that despite wide based opinion that over pronating can cause injuries in runners based on current research those who "over pronate" while they run actually have a lower risk of running related injuries.** What all this suggests is that we have to rethink our shoes. We need to think about how they feel to us rather than our foot shape or how our foot moves. Bottomline: When it comes to an athletic shoe we need to find what shoe style or inserts work best for us based on how they feel.

Do You Need Expensive Running Shoes: Affordable mid-price range running shoes are very nearly the same as expensive running shoes. I have found this to be true personally. That is why I typically spend moderately on my shoes and I always go for comfort and feel. (See my article).

Do You Need Minimalist Running Shoes: The popularity of running barefoot or in minimalist shoes is based on claims of injury prevention, enhanced running efficiency, and improved performance compared with standard running in shoes. A review suggest that because of lack of high-quality evidence, no definitive conclusions can be drawn regarding specific risks or benefits to running barefoot, shod, or in minimalist shoes (See Review).

DO YOU/CAN YOU DO THIS?
Short Wellness Self-Checks

Do You Need Expensive Running Shoes? How about Minimalist Shoes?

NOPE: Mid-Range Price shoes works best. In a recent Do You/Can You article I wrote that motion control shoes might be poorly suggested to some people. What I said it is more important is how the shoe feels (COMFORT) when you walk and/or run. Another question that comes up is do you need expensive shoes? Interestingly, according to the Washington Post a Danish Web site called runrepeat.com has crunched the numbers from nearly 135,000 consumer reviews.The biggest surprise: The higher the price, the lower the rating in many cases. In fact, the 10 most expensive running shoes, with an average list price of $181 per pair, were rated 8.1 percent lower than the 10 cheapest models (average price $61). The authors of the review state "If money is a matter to you, you will not get more in expensive running shoes". Affordable mid-range running shoes are very nearly the same as expensive running shoes. I have found this to be true personally. That is why I typically spend moderately on my shoes and I always go for comfort and feel. MY FEET KNOWS WHAT THEY LIKE. According to the Post article Skechers, Saucony and Vibram FiveFingers took the three spots on the podium, while Reebok, Adidas and Hoka One brought up the rear. As for the bottom of the list, the Post's author was very surprised to find Hokas there. Hokas is the pioneer of the current fat-sole boom. Ultra-marathoners swear by them, and lots of people are wearing them on the roads.

I also suggest not to wear your running she's all day long. Switch into another comfortable pair of shoes that offer some support. When at home go bare feet at times to condition your feet, but do not go bare foot all the time and please stay away from flip flops. HOW ABOUT BAREFOOT RUNNING SHOES The popularity of running barefoot or in minimalist shoes is based on claims of injury prevention, enhanced running efficiency, and improved performance compared with standard running in shoes. A review suggest that because of lack of high-quality evidence, no definitive conclusions can be drawn regarding specific risks or benefits to running barefoot, shod, or in minimalist shoes (See Review). Read more on minimalist shoes here.

If you are interested in minimalist shoes READ more:

Are minimalist shoes better for you?
These studies found that, following the transition to minimalist shoes, runners improved running economy, reduced peak pressure under the heel and increased intrinsic foot muscle cross-sectional area, but experienced increased calf and shin pain, increased foot bone marrow oedema[10] and a higher injury rate.
The long-term effect of minimalist shoes on running ... - NCBI

Minimalist - Better Economy but More Risks

Are minimalist shoes worth it?
The results indicated that **when running in minimalist shoes, the athletes had shorter contact times but higher peak forces on their feet**. These results were the most significant for the runners who landed on their forefeet, compared to those who had a midfoot or rearfoot-striking pattern.Jan 31, 2022
Study: do minimalist shoes cause injuries?

Do Not Wear Old Shoes

Wearing outworn shoes increases the risk of injuries, while using multiple pairs of running shoes decreases the risk of Running Related Injuries.

Running Shoes Last 300-500 Miles

You should generally replace your running shoes **every 300–500 miles**. That's because it's around this point that the midsole cushioning on most shoes will lose resiliency and stop absorbing shock as well as when newer, which can cause more impact on your muscles and joints.

Taunton JE, Ryan MB, Clement DB, et al.. A prospective study of running injuries: the Vancouver Sun Run "In Training" clinics. *Br J Sports Med* 2003;37:239–44. 10.1136/bjsm.37.3.239 [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Malisoux L, Ramesh J, Mann R, et al.. Can parallel use of different running shoes decrease running-related injury risk? *Scand J Med Sci Sports* 2015;25:110–5. 10.1111/sms.12154 [PubMed] [CrossRef] [Google Scholar]

PICKING RUNNING SHOES DETAILs-see more at Runner's World

- The most important thing is that your shoes are comfortable when you run.
- In general, a pair of running shoes should last between 300 to 500 miles of running (3 or 4 months for regular runners).
- Try on new shoes during the midday when the foot is at its largest.
- You should have a thumbnail's length of extra space in the toe box.
- The heel counter should be rigid.

- If you overpronate you can use a regular running shoe if you wear your orthotics, but a motion-control shoe offers the most additional support (this is questionable). Make sure you bring your orthotics when trying on new shoes.

- Foot width is an issue; you don't want a show that is too narrow or too wide.

- The midfoot should not be too tight, but it should be snug. Experiment with the lacing to get a proper fit.

- Take the shoes outside for a test run.

- Bring your running socks and try both shoes on. If one foot is larger than the other, buy the larger size.

- Find a good running-shoe store in your area,one where the salespeople are knowledgeable.

- Expect to pay anywhere from $60 to $120 dollars for a new pair of running shoes.

- One study suggest there is no difference between an expensive pair of running shoes and those moderately priced if there is no anatomical issues.

- **Foot Width**
- Most men wear a D-width shoe while most women wear a B-width. You don't have to wear a gender-specific shoes. The lasts are basically the same. Men: Try a women's shoe if you have a narrow foot. Women: Try a men's shoe if you have a larger or wider foot. If the shoe fits, wear it!

- **Overpronation and Oversupination**
- If you overpronate or underpronate you can tell by the wear of your shoes.
- • If you have a neutral stride, shoe wear is centralized to the ball of the foot and a small portion of the heel.
- • Overpronation is identified by wear patterns along the inside edge of your shoe.
- • Supination is marked by wear along the outer edge of your shoe.

- **Types of Running Shoes**
- Cushioning shoes provide elevated shock absorption and minimal medial (arch side) support. Cushioning shoes are also good for those who oversupinate. Cushioning shoes are also good for neutral runners during off-pavement runs. Reason: Minor irregularities in surfaces such as dirt roads give feet a little variety from the repetitive, same-spot strikes they typically experience on hard surfaces.
- Stability shoes help decelerate basic pronation. They're good for neutral runners or those who exhibit mild to moderate overpronation. Due to their extra support features, virtually all trail-running shoes fall in the stability category.
- Motion control shoes offer features such as stiffer heels or a design built on straighter lasts to counter overpronation. They're best for runners who exhibit moderate to severe overpronation.

Shoe Lasts
The "last" refers both to the shape of a shoe and also the form, or mold, around which a shoe is constructed.
When referring to the shape of a shoe:

- A **straight last** is appropriate if you are an overpronator or have a flexible, flat arch. It helps to control inward motion.
- A **curved last** is designed for underpronators (oversupinators) with rigid, high arches. The curved shape promotes inward motion.
- A **semi-curved last** represents the middle ground. It is appropriate for neutral pronators.

Chris's Summary of Feet and Shoes

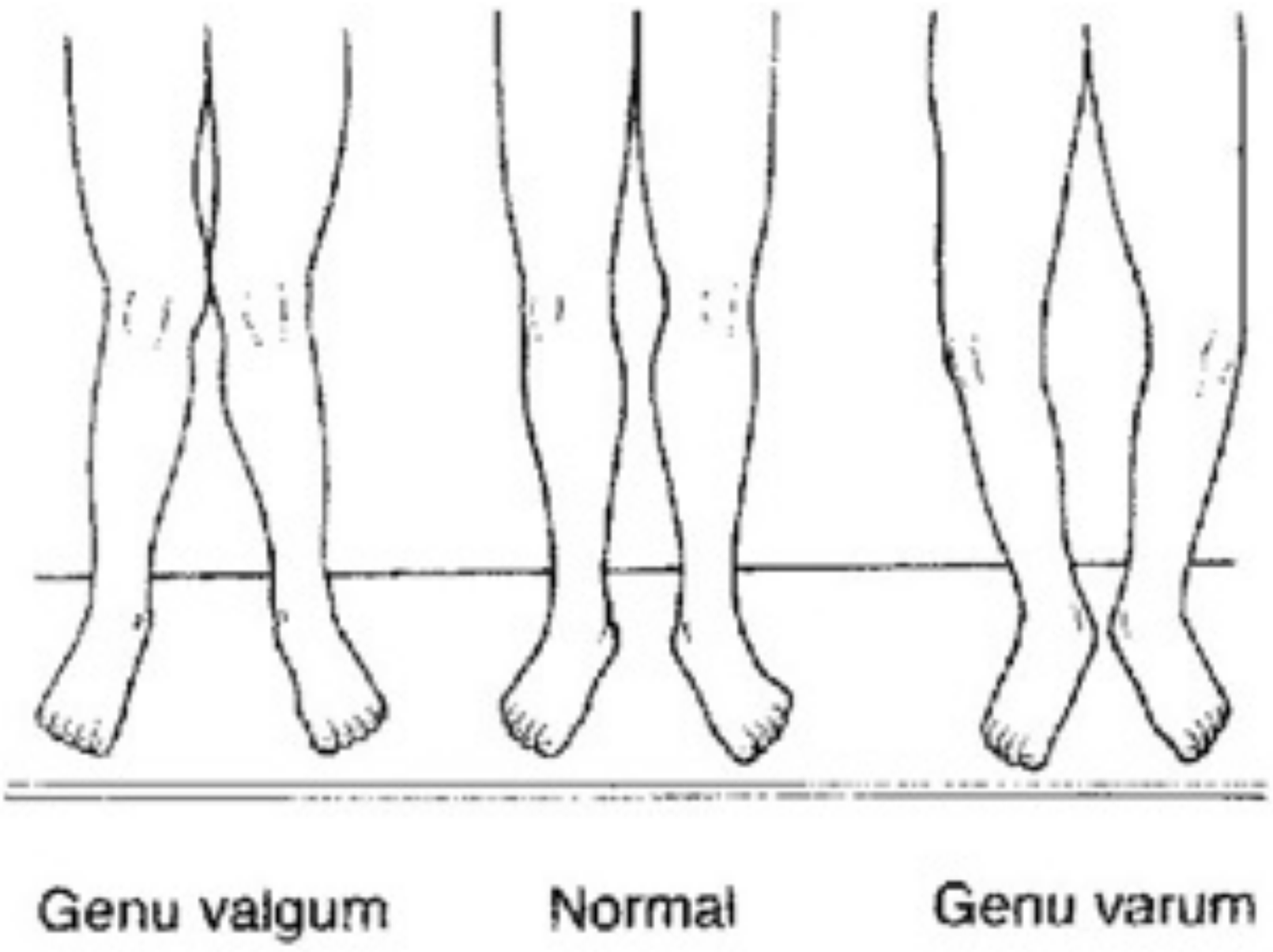
- Check if you over pronate or supinate in an unsafe zone. Did you ever have feet problems? If you did condition your feet, ankle, knees, and hips as well as the core. See how motion control shoes feel. If they feel better than traditional run shoes than go with them.

- Get New Shoes. Do Not start running on old ones. Find a shoe that is comfortable for you versus the shape of your foot or your foot's mechanics

- Affordable mid-price range running shoes are very nearly the same as expensive running shoes.

- If you are new to running stay away from minimalist shoes and barefoot running for now or maybe forever.

Self Body Analysis
3. Examine your knees



Varus and Valgus deformities can lead to abnormal forces around the hip and knee joint causing several common knee disorders, including iliotibial band syndrome, patellofemoral pain syndrome, chondromalacia of the patella, and more. Repetitive trauma to the knee, which can be caused by activities such as running or biking, combined with improper alignment, can lead to joint pain and may damage the internal structures of the knee, such as the ligaments or the menisci. Therefore there is a need for limiting running and conditioning the hips and knees for improved strength at various angles, directions, speeds, and heights for those who like to run. Hip and knee strengthening exercises in all directions with proper form, as well as balance and stability training, will help provide improved support (see more here).

Knocked Knee

Bowed Legged

Self Body Analysis

3. Examine your knees

Examine Your Knees

Use a mirror, it is a good tool.

Unfortunately if you have bow legs or knock knees you may be at higher risk for injuries during high-impact exercise like aerobic dance and running type sports. Knees that deviate from the norm (either in or out) can put added strain on the joints of the entire lower body and even the upper body, especially the hips, knees, lower legs, ankles, and feet. The norm is where the when standing shoulder width apart the knee sits over your feet.

Someone who has knock knees will often pronate (the ankles and feet roll inward too much), while if bow legged person is more likely to supinate (the ankles and feet roll out). If you have either condition you may be a good candidate for an orthotic. A physical therapist or podiatrist may prescribe inserts or a modified exercise program. Also if you have these condition w**hen you run make sure your knee and feet line up and do not do too much mileage! If you have either condition you need to strengthen the core and the lower limbs.**

Self Body Analysis

4. Examine your hips

Having large hips and a large Q-angle can cause problems as well.

Q angle-the angle formed by lines representing the pull of the quadriceps muscle and the axis of the patellar tendon.

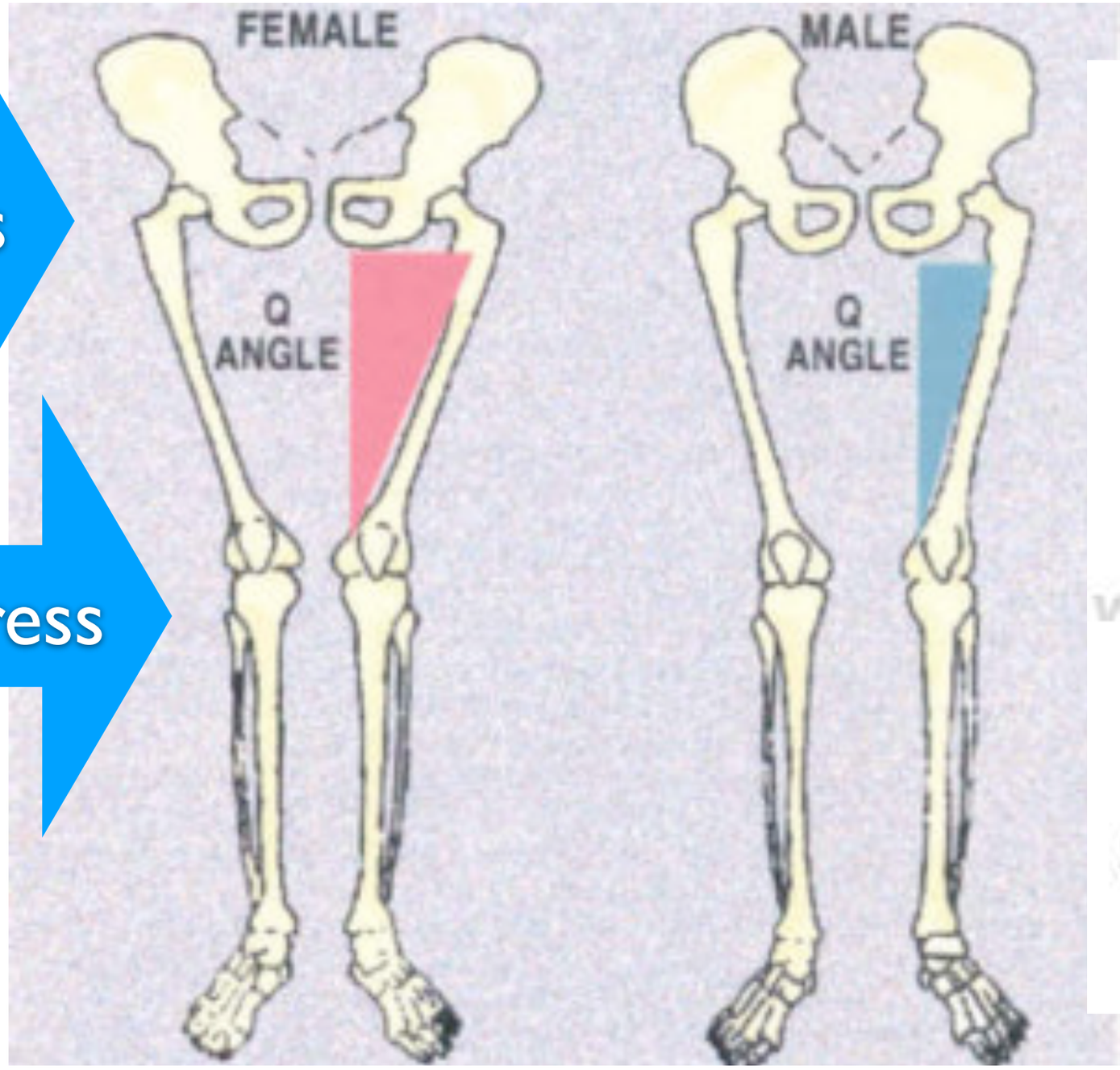
There has been studies suggesting an association between a large q-angle and patellofemoral and hip pain and IT band issues.

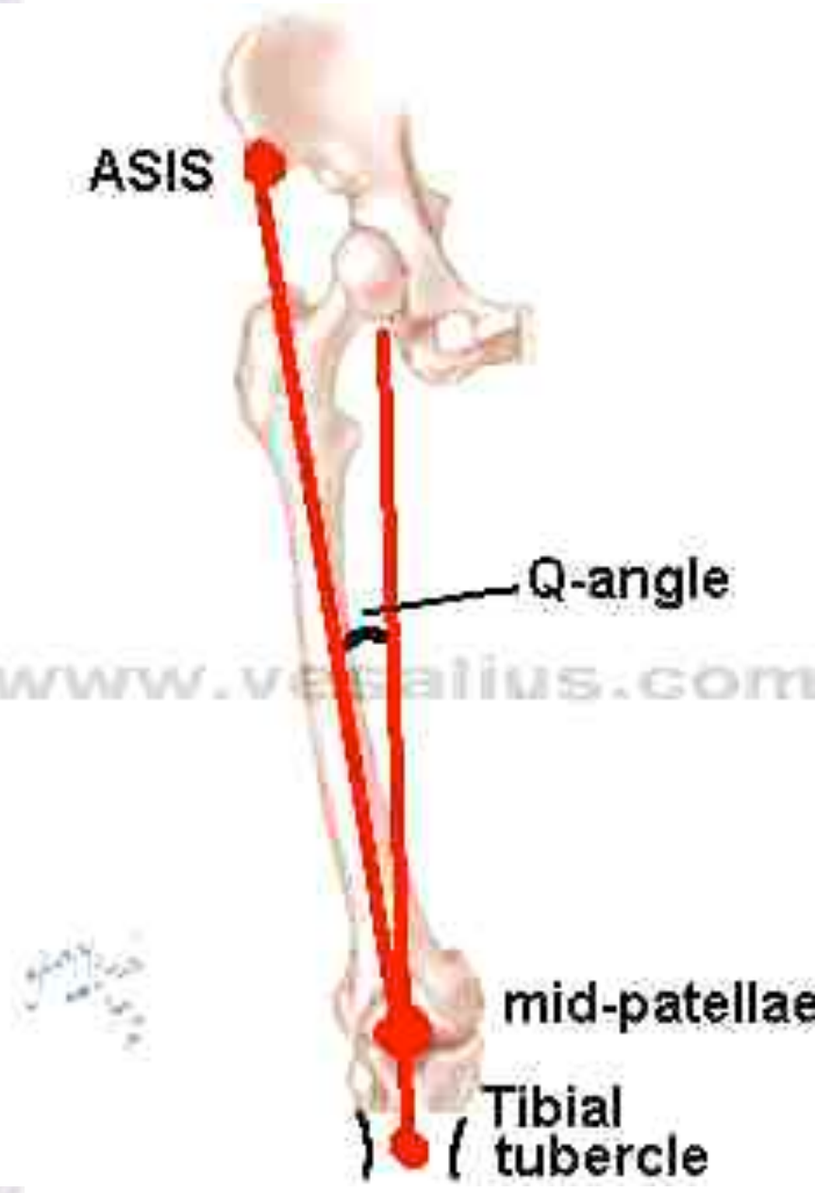
An increased Q angle places more stress on the knee joint, as well as leading to increased foot pronation.

Q Angle

Stress

Stress

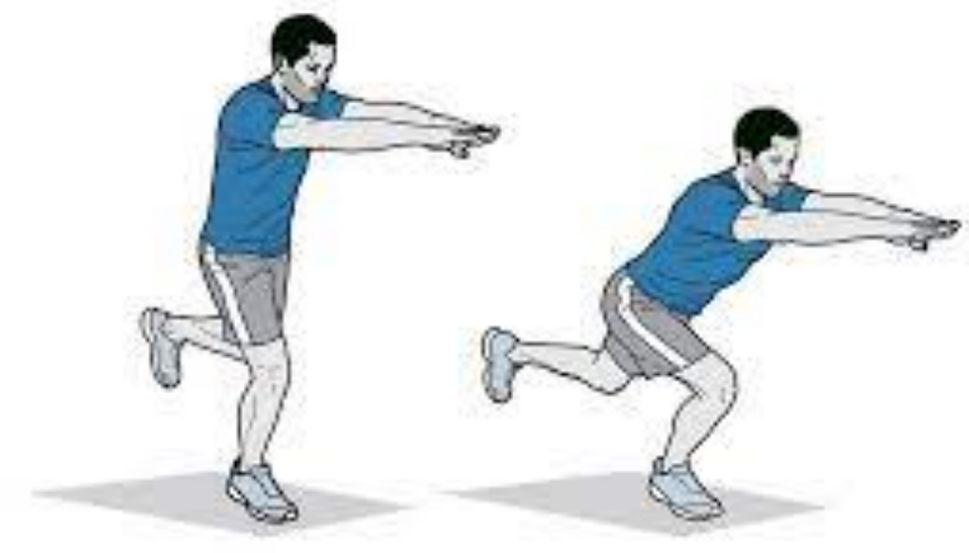


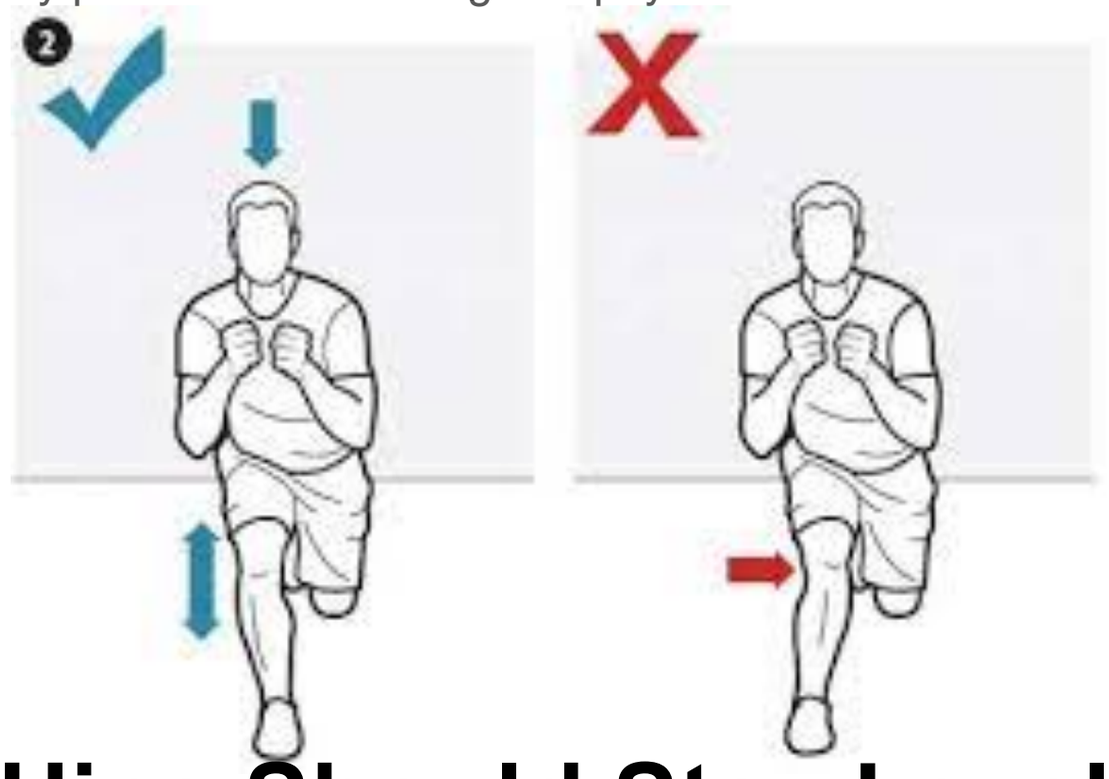


Large Q-angle greater stress at hip and knee. **Therefore need to strengthen the lateral hip.** Runners with a Q-angle 20° were more likely to injure their knee. Runners with a Q-angle 20° had greater time lost due to injury (Study)

Self Body Analysis: The single leg squat test is a way to determine if you need to strengthen your hips and quads if you have a large Q angle and/or Varus or Valgus Knees. It is also a great exercise that all runners should do.

The single-leg squat test SLST (also known as a single leg sit to stand test) is a test used to assess dynamic hip control and lower limb function and has practical relevance to any sport involving landing, cutting, or running. The SLST is commonly used for injury prevention screening and physical rehabilitation evaluation.



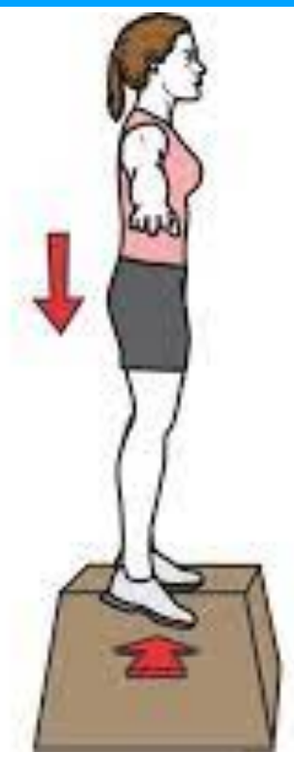


*** Hips Should Stay Level.**
*** Knee Should Line up with second toe.**

Great Training Exercise 3 sets 10-15 reps

Start Here Supported

PROGRESSION



Keep Hips
Level
Keep Knee
Lined up with
Second Toe

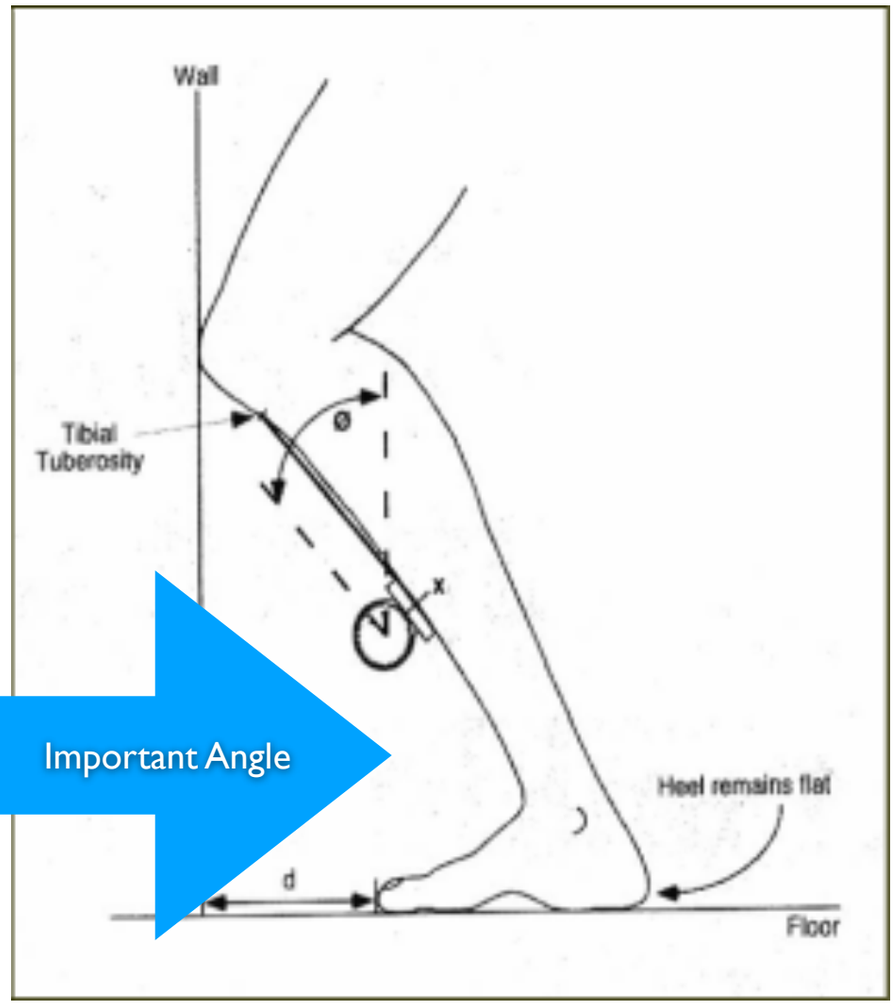
PROGRESSION

Self Body Analysis 5. Examine your ROM Flexibility Self Tests MUST DO TEST

Lack of mobility in the ankle will limit motion and place stress above and below.

Calf: Do you have good calf flexibility?

Stand with toes 4 inches from wall. Keeping foot flat you should be able to touch knee to wall. If not work on stretching and strengthening the calf with this and other stretches. Both sides should be the same. A restricted Lunge test essentially suggests there in an increased ankle joint dorsiflexion stiffness. Research tells us this may increase an individuals risk for lower extremity injury. Considered one of the best tests to predict injury.



Flat foot knee touches at 4” at least prefer 6”

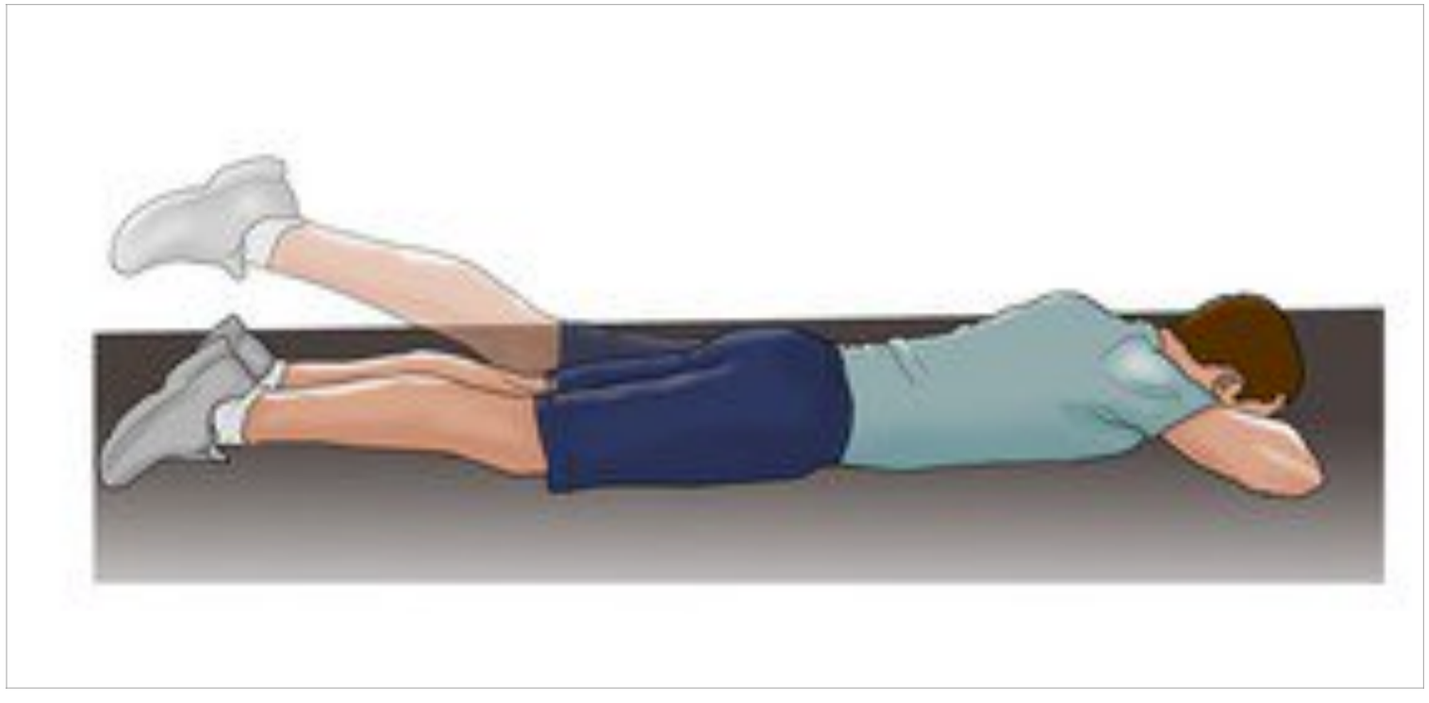
References

Bennell, K. L., Talbot, R., Wajswelner, H., Techovanich, W., & Kelly, D. (1998). Intra-rater and Inter-tester reliability of a weightbearing lunge measure of ankle dorsiflexion. *Australian Physiotherapy*, 24(2), 211-217.

Gabbe, B. J., Finch, C. F., Wajswelner, H., & Bennell, K. L. (2004). Predictors of lower extremity injuries at the community level of Australian football. *Clin J Sport Med*, 14(2), 56-63.

Pope, R., Herbert, R., & and Kirwan, J. (1998). Effect of ankle dorsiflexion range and pre-exercise calf muscle stretching on injury risk in Army recruits. *Australian Physiotherapy,* 44(3), 165-172.

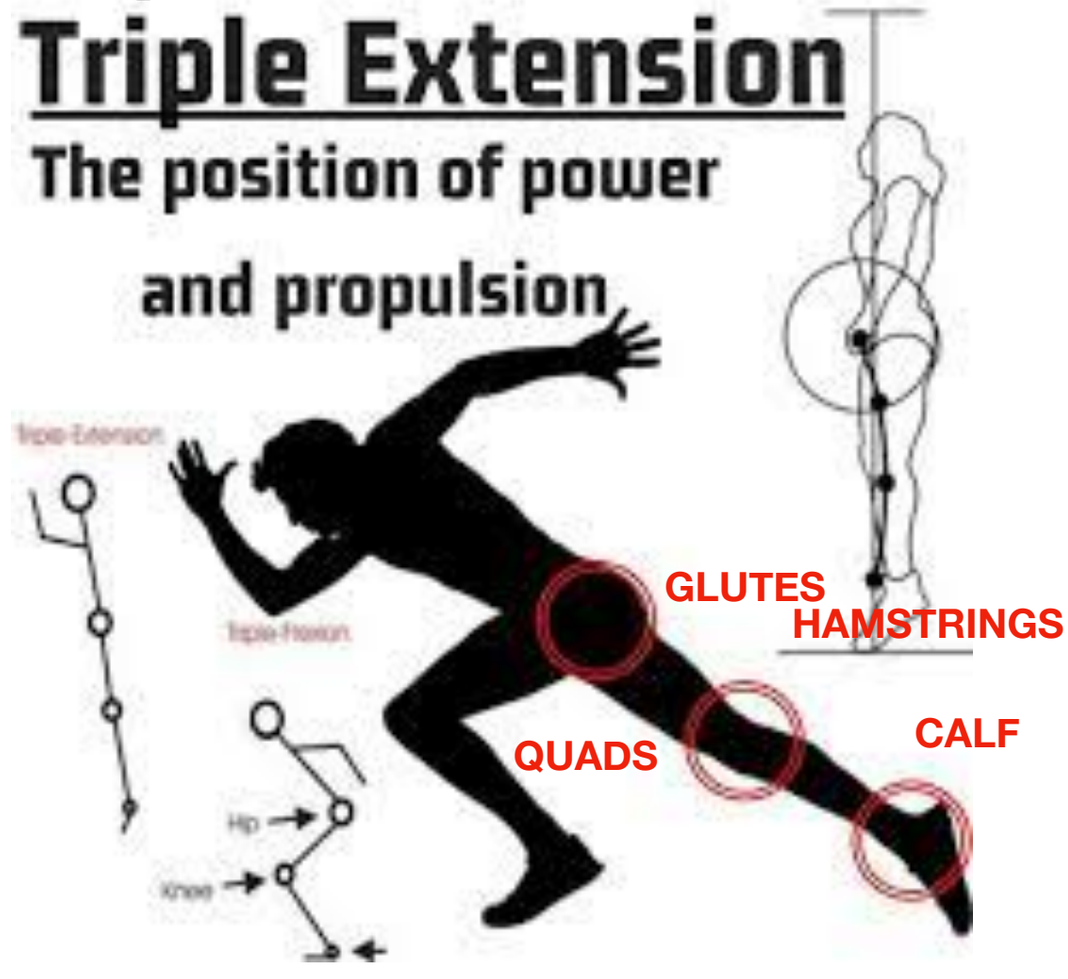
Flexibility-MUST DO TEST Prone Hip Extension Test. Hip extension is important in propulsion. You should be able to lift it up 10-20 or more degrees. Runners are shown to extend their hip around 10-15° at 'toe off' (Koblbauer et al. 2013).Note the muscles engaged. Proper movement should come first and primarily from the gluteals with minor low back and hamstring involvement in that order. If not you may have weak glutes and tight hip flexors. You can use this test as an exercise. WHY IS THIS IMPORTANT: Researchers trace the biomechanical cause of many (but of course not all) running injuries to poor biomechanics around the hips and pelvis. Lying prone lift one leg up.



TRIPLE EXTENSION

POWER PHASE of Running starts at hip extension. If you have limited hip extension you are limiting propulsion:

Triple Extension is Key to Power Sports as well as Fitness Walking and Running



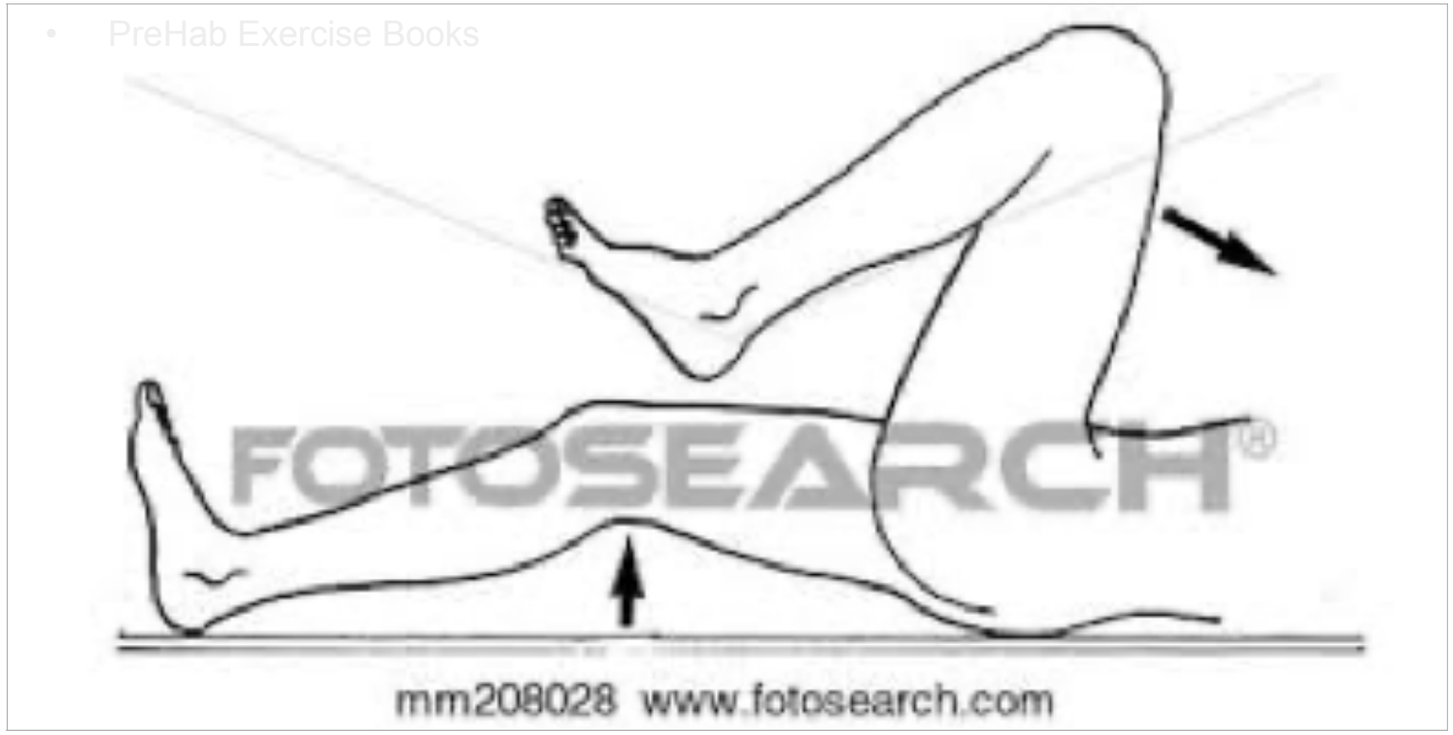
The term triple extension refers to the extension of the hips (glutes and hamstrings), knees (quads), and ankles (calf). This happens during the stance to push-off phase in fitness walking and running. Push back from the glutes, hamstrings, quads, and calves through toe off.

The **gluteus maximus** is the largest muscle in the human body. **Make sure iyou engaged it. HIP, KNEE, AND CALF ISSUES HAPPEN FROM WEAK GLUTES.**

5. Flexibility-Hip Flexors. Do you have adequate hip flexor flexibility?

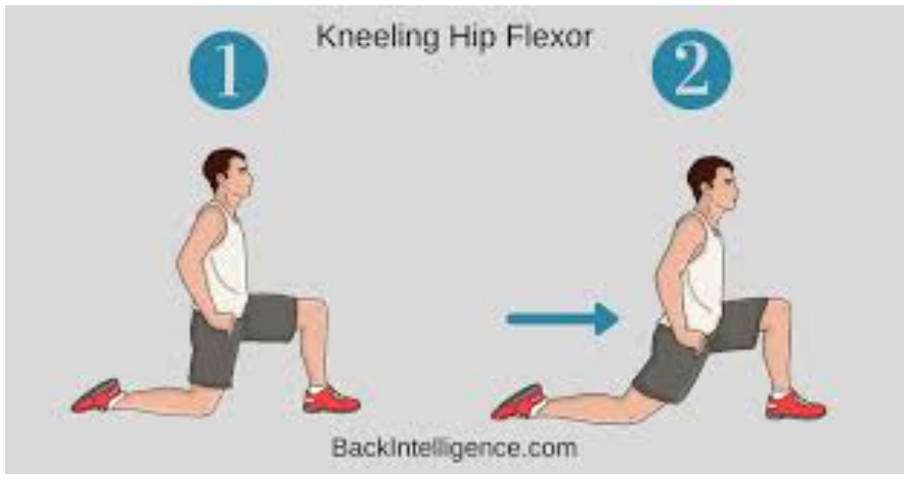
Tight Hip Flexors may limit hip extension which will decrease propulsive forces and possibly cause back pain. While prone on floor pull one knee into chest. The opposite leg / knee should not raise up. If it does work on stretching and strengthening the hip flexors and gates. Both sides should be the same.

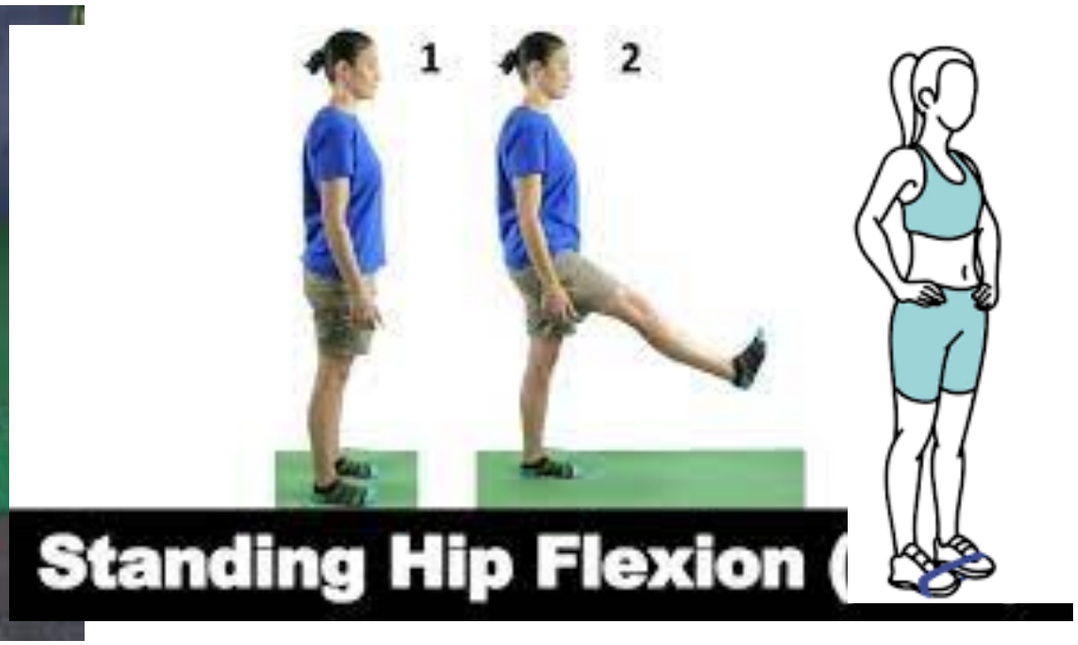
Some suggest **tightness or hypertonicity of the psoas muscle resulting from prolonged sitting in a flexed position** can mechanically restrict the motion of hip extension and inhibit the glutes. A tight psoas muscle will restrict hip extension range of motion, which normally is 10-20 degrees, and will result in a decreased stride.



Tight Hip Flexors may limit hip extension and inhibit the glutes (research)

HIP FLEXOR Stretching and Strengthening to Prevent and Treat Injuries (see more here)



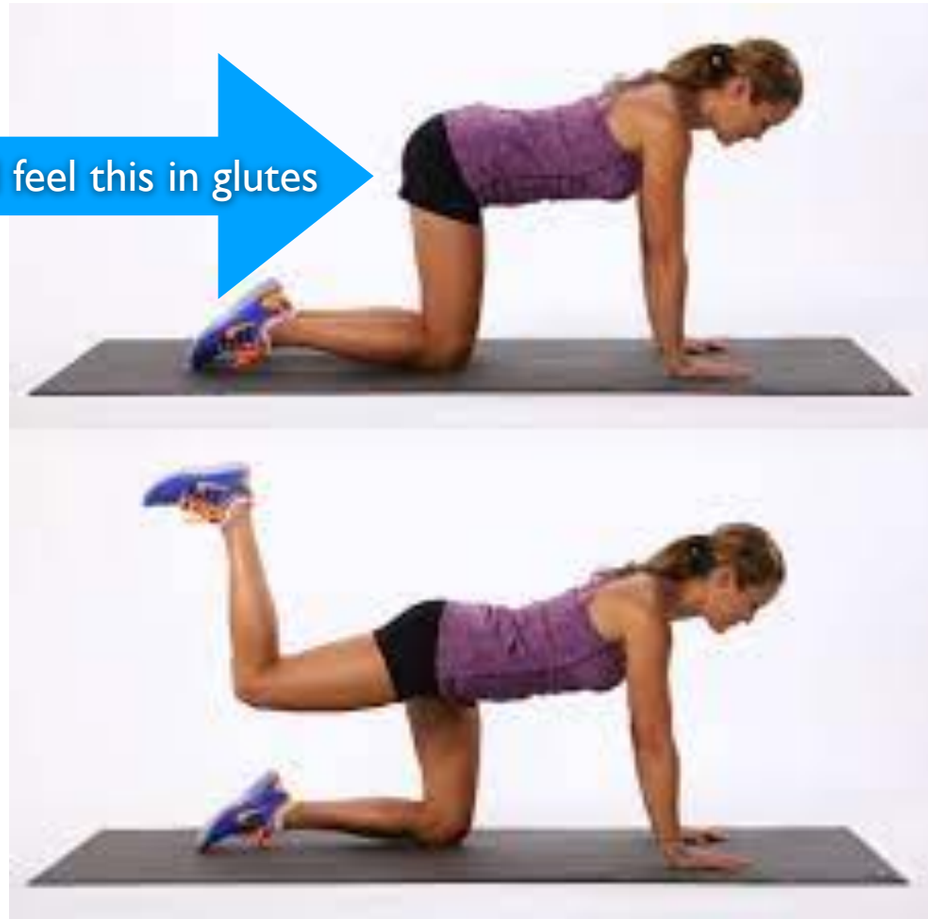


Tight Hip Flexors could be because of weakness, so strengthen. Stronger hip flexors will make you faster.

Self Body Analysis 6. Muscular Tests

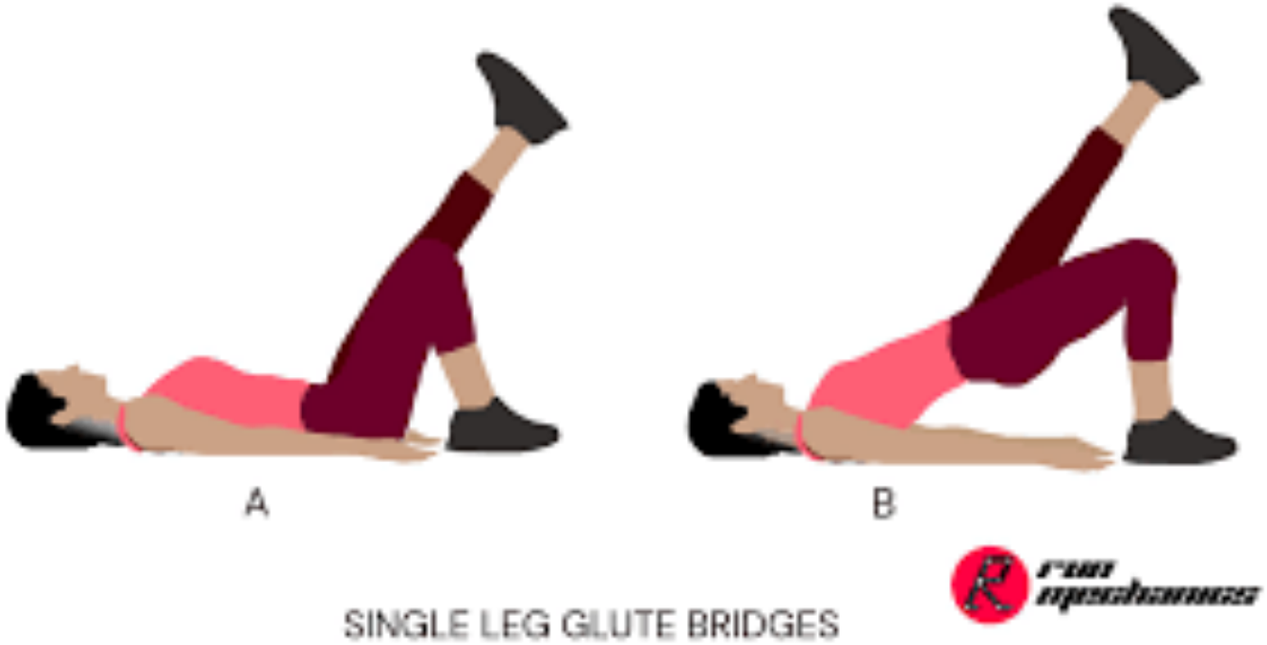
6. Side Lying Leg Lift Gluteal Test - Can you lift your leg up 20x? Do both sides feel the same? If not you need to strengthen your side glutes with this exercise as well as other exercises, see below right band walks 1-3 sets of 10-20 reps

6. Donkey Kicks - Can you lift your leg up 10x? Do both sides feel the same? MOST IMPORTANT IS THAT THE GLUTE MUSCLES - NOT YOUR HAMSTRINGS ARE THE PRIME MOVER. If not you need to strengthen your glutes with this exercise as well as other exercises, see hip thrusts below 1-3 sets of 10-20 reps

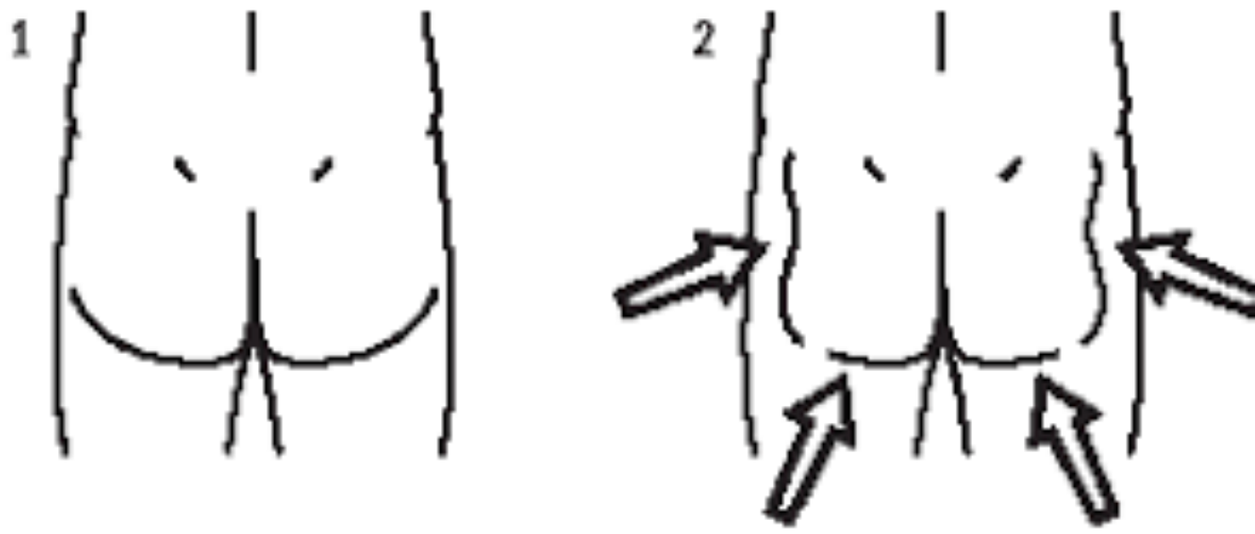


Self Body Analysis 6. Muscular Tests

6. Single Leg Bridge - Can you hold a single leg bridge with good form for 30+ seconds? Do both sides feel the same? If not you need to strengthen your glutes with this core exercise as well as other exercises. Do 10 to 15 reps or holds for 5 to 30 seconds for multiple reps. Push through your heels.
MOST IMPORTANT IS THAT THE GLUTE MUSCLES, NOT YOUR HAMSTRINGS, ARE THE PRIME MOVER.



6. Glute Squeezes- Put both hands or buttocks and engage the muscle. Can you feel a strong engagement. Many people can not. This is a great exercise to do any time during the day. Part of My Daily Moves Program.



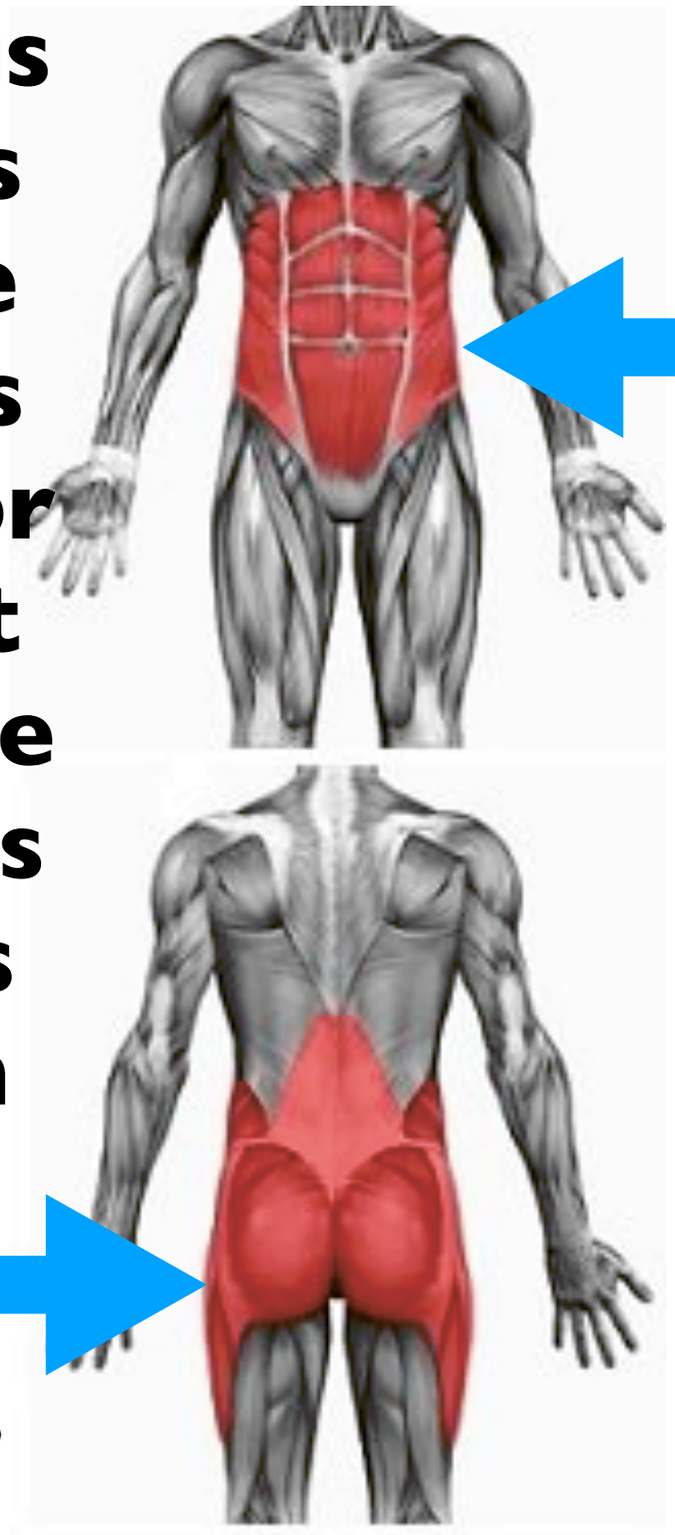
Why all these Glute Tests?

The Glutes are an important Core Muscle.

The Glutes are key in Propulsion. It is part of Triple Extension in both walking and running. They are also important in protecting the knee and back.

What is the Core? The easiest explanation is the musculature above the knee and below the chest. A developed core allows you to transmit forces throughout your body better.

The Gluteus Maximus is Part of the Core and is Essential for Running: It is one of the key muscles that drives propulsion through triple extension.



Lateral Core is Essential for Running: It Keeps the Hip Up, which assures knee and hip alignment. Side Bridges and Lateral Leg Lifts/Walks works the Lateral Core.

PERFORMANCE 101: Core Training

What is Core? The easiest explanation is everything above the knee and below the chest. **Why is it important?** A developed core allows you to transmit forces throughout your body better. If you core is weak it will be hard for you to transmit the power form your legs to your arms and vice versa, which is critical in activities of daily living and in sports like running and golf. Having a durable, stable core helps us to prevent injuries by sparing the spine from excessive load and preventing falls. The musculature of the core does this by keeping the most efficient and safe position of the spine as well as bearing some of the forces through its musculature and tendons. **What are core exercises?** Many core exercises are isometrics holds versus motions. Examples: Planks, Bridges, Bird Dogs, and Sidebridges. The reason is that the core should be developed to maintain and protect the natural curves of the spine. The best way to do that is through stabilizing isometric exercises. Also, studies have shown that endurance of the core is more important than strength when it comes to protecting the spine. *Isometric (no motion) holds develops localized endurance.*

Videos
Core Training on Floor the 5 essential core exercises
Core Training Standing

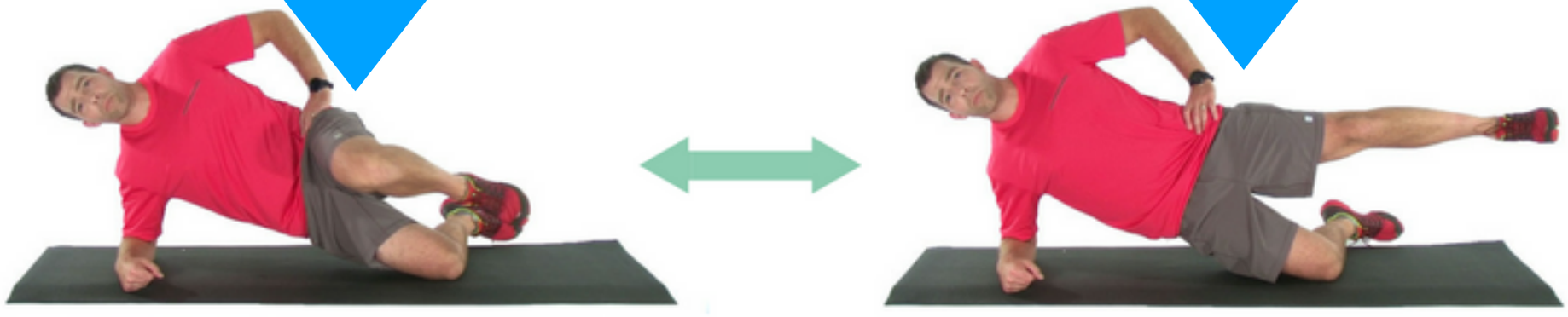
PERFORMANCE 101
PHYSICAL
CARDIO
MUSCLE
MOVEMENT

See Article

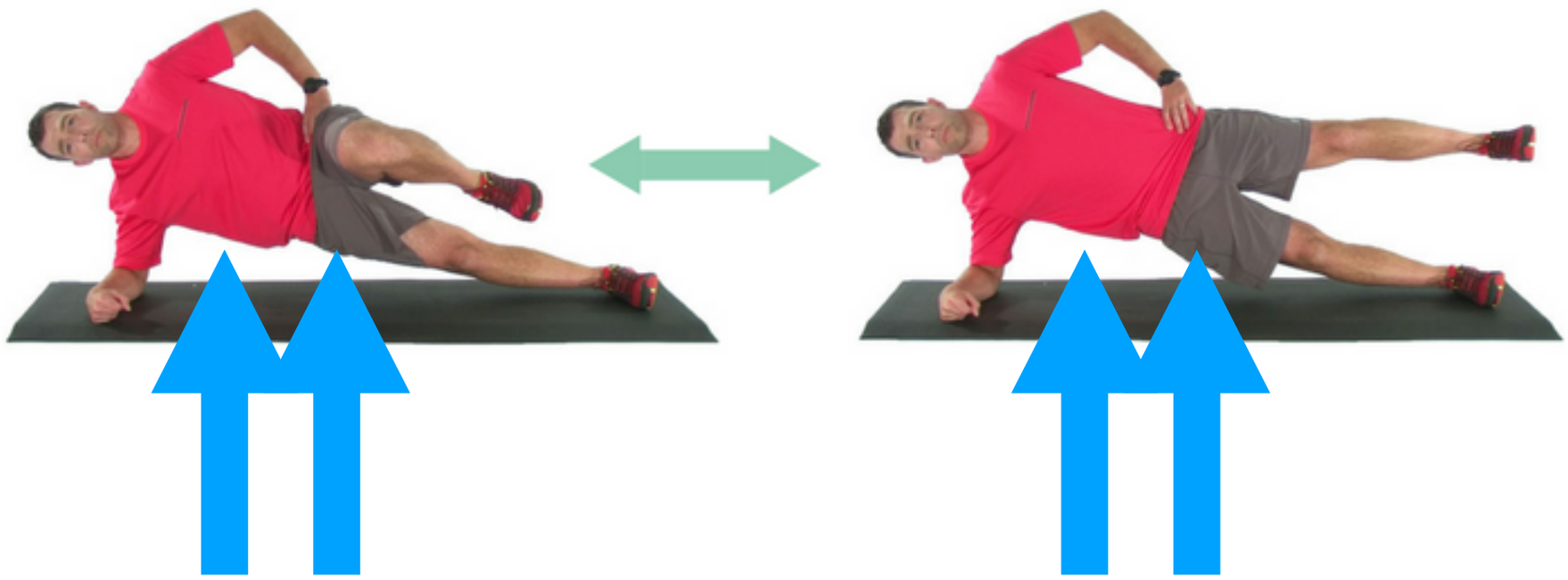
STRENGTHENING WITH THE SIDE BRIDGE ASSURES HIP STAY LEVEL AND KNEES ARE OVER TOES WHEN RUNNING AND WALKING

WHY: CORE TRAINING:

Gluteals are Part of the Core



SIDE BRIDGE PROGRESSION WITH LEG LIFT



Lateral Core and Glute Complex

Side Bridges Prevents This

Core Training - 5 Essential Exercises 3 x per week

Videos

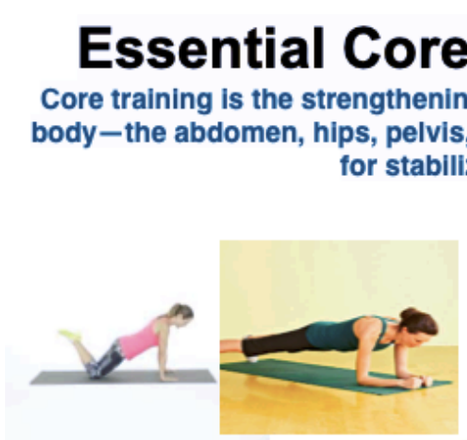
Core Training on Floor the 5 essential core exercises

Core Training Standing

Essential Core Training 3 or more times a week

Core training is the strengthening and conditioning of the core muscles surrounding the middle of the body—the abdomen, hips, pelvis, and lower back. These muscles protect the spine and are responsible for stabilizing and balancing the body during movement.

(see Do It Right for details)



5 Essential Core Exercises

You Can do Daily. Should do 3 or more times per week.

Great Way to Warm Up Body before a workout

I highly recommend these exercises to anyone that is following a fitness program

If just starting out perform modified version.

Planks (modified on knees)
Hold for > 15-30 seconds for 1-3 sets or 5-10 seconds for 5-10 reps

Sidebridge (modified on knees)
Hold for > 15-30 seconds for 1-3 sets or 5-10 seconds for 5-10 reps

Leg bridge (modified double leg)
Hold for > 15-30 seconds for 1-3 sets or 5-10 seconds for 5-10 reps

Bird-dog (modified raised hand out in front on floor and/or have raises leg knee bent)
Hold for > 15-30 seconds for 1-3 sets or 5-10 seconds for 5-10 reps

McGill Crunch with single bent knee 1-3 sets for 10 to 30 reps is a good goal, switch knees after 10-15 reps. Lift shoulders off floor, pause for 1 second, and repeat. Modified-If needed use hands behind head for support.

A Developed Core is one where all positions can be held for at least 60 seconds and both sides are the same.

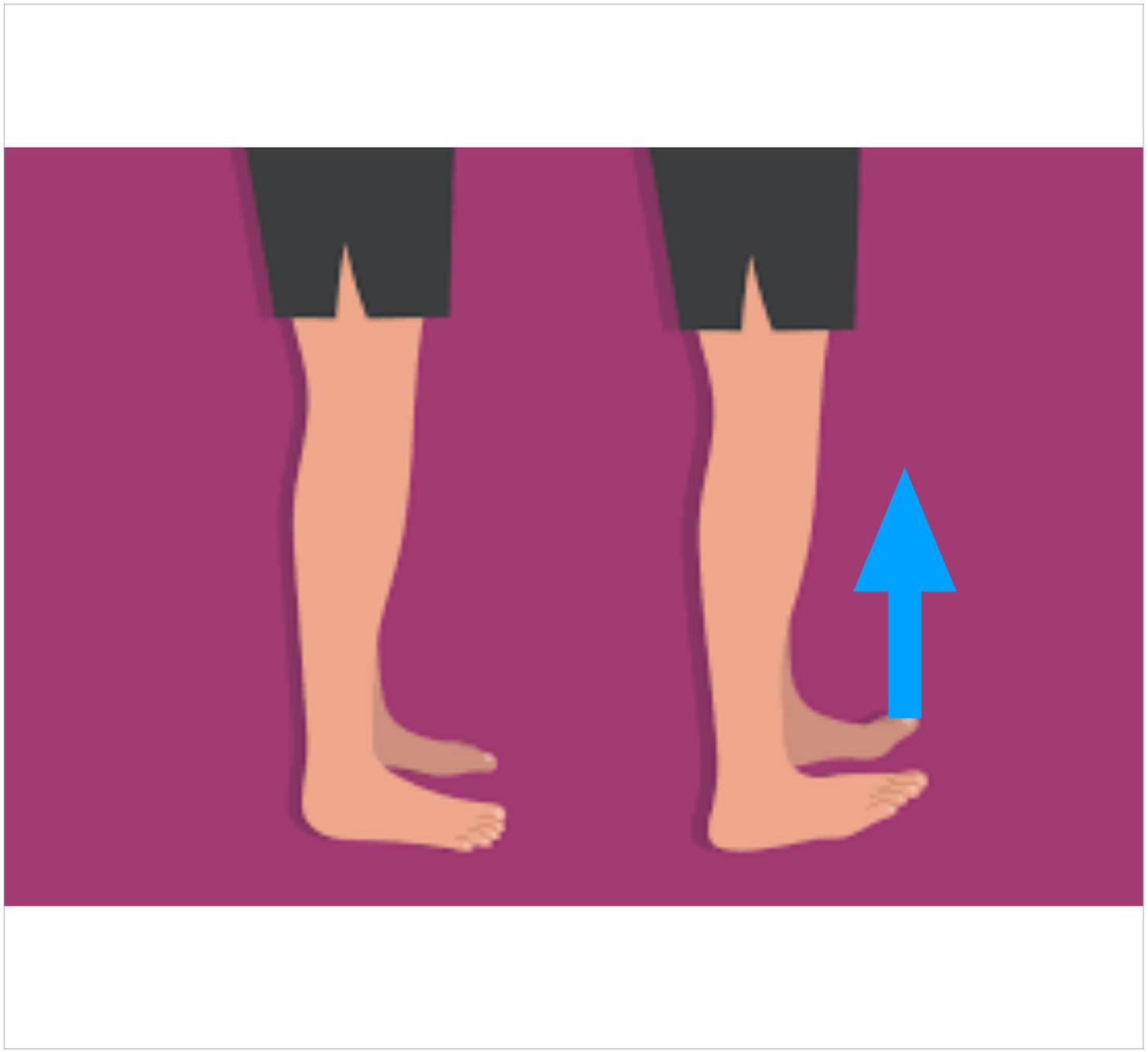
See Article

Calf Complex is Important in Running
Test Your Calf Endurance

6. Calf Endurance-Can you do 20 calf lifts?	If you have calf or dorsiflexor weakness it will affect your running ability and hasten an injury from running.	
6. Dorsiflexor Endurance-Can you do 20 dorsiflexor toe lifts?	Weakness in the dorsiflexors has been related to shin splints.	

These two exercises should be done 2-3 x a week for 1-3 sets for 20 reps. Progress to single leg calf raises.

I can not Overstate the Importance of the Toe Lift for all runners especially Novice Runners.



Self Body Analysis
7. Understand pain

Pain is a sign of dysfunction.
It is a sign that something is wrong.

Working through it will cause more problems and more pain.

Fatigue is not the same as pain.

When you exercise and you have pain stop and examine.

Self Body Analysis
7. Understand pain

Important Point !

The most frequently identified risk factor in running related injuries is a previous injury. Therefore, prevention of this first injury is very important so you should do strength and conditioning to improve performance and prevent injury.