

ILIOTIBIAL BAND SYNDROME PREVENTION FOR DISTANCE RUNNERS



STRENGTH AND CONDITIONING

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ILIOTIBIAL BAND SYNDROME PREVENTION BASICS

Iliotibial band syndrome (ITBS) is a rather unique but common running injury. It's one of the more common running injuries because the mechanics of running place a lot of stress on your Iliotibial band (ITB). ITBS is a unique running injury because the actual cause of the injury is not usually located in the same place as it's associated pain and discomfort.

Your Iliotibial band, which is also known as Iliotibial tract or Maissiat's band, is a thick, fibrous band that travels down the lateral or outer side of your thigh from your tensor fascia lata, gluteus maximus and gluteus medius muscles, down the side of your knee to your tibia. You probably are already very familiar with your gluteus maximus or "butt muscle". Your gluteus medius is a slightly smaller muscle that is located underneath and slightly superior to your gluteus maximus. Your tensor fascia lata muscle is located on the lateral side of your hip just in front of your hip bone. Each of those muscle provide a number of services but when combined with your Iliotibial band their primary duty is to abduct your leg or move your leg laterally away from the midpoint of your body at your hip. If you were to lie on your side and raise your leg away from your body you would be abducting your hip and leg.

Anatomically speaking, abduction is the primary purpose of your ITB, but as a runner your ITB fills an even more important role. It controls the adduction of your thigh which is the opposite of abduction. You are adducting your leg at the hip when you move your leg towards the mid line of your body. During the foot strike and stance phase of your running motion your foot pronates or rolls inwards slightly. At the same time your lower leg rotates inward or in a counter clockwise direction. That combination of foot pronation and inward tibial rotation causes your leg to adduct at the hip. Your hip abductor muscles and your ITB team up to control and stop that hip adduction motion.

You can see that your ITB is doing a tremendous amount of work with each running stride you take but that isn't all it's doing. During that same foot strike and stance phase of your running cycle your ITB is performing another critical function. It's preventing the opposite side of your hip from collapsing downward. Without the support of the ITB on your foot strike side, your opposite hip would dip down and your stride would collapse. The ITB on your support side is keeping your pelvis stable and keeping your stride even and strong.

The pain associated with ITBS is usually located on the outside of your knee. Since all of the muscular work is performed at or near your hip you're probably wondering why the pain is at your knee. That's one of the things that makes ITBS a unique injury. The pain can be located in the hip area due to a condition called greater trochanter bursitis but that is an associated problem - not a true case of Iliotibial band syndrome. The outside of your knee takes the lion's share of the pain because the ITB rubs over the epicondyle of your femur (bony knob on the outside of your knee). The constant friction leads to irritation and pain at the point of contact.

Your ITB doesn't always pass over your epicondyle. When your leg is straight your ITB passes in front of your epicondyle. As you flex your knee your ITB passes over your epicondyle. It is the repeated flexing and straightening of your knee that creates the friction and irritation of ITBS. When your leg is flexed more than about 30 degrees the ITB travels behind your epicondyle. Most studies agree that your ITB rubs against your epicondyle when your

leg is flexed between 20 and 30 degrees. A study from the Australian Institute of Sport¹ found that the friction occurred at an average of 21.4 degrees of flexion.

AVOIDING ILIOTIBIAL BAND SYNDROME

You can't avoid flexing your knee during your running stride unless you're using the Frankenstein technique, so is there any way to avoid ITBS? You may not be able to completely avoid all friction caused by your ITB but you can take steps to minimize the problems caused by it.

The first and most important step you should take is to strengthen your hip abductor muscles. If your hip abductors are weak your ITB will need to work harder to take up the slack. A 2005 study at Stanford University² found that "...weakness or inhibition of the lateral gluteal muscles is a causative factor ...When these muscles do not fire properly throughout the support phase of the running cycle, there is a decreased ability to stabilize the pelvis and eccentrically control femoral abduction." To make up for that weakness some of your other muscles must try to compensate which can lead to excessive tightness in your ITB and an increase in the friction between your ITB and your knee.

You can strengthen your hip muscles by simply performing side lying leg raises in which you lay on your side and slowly raise your leg away from your body. You see this exercise performed in gyms every day, but that simple exercise isn't running specific. As a runner you want to strengthen your muscles using more running specific motions and exercises. This strength training plan includes a series of exercises that will get your hip abductors in top running condition.

STRIDE MECHANICS

Strong hip abductor muscles will help you avoid ITBS but you can also take some other measures to help you avoid this injury, including tweaking your stride and being careful how and where you run. A number of studies including the Stanford University and Australian Institute of Sport investigations found that faster running is less likely to cause or aggravate ITBS because at foot strike the knee is flexed beyond the angle at which friction occurs. Can you adjust your stride to avoid that angle even when running more slowly? In many cases you can by eliminating over striding. When you over stride your foot strike is in front of your body and your knee is less flexed. Your foot strike should always be directly under your center of gravity with more flexed knee. Not only is that type of foot strike more efficient and economical but you will avoid ITBS and other repetitive motion injuries.

Another possible reason that faster running is less likely to cause ITBS is associated with ground contact time. When you run faster your ground contact time decreases. Less ground contact time can mean less stress on your ITB because you "spring" off your foot more quickly and less leg abduction takes place. When you run, concentrate on dorsiflexing your foot so that you are able to use your calf muscle elasticity with greater efficiency and decrease both your ground contact time and the stress on your ITB.

Where you run can also play a role in ITBS. Running on a short track with tight corners

1 Biomechanics of iliotibial band friction syndrome in runners, Orchard JW, Fricker PA, Abud AT, Mason BR, Sports Science and Sports Medicine Centre, Australian Institute of Sport, AM J Sports Med. 1996 May - June;24(3):375-9

2 Iliotibial band syndrome in runners; innovations in treatment, Fredericson M, Wolf C, Stanford University School of Medicine and Stanford University Cross-Country and Track Teams, Sports Med. 2005;35(5):451-9

places much more stress on the ITB of your inside leg because you lean towards that leg. The inside lean places more stress on your ITB as it is forced to work harder to prevent excessive adduction of that leg. If you consistently run on a track try to reverse directions frequently. Many track runners have chronic problems with ITBS in their left leg because of the “requirement” of running in a counter clockwise direction on a track.

In addition to the exercises intended to strengthen your hip abductor muscles, this plan includes some workouts and exercises that will increase your power, decrease your ground contact time and improve your running mechanics.

THE ILIOTIBIAL BAND SYNDROME PREVENTION PLAN

This Iliotibial Band Syndrome prevention plan is composed of a 4 week build up strength training and flexibility schedule that focuses on gradually and progressively building the functional strength and flexibility of your hip abductor muscles, followed by a weekly rotating maintenance plan. All strength and flexibility exercises are body weight based, so you can do them at home, the park, the trail or the track. No specialized equipment or access to a gym is needed. In addition to the hip strength and flexibility exercises, I have included workouts that are designed to increase the functional strength of the lower leg muscles that support and control excessive foot motion. These exercises will help prevent over pronation which can cause an inward rotation of your knee and hip. Eliminating that inward rotation will also help prevent iliotibial band syndrome.

*This injury prevention plan is adapted from “Bear Naked Strength Training for Distance Runners”, by Rick Morris

4 WEEK BUILD UP SCHEDULE

Week 1	
Monday	Fire Hydrants - One set with each leg Leg Sweeps - One set with each leg Basic Plank - 2 x 20 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds
Tuesday	Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds Rest Shin Stretch - One set of 20 seconds Calf Stretch - One set of 20 seconds
Wednesday	Fire Hydrants - One set with each leg Leg Sweeps - One set with each leg Basic Plank - 2 x 20 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds
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Friday	Fire Hydrants - One set with each leg Leg Sweeps - One set with each leg Basic Plank - 2 x 20 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds

Week 1	
Saturday	Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds Rest Shin Stretch - One set of 20 seconds Calf Stretch - One set of 20 seconds
Sunday	Rest

Week 2	
Monday	Fire Hydrant Wrap Arounds - Two sets with each leg Hip Shrugs- Two sets with each leg Heel Walking - Two Repetitions Basic Plank - 2 x 30 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds
Tuesday	Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds Rest Shin Stretch - One set of 20 seconds Calf Stretch - One set of 20 seconds
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Sunday	Rest

Week 3	
Monday	Fire Hydrant Wrap Arounds - Three sets with each leg Barefoot Strides - 2 x 100 meters with 30 seconds rest between repeats Heel Walking - Two repetitions Side Plank - 3 x 20 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds
Tuesday	Quadriceps Stretch - Two sets of 20 seconds Hamstring Stretch - Two sets of 20 seconds Hip Stretch - Two sets of 20 seconds Piriformis Stretch - Two sets of 20 seconds Pretzel Stretch - Two sets of 20 seconds Butterfly Stretch - Two sets of 20 seconds Rest Shin Stretch - Two sets of 20 seconds Calf Stretch - Two sets of 20 seconds
Wednesday	Hip Rolls - Two sets with each leg Barefoot Strides - 2 x 100 meters with 30 seconds rest between repeats Lateral Foot Walk - Two repetitions Side Plank - 3 x 30 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds
Thursday	Quadriceps Stretch - Two sets of 20 seconds Hamstring Stretch - Two sets of 20 seconds Hip Stretch - Two sets of 20 seconds Piriformis Stretch - Two sets of 20 seconds Pretzel Stretch - Two sets of 20 seconds Butterfly Stretch - Two sets of 20 seconds Rest Shin Stretch - Two sets of 20 seconds Calf Stretch - Two sets of 20 seconds
Friday	Fire Hydrant Wrap Arounds - Three sets with each leg Barefoot Strides - 2 x 100 meters with 30 seconds rest between repeats Medial Foot Walk - Two repetitions Side Star - 3 x 20 seconds with 30 seconds rest between exercises Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds

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Sunday	Rest

Week 4	
Monday	<p>Hip Rolls - Three sets with each leg Barefoot Strides - 3 x 100 meters with 30 seconds rest between repeats Heel Walking - Three repetitions Side Plank - 3 x 30 seconds with 30 seconds rest between exercises Double Leg Lateral Hop - Two Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>
Tuesday	<p>Quadriceps Stretch - Three sets of 20 seconds Hamstring Stretch - Three sets of 20 seconds Hip Stretch - Three sets of 20 seconds Piriformis Stretch - Three sets of 20 seconds Pretzel Stretch - Three sets of 20 seconds Butterfly Stretch - Three sets of 20 seconds Rest Shin Stretch - Three sets of 20 seconds Calf Stretch - Three sets of 20 seconds</p>
Wednesday	<p>Hip Rolls - Three sets with each leg Barefoot Strides - 3 x 100 meters with 30 seconds rest between repeats Lateral Heel Walk - Three repetitions Side Star - 3 x 30 seconds with 30 seconds rest between exercises Lateral Hill Drill - One set Double Leg Lateral Hop and Run - Two Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>
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Friday	<p>Hip Roll Strides - Three sets with each leg Barefoot Strides - 3 x 100 meters with 30 seconds rest between repeats Medial Heel Walk - Three repetitions Lateral Foot Walk - Three repetitions Heel Walking - Three repetitions Bench Hip Abduction- 2 x 30 seconds with 30 seconds rest between exercises Single Leg Lateral Hop - Two Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>

Week 4	
Saturday	Quadriceps Stretch - Three sets of 20 seconds Hamstring Stretch - Three sets of 20 seconds Hip Stretch - Three sets of 20 seconds Piriformis Stretch - Three sets of 20 seconds Pretzel Stretch - Three sets of 20 seconds Butterfly Stretch - Three sets of 20 seconds Rest Shin Stretch - Three sets of 20 seconds Calf Stretch - Three sets of 20 seconds
Sunday	Rest

ROTATING MAINTENANCE SCHEDULE

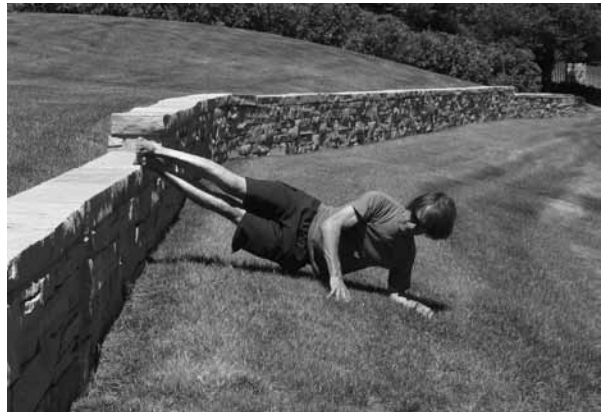
Weekly Rotating Maintenance Schedule	
Monday	<p>Hip Roll Strides - Three sets with each leg Barefoot Strides - 4 x 100 meters with 30 seconds rest between repeats Heel Walking - Three repetitions Side Plank - 3 x 30 seconds with 30 seconds rest between exercises Double Leg Lateral Hop and Run - Three Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>
Tuesday	<p>Quadriceps Stretch - Three sets of 20 seconds Hamstring Stretch - Three sets of 20 seconds Hip Stretch - Three sets of 20 seconds Piriformis Stretch - Three sets of 20 seconds Pretzel Stretch - Three sets of 20 seconds Butterfly Stretch - Three sets of 20 seconds Rest Shin Stretch - Three sets of 20 seconds Calf Stretch - Three sets of 20 seconds</p>
Wednesday	<p>Hip Roll Strides - Three sets with each leg Barefoot Strides - 4 x 100 meters with 30 seconds rest between repeats Lateral Foot Walk - Three repetitions Lateral Hill Drill - Two Sets Bench Hip Abduction - 3 x 30 seconds with 30 seconds rest between exercises Single Leg Lateral Hop and Run - Three Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>
Thursday	<p>Quadriceps Stretch - Three sets of 20 seconds Hamstring Stretch - Three sets of 20 seconds Hip Stretch - Three sets of 20 seconds Piriformis Stretch - Three sets of 20 seconds Pretzel Stretch - Three sets of 20 seconds Butterfly Stretch - Three sets of 20 seconds Rest Shin Stretch - Three sets of 20 seconds Calf Stretch - Three sets of 20 seconds</p>

Weekly Rotating Maintenance Schedule	
Friday	<p>Hip Roll Strides - Three sets with each leg Barefoot Strides - 3 x 100 meters with 30 seconds rest between repeats Medial Foot Walk - Three repetitions Heel Walking - Three repetitions Advanced Bench Hip Drop - 3 x 30 seconds with 30 seconds rest between exercises Double Leg Lateral Hop - Three Sets Quadriceps Stretch - One set of 20 seconds Hamstring Stretch - One set of 20 seconds Hip Stretch - One set of 20 seconds Piriformis Stretch - One set of 20 seconds Pretzel Stretch - One set of 20 seconds Butterfly Stretch - One set of 20 seconds</p>
Saturday	<p>Quadriceps Stretch - Three sets of 20 seconds Hamstring Stretch - Three sets of 20 seconds Hip Stretch - Three sets of 20 seconds Piriformis Stretch - Three sets of 20 seconds Pretzel Stretch - Three sets of 20 seconds Butterfly Stretch - Three sets of 20 seconds Shin Stretch - Three sets of 20 seconds Calf Stretch - Three sets of 20 seconds</p>
Sunday	Rest

ILIOTIBIAL BAND SYNDROME PREVENTION EXERCISES

ADVANCED BENCH HIP DROP

- Begin on your left side with your upper body supported by your left forearm and elbow.
- Place your extended left leg and foot on a bench or box that is 16 to 24 inches in height. Stack your right leg on top of your left.
- Now raise your hip until your body is completely straight and supported only by your left forearm and left foot.
- Now drop your left hip towards the ground and bring back up to a straight body position. Don't lower your body to the ground during this exercise. Just drop your hip towards the ground so your body has a downward curve at your hip.
- Keep repeating this exercise until you are fatigued.
- Switch sides and repeat.



BENCH HIP ABDUCTION

- Begin on your left side with your upper body supported by your left forearm and elbow.
- Place your extended left leg and foot on a bench or box that is 16 to 24 inches in height. Stack your right leg on top of your left.
- Now raise your right leg and right arm laterally away from your body. At the same time raise your lower body by pushing your left hip laterally away from the ground.
- Hold this position for about 30 to 45 seconds and slowly return to your starting position.
- Switch sides and repeat.



BAREFOOT STRIDES

- While this exercise is more of a running drill than a strength training exercise, it's included in this section because running barefoot uses nearly every muscle in your lower leg. This barefoot drill is very effective at lower leg conditioning, injury prevention and stride improvement.

- The best place to do this drill is on the artificial surface infield of a running track. You can do these anywhere but make sure the surface is relatively soft and is free from any sharp objects or other debris that could injure your bare feet.

- This exercise is simple to perform. Just run 100 meter barefoot acceleration strides in which you start out at a moderate pace. Smoothly accelerate to full sprint pace at about 80 meters and then "float" or "coast" for the final 20 meters.

- Repeat for your desired number of repetitions.



BUTTERFLY STRETCH

- This is an exercise that will stretch the adductor (groin) muscles of your inner thigh.

- Start in a sitting position with your knees out and the soles of your feet together.

- Grab your toes and pull them gently upward. At the same use your elbows to gently push outward on your knees. You should feel a slight stretch on your inner thigh. Hold this position for about 20 to 30 seconds.



DOUBLE LEG LATERAL HOPS

- Stand in an upright position with your knees soft and very slightly bent in an athletic stance. Your feet should be about shoulder width apart.

- Quickly drop your hips and rapidly explode upward and to the right.

- Keep your feet dorsi-flexed (toes up) throughout this drill.

- Land on the balls of your dorsi-flexed feet under your center of gravity and very quickly bounce as far as possible to the left.



- Keep repeating this motion for about 30 seconds.

- Focus on bouncing off your dorsi-flexed feet rather than gathering yourself and jumping.

DOUBLE LEG LATERAL HOP AND RUNS

- These are very similar to double leg drop and runs with the addition of an explosive sprint.

- Stand in an upright position with your knees soft and very slightly bent in an athletic stance. Your feet should be about shoulder width apart.

- Quickly drop your hips and rapidly explode upward and to the right.

- Keep your feet dorsi-flexed (toes up) throughout this drill.

- Land on the balls of your dorsi-flexed feet under your center of gravity and very quickly bounce as far as possible to the left.

- Keep repeating this motion for about 30 seconds.

- After 30 seconds, explode forcefully forward and sprint for about 30 meters.

- Focus on springing off your dorsi-flexed feet rather than gathering yourself and jumping.

FIRE HYDRANTS

- Position yourself on your hands and knees with your back straight. Don't allow your back to arch or bow.
- Contract your abs and core muscles to stabilize your hips and spine.
- Keeping your right knee bent at a 90 degree angle raise your right leg laterally away from your body. Raise your leg until your thigh is parallel to the ground and return to the starting position.
- Continue this motion for 30 seconds to 1 minute.
- Switch legs and repeat.



FIRE HYDRANT WRAP AROUND'S

- Position yourself on your hands and knees with your back straight. Don't allow your back to arch or bow.
- Contract your abs and core muscles to stabilize your hips and spine.
- Keeping your right knee bent at a 90 degree angle raise your right leg laterally away from your body. At the same time drive your foot and leg behind your body so that your thigh and knee is pointed directly behind you. In the finishing position your thigh should be parallel to the ground and your knee should be behind your body.
- Continue this motion for 30 seconds to 1 minute.
- Switch legs and repeat.



HAMSTRING STRETCH

- Lie on your back in a supine position. Keep your right foot on the ground with your knee bent at 90 degrees.
- Raise your left leg up, grab it below your ankle and pull it toward your shoulders.
- Pull your leg until you feel a slight pull. Hold that position for about 20 seconds. Switch your leg positions and repeat.



HEEL WALKING

- With your feet dorsi-flexed (the front of your foot and toes pulled up towards your shin), walk on your heels for about 20 to 30 meters.
- Repeat 2 to 4 times.
- Keep your feet dorsi-flexed throughout this exercise. Don't allow the front of your feet or toes to drop towards the ground.
- Keep your knees "soft" or very slightly bent during this exercise.



HIP SHRUGS

- Stand on a bench or step with your right foot on the bench. Your left foot should be held unsupported next to your right foot. Your hips should be level with both feet held at the same height.
- Lower your unsupported left foot towards the ground by dipping the left side of your pelvis. Your body should remain completely vertical and your knees fully extended. The only motion should be at your hips.
- Now raise your left foot above the level of your right foot by raising your left hip as high as possible. This should be a hip shrugging motion similar to shrugging your shoulder. Keep performing that motion for 30 seconds to 1 minute.
- Switch leg positions and repeat.
- All motion in this exercise is at your hips. Avoid any movement of your knees or ankles. Keep your body completely vertical with no lateral, forward or backward lean.



HIP ROLLS

- This exercise is very similar to the hip shrugs. You simply add in a rotary or rolling motion with your hips.
- Stand on a bench or step with your right foot on the bench. Your left foot should be held unsupported next to your right foot. Your hips should be level with both feet held at the same height.
- Lower and roll your unsupported left foot towards the ground and forward by dipping the left side of your pelvis and at the same time rolling it backward. Continue the cycling motion by raising your left hip and rolling it forward. It should be like a smooth cycling motion with your left hip. Your body should remain completely vertical and your knees fully extended. The only motion should be at your hips.
- Continue rolling forward for about 45 seconds then reverse directions and roll backward for another 45 seconds.
- Switch leg positions and repeat.
- All motion in this exercise is at your hips. Avoid any movement of your knees or ankles. Keep your body completely vertical with no lateral, forward or backward lean.

HIP ROLL STRIDES

- This exercise is similar to standard hip rolls with the addition of a knee drive.
- Stand on a bench or step with your right foot on the bench. Your left foot should be held unsupported next to your right foot. Your hips should be level with both feet held at the same height.
- Lower and roll your unsupported left foot towards the ground and forward by dipping the left side of your pelvis and at the same time rolling it backward. Continue the cycling motion by raising your left hip and rolling it forward. As your hip is rolled forward drive your knee up as in a running stride. As your hip rolls down and back, drive your foot down and back like a push off in your running stride. Your body should remain completely vertical.
- Continue for about 45 seconds, then switch legs and repeat the exercise.
- Keep your body completely vertical with no lateral, forward or backward lean.



HIP STRETCH

- This exercise will stretch the iliopsoas muscle on the front of your hip.
- Move your right leg forward until your knee is directly over your ankle. Your left leg should be stretched out behind you with your knee on the ground.
- Now lower and push your hips down and forward to create a gentle stretch. Hold this position for 20 to 30 seconds. Switch your leg positions and repeat.



LATERAL FOOT WALK

- Stand with your feet in a supinated position. Your feet are supinated when you roll your feet so that you are standing on the outside edge of your feet.
- Keeping your feet supinated, walk forward for 20 to 30 meters.
- Repeat 2 to 4 times.
- Keep your toes pointed straight ahead.



LATERAL HILL DRILL

- For this exercise you will need to find a short steep hill.
- Stand sideways to the hill in a "ready position" with relaxed but slightly bent knees.
- Push off laterally with your downhill leg and shuffle sideways up the hill. Don't cross your feet during this drill. Use a sideways shuffling motion.
- Keep moving up the hill for about 50 meters.
- Now shuffle back down the hill in the same position.
- Face the other direction using your other leg as the downhill leg and repeat.



LEG SWEEPS

- Stand in a relaxed position with your feet about 12 inches apart.
- With your weight centered over the middle of your left foot, sweep your right leg, in front of your body, as far to the left as possible and then back to the right as far as possible. Concentrate on reaching your maximum arc with each leg sweep.
- Keep your body and support foot facing forward. Don't rotate your torso or legs. The only movement should be lateral movement of your sweeping leg. Keep sweeping your right leg for 30 seconds to 1 minute.
- Switch legs and repeat.



MEDIAL FOOT WALK

- This exercise is similar to the lateral foot walk except you walk on the inside of your feet.
- Stand with your feet in a pronated position. Your feet are pronated when you roll your feet so that you are standing on the inside edge of your feet.
- Keeping your feet in a pronated position, walk forward for 20 to 30 meters.
- Repeat 2 to 4 times.



PRETZEL STRETCH

- This exercise will stretch your upper back, lower back, hips and illiotibial band.
- Start is a sitting position with your right leg straight. Bend your left knee and cross it over your right leg so that it rests on the outside of your right knee.
- Now place your right elbow on the outside of your left knee. While supporting your body with your left hand twist your body to the left. Turn and look in that same direction. Hold that position for 20 to 30 seconds. Switch leg positions and repeat.



PIRIFORMIS STRETCH

- This is a great stretch that improves the flexibility of your piriformis muscles which externally rotate your hip muscle on the front of your hip.
- Position your right leg so that your knee is directly in front of your body and your lower right leg and foot is slanted to the left.
- Now lean forward until your chest is nearly touching your right knee. You should feel a strong pull on outside/rear portion of your right hip.
- Your left leg should be stretched out behind you with your knee on the ground.
- Hold this position for 20 to 30 seconds. Switch your leg positions and repeat.



QUADRICEPS STRETCH

- While standing on your left foot, pull your right foot up toward your right hip. Keep your lower leg aligned with your thigh. Do not pull your lower leg to the right or left.
- Pull until you feel a gentle stretch. Hold this position for 20 to 30 seconds. Switch leg positions and repeat.



SIDE STAR

- Lie on your left side with your upper body supported by your extended left arm and hand. Your lower body should be supported by the side of your left foot. Your body should be completely straight and supported off the ground. Only your left hand and the left side of your foot should be touching the ground. Your right arm should be resting along the right side of your body.
- Contract your core muscles to stabilize your body.
- Now raise your right leg and right arm laterally away from your body. At the same time raise your lower body by pushing your left leg and hip laterally away from the ground. Hold that position for about 45 seconds.
- Switch sides and repeat.



SINGLE LEG LATERAL HOPS

- Stand on your right foot in an upright position with your right knee soft and very slightly bent. Hold your left foot up behind your body.
- Quickly drop your right hip and rapidly explode upward and to the right.
- Keep your feet dorsi-flexed (toes up) throughout this drill.
- Land on the ball of your dorsi-flexed right foot under your center of gravity and very quickly bounce as far as possible to the left.
- Keep repeating this motion for about 30 seconds.



- Focus on bouncing off your dorsi-flexed feet rather than gathering yourself and jumping.
- Repeat using your other leg

SINGLE LEG LATERAL HOP AND RUNS

- These are the same as single leg lateral hops with the addition of an explosive forward sprint
- Stand on your right foot in an upright position with your right knee soft and very slightly bent. Hold your left foot up behind your body.
- Quickly drop your right hip and rapidly explode upward and to the right.
- Keep your feet dorsi-flexed (toes up) throughout this drill.
- Land on the ball of your dorsi-flexed right foot under your center of gravity and very quickly bounce as far as possible to the left.
- Keep repeating this motion for about 30 seconds.
- After 30 seconds, explode forcefully forward and sprint for about 30 meters.
- Focus on springing off your dorsi-flexed feet rather than gathering yourself and jumping.