Deep Squat
Exercise
Progressions
Figure 41. Soleus Stretch

If an athlete experienced difficulty lifting the arms overhead during the test, it would be beneficial for them to perform the following stretch:

Latissimus Dorsi stretch

Stand facing a wall with feet placed shoulder width apart. Place hands on a wall just above shoulder height. Bend at the hips, bend knees slightly, and sag middle and lower back downward. Maintain hand placement. If it is difficult to assume this position try stepping the feet further away from the wall.

Tension may be felt in the low back region, in armpit, or top of shoulder. It should not be painful.

Hold at the point of tension for 20-30 seconds. Repeat 2-3 times.

Figure 42. Latissimus Dorsi Stretch
the trunk and mobility of the extremities through constantly changing tension and position. The tension between the muscles of the trunk and limbs must coordinate perfectly—as one relaxes, the other must contract to maintain balance and an erect spine through the entire motion. If coordination is skewed, the deep squat will feel extremely awkward and limited.

**TOE TOUCH PROGRESSION**

The toe touch progression is a simple exercise to improve body awareness (or sensory awareness) for deep squatting. The toe touch progression is a fundamental component of the exercises needed for the deep squat and shouldn’t be overlooked. It simply teaches relaxation of the tension in the lower back and how to shift weight from the heels to the toes in a smooth and consistent fashion.

Stand erect with feet side by side, heels and toes touching. The balls of both feet should be elevated onto a 1- to 2-inch platform such as a board or free-weight plate. Insert a towel roll or foam roll between the knees by flexing the knees slightly and separating them without changing foot position (figure 6.1a). The towel or foam roll should be thick enough that the knees cannot be locked backward or hyper-extended. This position will feel bowlegged and extremely awkward, but do not change it. If foot position is altered in any way, the towel roll is too large; unroll a layer or two before continuing. The back should be relaxed and without tension. You should feel tension from the outside of the knee up through the outside of the hips.

Reach for the ceiling, stretching the arms as high as possible with palms facing forward. Hollow out the abdomen by pulling in as deeply as possible with the abdominal muscles. This should not alter breathing. If it does, continue practicing the movement until it can be done without significantly changing breathing.

Bend forward so that the fingertips touch the toes (figure 6.1b). If the fingertips do not make it completely to the toes, remember to keep the abdominal area pulled inward. Also, squeeze the towel roll slightly to help relax certain muscles in the outer

**Figure 6.1** Toe touch progression, phase 1: (a) stand with balls of feet elevated on a platform and a foam roll between knees; (b) touch the toes.
thigh and back so that the toes can be reached. If you still cannot reach the toes, bend the knees slightly to reach them for the first repetition.

Return to the starting position, keeping the heels on the ground and the hands raised as high as possible overhead with palms facing forward. Keep the abdominal region pulled inward and repeat the movement. If a slight knee bend was required for the first repetition, try to bend the knees a little less this time. Reduce the knee bend with each repetition and try to go a little farther each time. Do 10 to 12 repetitions. You will feel tension in the calf behind the knee, in the hamstrings, and possibly in the lower back.

Phase two of the toe touch progression uses the same movement but from a different position. For phase two, elevate the heels on a 1- to 2-inch platform (figure 6.2a). The toes should be on the ground. Insert the towel roll between the knees without changing the foot position. Repeat the toe touch movement, reaching up to the ceiling, pulling in the abdominals, and reaching to the toes (figure 6.2b). There may be slightly greater tension in the lower back and hamstrings and slightly less tension in the calves than in phase one. Bend the knees as little as possible to allow a toe touch, and bend the knees less and less with each repetition until they can be held in a nearly straight position. At no time during the exercise should the knee hyperextend or the foot position change. You should be closer to touching your toes or doing so more comfortably following this drill. You should be comfortable touching your toes before starting the deep squat progression.

**Figure 6.2** Toe touch progression, phase II: (a) stand with heels elevated on a platform; (b) touch the toes.
DEEP SQUAT PROGRESSION

With the heels on a 1- to 2-inch platform, spread the feet until they are shoulder-width apart or wider. Bend forward until the entire palm can be laid flat on the floor or on a 2-, 4-, or 6-inch platform (figure 6.3a). Use only what you need and gradually reduce the platform, or get rid of the platform altogether. Free-weight plates, wooden blocks, or small bricks can be used. The entire palm must lay completely flat, so it is better to use a slightly taller brick or block than to overreach and be off balance. Heels should remain flat and the knees should be extended but not hyperextended. The head and neck should be relaxed and looking downward.

Without moving the hands off the platform, slowly bend the hips, knees, and ankles and lower the body into the squat position with the knees going to the outside of the elbows (figure 6.3b). Do not change foot position during the descent. If it is hard to control foot position during the descent, hold the knees outward or widen the feet slightly, but keep the feet pointed straight ahead at all times.

With the hands flat on the platform, keep the heels in full contact with the 1- to 2-inch platform and sit deeply into the squat. Concentrate on keeping the knees outside of the elbows and try to relax as much as possible. If this position causes a stretch, maintain the stretch for approximately 20 seconds. Try pulling in the abdominals as in the toe touch progression to make this movement easier. Use long, slow, deep breaths and exhale during the stretch.

Figure 6.3  Deep squat progression, phase I: (a) bend forward and place hands on platform; (b) descend into a deep squat; (c) reach one arm toward the ceiling.
If you cannot achieve a comfortable sitting position, use a slightly greater heel lift and a slightly elevated hand platform.

Once the squat position is comfortable, elevate one arm as high as possible over the head, reaching for the ceiling without changing the hip, knee, or ankle position (figure 6.3c). Do not shift weight. Keep both feet flat and both legs in the same position. Follow the movement of the hand with the eyes. Turn the head to the side of the arm that is being raised. Do not attempt to take the arm straight backward; rather, reach overhead, keeping the spine as long and tall as possible throughout the entire movement.

This movement should take approximately 20 seconds: 8 to 9 seconds on the way up, 2 to 4 seconds to hold the stretch while reaching as tall as possible, and 8 to 9 seconds to return to the platform. Repeat on the other side. You should note which side is tighter or presents greater difficulty. Try to achieve equal movement by working the tighter side three times more than the other side.

Once the movement can be done with the lower body completely relaxed, the upper body moving freely, and the right and left sides feeling about equal, proceed to the next phase of the exercise.

Start from a deep squat position with the hands on the platform. Raise both hands into a Y position and take them as far back and up as possible, maintaining complete balance and keeping the lower body fully relaxed (figure 6.4a). There should be no change in foot, hip, or knee position. If the hands are directly above the head, reach and then stand up out of the squat (figure 6.4b). It will feel difficult at first because this move uses the most powerful muscles of the hips and thighs in a new position. Numerous repetitions of this exercise will improve motor memory and increase coordination.

Return to the start position by bending forward and touching the 2-, 4-, or 6-inch raised platform with palms flat. Drop again into the squat, then resume the Y or overhead reach with both arms.

Figure 6.4 Deep squat progression, phase II: (a) raise both arms; (b) stand up.
Shoulder Mobility Exercise Progressions
Figure 69a. Shoulder Mobility and Stability test-hand measurement.

Figure 69b. Shoulder Mobility and Stability test

Scoring:

Successful completion of the test requires the following:

- Fists one hand width apart or less

  If these criteria are met the performance is scored as a “Pass”.

  If verbal cues are required during the second and third attempts the performance is scored as a “Pass with work”.

  A “Needs Improvement” is scored if the athlete is unable to perform the test correctly despite repeated trials and verbal cues.

If the athlete experiences pain during the test a “Needs Improvement” score is given and the athlete should be instructed to attend the appropriate health professional.

Corrective activities:

Shoulder mobility Stretch

Assume the test position as above. Hold a strap between each hand and alternate between gently pulling the top hand downward and the bottom hand upward while holding the strap. Gentle tension should be felt and NOT pain. If so try moving the hands further apart along the length of the strap.
Please note: If the athlete scores lower on one side compared to the other. Perform this stretch twice on the tighter side to every once on the other side. In other word perform the stretch 4 times on the tighter side and twice on the other side.

Figure 70. Shoulder Mobility Stretch

**Shoulder Internal and External rotation**

As outlined above
Shoulder External Rotation

Stand with elbows bent at 90 degrees and placed along the side of the trunk. Hold a resistance band in each hand in front of the body OR anchor one end of the band to a post/door knob. Slowly pull one hand outward away from the body while maintaining a 90 degree bend in the elbow. Do not allow the elbow to move away from the side of the trunk. Do not rotate shoulders or trunk. If this is difficult use a lighter resistance band or slide one hand further along the band to decrease the tension in the band.

Hold 3-5 seconds and return hand to start position. Complete 10-15 repetitions each side. Gradually increase repetitions until completing 2-3 sets of 10-15 repetitions.

Figure 67. Shoulder External Rotation

Shoulder Internal Rotation

Stand as in the above exercise. Alternate the band position to the backside of the one hand travelling away from the body. The other end of the band may be anchoring to a post or held by a partner at an appropriate height to allow the 90 degree bend in the elbow.

Slowly pull the hand inward across the body. Do not allow the elbow to move away from the side of the trunk. Do not rotate shoulders or trunk. If this is difficult use a lighter resistance band or slide one hand further along the band to decrease the tension in the band.

Hold 3-5 seconds and return hand to start position. Complete 10-15 repetitions each side. Gradually increase repetitions until completing 2-3 sets of 10-15 repetitions.
Figure 68. Shoulder Internal Rotation
If these criteria are met the performance is scored as a “Pass”.

If verbal cues are required during the second and third attempts the performance is scored as a “Pass with work”.

A “Needs Improvement” is scored if the athlete is unable to perform the test correctly despite repeated trials and verbal cues.

If the athlete experiences pain during the test a “Needs Improvement” score is given and the athlete should be instructed to attend the appropriate health professional.

Common errors/limitations include:

- Movement is observed in the torso, balance is poor (unsteady)
- Knee is lifted and pulled sideways and/or lower leg rotates resulting in the foot travelling inward across body
- Foot touches tape
- Dowel touches doorway
- Shifting is noted in the hips or spine (e.g. spinal side flexion)

Figure 60. Errors/Limitations in Hurdle Step- knee and lower leg not aligned, movement in torso, side flexion of spine (resulting in hiking hip upward).

Corrective activities:

Glute max activator

Stand facing wall with feet placed shoulder width apart. Raise body up on the toes maintaining the hips fully straight and engage core musculature by tightening lower abdominals.

Slowly lift one knee to at least hip level preferable a little higher. Squeeze the buttock on the straight leg. Maintain a small curve in the low back and avoid tucking the tailbone under. Avoid side flexing the spine and lifting one side of the pelvis.
Hold 3-5 seconds then slowly lower leg placing the foot on the floor.
Repeat 10 times each side

Figure 61. Glut Max Activator

Single leg balance

Stand with feet placed shoulder width apart. Engage core musculature by tightening lower abdominals. Slowly lift one foot up bending the knee. Only lift the leg as high as possible while maintaining perfect balance. Hips should stay level while trunk and shoulders stay still. Relax through the shoulders.

Hold for 10 seconds. Then lower the leg and repeat other side. 10 repetitions each side.

Figure 62. Single Leg Balance

Lunge stretch- as outlined above.

Sport Readiness Assessment
Tracie Albisser, MSc.

Canadian Sport Centre Pacific/ PacificSport
Foundation Drills

Perform 8 to 10 repetitions of each exercise on each side, working one leg at a time. If you have a right-left imbalance, do two more sets of 8 to 10 repetitions on the problem side. If not, do two sets on each side.

**ELEVATED MOUNTAIN CLIMBER CYCLE**

Using a step, low bench, or table, assume a push-up position with arms directly under shoulders. To decrease difficulty, increase bench height; to increase difficulty, reduce bench height. The back and legs must be completely straight. Keeping the spine as long as possible with no observable movement, draw one knee toward the chest by bending
both the knee and the hip (figure 6.5a). Bring the knee as close to the chest as possible and then straighten the leg. Make the leg as long as possible and only lightly touch the toe to the ground. Now bend the knee to greater than 90 degrees (figure 6.5b). Do not allow this position to change the spine position. The spine and nonmoving leg should look like a straight line. If this causes a great stretch on the thigh, you're doing it correctly. If the move is difficult, continue to work between the two movements. If it is not too difficult, add a third movement—extend the hip without changing the back or other leg position.

To increase the level of difficulty, get rid of the bench. Assume a push-up position on the floor. Hands should be directly below the chest and collarbone. Follow the same movement pattern. Or try a narrow stance to increase the difficulty of the movement: move the hands closer together under the face. Moving the hands forward on the floor will increase difficulty. Move the hands inward to narrow the stance and increase difficulty again. Follow the same movement pattern.
Figure 6.6 Elevated dip cycle: (a) lean back on bench; (b) bring knee toward chest.

**ELEVATED DIP CYCLE**

The elevated dip is a reverse of the mountain climber. The leg movement is the same but the body position is reversed. With the back to the step, low bench, or low table, bend the elbows and rest the forearms on the step, bench, or table (figure 6.6a). To decrease difficulty, increase bench height; to increase difficulty, reduce bench height. Extend the legs. The spine should remain straight at all times. Draw one hip and knee toward the chest, keeping the other leg extended and the spine straight (figure 6.6b). Return the leg to the extended position to complete the repetition.

To increase the level of difficulty, remove the bench and extend the elbows. Rest the hands on the floor, fingers forward. Perform the same movement pattern.

Pick three or four of the stretches and foundation drills to serve as a warm-up and cool-down, or make them part of a workout for one week and retest. Check all movements, not just the one being focused on, and see what has happened. Sometimes the difference will be obvious; sometimes it will not. Be persistent and consistent and you will start to see change. Follow directions and work on the asymmetries (left-right differences) first and limitations (general stiffness noted on both left and right sides) second.
In-Line Lunge Exercise Progressions
Kneeling Hip Flexor Stretch

Kneel on the ground. Place one foot forward flat on the ground with the knee bent approximately 90 degrees. Gently slide the opposing knee backward 1-2 inches. Tighten abdominals so the low back flattens. Ensure body weight is shifted to the front foot and shoulders are square. Lean trunk and pelvis forward together slowly until a gentle stretch is felt on the front upper thigh of the down leg. Hold 30 seconds and release. Repeat 3 times each side.

Figure 31. Kneeling Hip Flexor Stretch
Corrective activities:

**Lunge stretch**

Stand with feet placed shoulder width apart. Slowly bend trunk forward (i.e. bend hip) keeping the knees fairly straight and place hands on the floor. If unable to place hands on the floor with knees straight then bend the knees slightly. Slowly step one foot backward keeping the knee straight until it is full extended behind the body. The front leg should be bent approximately 90 degrees with the foot flat on the ground. The body should remain in a straight line from ankle to knee to hip to shoulder. Be careful not to twist through the pelvis by ensuring that the "bumps" on the front of each hip are the same distance from the floor. If this is not possible, place the hands on blocks. A stretch should be felt on the front of the hip and upper thigh of the straight leg. Hold for 30 seconds and release. Repeat 3 times each side.
If this stretch is too difficult it may be more appropriate to first perform the Hip Flexor Stretch as outlined in the Hamstring and Hip Flexor section prior to completing this stretch.

![Lunge Stretch](image)

**Figure 52. Lunge Stretch**

**Mini split squat (with or without stability ball)**

Kneel on the ground. Place one foot forward flat on the ground with the knee bent approximately 90 degrees. Maintain the placement of the front foot, slowly straighten the legs and arise to a standing position. Feet should be in a staggered stance with the back heel comes up off the ground slightly. This is the starting position. If it is difficult to maintain balance in this position, it may be helpful to widen the stance slightly or place a large stability ball beside the body and rest a hand on the top of the ball. Slowly descend dropping the back knee straight down towards the ground. The front knee should bend and should NOT travel forwards. Move through a small range maintaining the trunk in an upright position with NO forward lean. Focus on maintaining full contact of the front foot with the ground. It should not rock side to side. The front knee should remain lined up with the second toes of the foot and remain directly over the ankle (i.e. not in front of toes). Move only through the range in which the body remains in perfect form. Then travel back up to the starting position (feet staggered). Over time this range should increase until able to perform a full split squat (described below) without using a stability ball for balance. Repeat 10 times. Gradually increase repetitions to 2-3 sets of 10 repetitions.
Figure 53. Split Squat with stability ball (may also be performed without the stability ball)

Split squats

Stand with feet placed shoulder width apart. Take a large step forward with one foot. The step should be large enough that the back heel comes up off the ground slightly. This is the starting position. If it is difficult to maintain balance in this position it may be helpful to widen the stance sideways slightly. Slowly descend dropping the back knee straight down towards the ground. The front knee should bend to approximately 90 degrees and should NOT travel forwards. Maintain the trunk in an upright position with NO forward lean. Keep the head and chest up. Focus on maintaining full contact of the front foot with the ground. It should not rock side to side. The front foot should remain lined up with the second toes of the foot and remain directly over the ankle. Then travel back up to the starting position (feet staggered). Repeat 10 times. Gradually increase repetitions to 2-3 sets of 10 repetitions.
Prone Quadriceps stretch

Lay face down on a mat. Bend one knee and reach back with the same side hand grasping the top of the foot. The pelvis should remain level. And the knee should not shift to the side.

If the foot is difficult to reach, use a stretching strap around the foot.

Gentle tension should be felt along the front on the thigh on the bent leg.

If the position causes low back pain try placing a folded towel under the belly.
Figure 56- Prone Quadriceps Stretch
HALF-KNEELING DOWEL TWIST

Get into a half-kneeling position, keeping the spine as tall as possible (figure 6.7a). Do not hyperextend the hip. Hold the body erect in line over the down knee. Bring the foot of the front leg to within four inches of the end of the tape line if you use a tape line. The down knee should be on the back end of the tape line. The front heel must be equal with the front end of the tape line, but it can be up to four inches to the side to widen the base and reduce the difficulty when you start this exercise. The front of the down thigh, the back of the front thigh, and the calf of the front leg should form a box. Maintain this box throughout the entire exercise.

Hold a dowel or stick across the shoulders (not the neck) and twist in the direction of the front leg (figure 6.7b). Keep the spine as tall as possible and do not lean. Twist only as far as possible without losing posture or original leg position. Don’t fight the stretch. Relax and hold the position for at least 30 seconds.

Now twist toward the down leg. This move will be easier to do, but the position will be harder to hold. The hips will want to rotate, but don’t let them. Stay tall and twist. Hold the position for at least 30 seconds.

Figure 6.7  Half-kneeling dowel twist: (a) start in a half-kneeling position with the dowel across your shoulder blades; (b) twist to one side.
Rotary Stability Exercise Progressions
Figure 78. Prone Table Top position- Arm only activity

- Leg only

Assume a hands and knees position and place a dowel across the back of the pelvis/hips. Shoulders and hands aligned as are hips and knees.

Inhale fully. Upon exhale lift the belly button towards the spine and engage the core musculature. The spine is required to stay in a neutral position and pelvis is level.

Instruct the athlete to lift the one knee a couple inches from the ground. The pelvis needs to stay level in order to balance the dowel. Slowly lift the leg and push the foot away from the body.

Lower leg and resume the start position. Repeat 10 times each side. Gradually increase repetitions to 3 sets of 10 repetitions.

Figure 79. Prone Table Top position- Leg only activity
Active
Straight-Leg
Raise Exercise
Progressions
Active Straight Leg Raise

At first glance, the active straight leg raise may appear to be less functional than the deep squat, hurdle step, and lunge. The active straight leg raise was not chosen as an assessment because of its similarity to sport movement, but rather because it is a simple movement that creates an appreciation of left-right differences or unobserved limitations. It combines leg flexibility with trunk strength. Difficulty with this test usually is caused by a combination of strength and flexibility imbalances or timing problems. Someone who can easily touch her toes but has difficulty with the active straight leg raise may be performing the toe touch by overstretching the spine to compensate for a flexibility problem in the lower body. She also may have poor coordination throughout the abdominal muscles, resulting in limited leg-lifting ability.

The core, the midsection of the body, should be the first group of muscles to fire. In nearly any activity, they stabilize the spine so that the extremities can be moved. The lack of this coordination sequence can really be seen in the active straight leg raise because the hip flexor muscles often will fire first, tilting the pelvis forward and pulling the low back off the floor into an arched position. This position reduces the effectiveness of the abdominal muscles as well as the other muscles that stabilize the trunk. When the core is functioning effectively the trunk and pelvis stabilizers fire before the hip flexors. The hip is effectively flexed without changing the position of the trunk. This is a true example of core stability.
One of the greatest conditioning mistakes is to assume that ab strength and endurance developed in one exercise will carry over into all movement patterns. Most people train their abs with crunches. However, crunches do not create the stress on the lower back that forces the abs to be completely reactive and coordinated. The scissors movement of the legs in the active straight leg raise does. Another problem in conventional conditioning is abdominal function symmetry. There are few ways to check for left and right differences in abdominal strength and function. The active straight leg raise may give some insight into the asymmetry. Simple crunches or sit-ups may demonstrate ab strength or endurance but do not reveal significant left-right differences when it comes to functional movement.

The active straight leg raise does require leg flexibility. It would be easy to assume that hamstring flexibility is the most important factor. It is not. If you are concerned only with the lifted leg, you will forget the leg on the floor. The leg on the floor must be flexible in the direction of extension; the leg being lifted needs flexibility in the direction of flexion. The striding motion used is not dependent on just one muscle but on groups of muscles on each side of the body, allowing for a full and unrestricted stride in either direction.

The final and most often overlooked attribute of this simple test is core stability. Stability implies control of motion, not the production of motion or the strength of the core. Stability means the core doesn't move when the extremities do.

If you want the core to move more, then do crunches, sit-ups, and roman chair extensions. If you want the core to be stable, do tests and exercises that demonstrate stability, such as the active straight leg raise. Move the limbs and note whether the core moves, too. If it does, it's not stable. Don't dismiss this simple test. Practice the following exercises to improve your score.

**LEG-LOWERING PROGRESSION**

Lie on your back and lift your legs to as close to a right angle as possible (figure 6.9a). Relax the feet or point the toes. Arms should be in a T or Y position to help balance the weight as you lower the leg. Lower one leg while keeping the other leg straight (figure 6.9b).

At first, use a 6- to 8-inch block or step. The important thing is not how much you lower the leg but how still you keep the upright leg. Keep the spine and legs as long as possible.

![Figure 6.9 Leg-lowering progression: (a) lie on the floor with feet lifted; (b) lower one leg.](image-url)
Relax and don’t strain. If you are straining, make it easier (increase box, chair, or bench height) and do more reps.

Make sure the left and right sides are symmetrical in ability and control. Once you feel equal between the left and right sides, move to symmetrical activities that will help reinforce strength in this new pattern, such as the curl-up.

**CURL-UPS TO MODIFIED CURL-UPS**

This exercise should be used only as a supplement to the leg-lowering progression. It will help maintain leg flexibility and improve motor learning, leg relaxation, and trunk control. The stability program with leg lowering is more functional and should always come first. This exercise is only a complement.

Lie flat on your back with your arms over your head and toes pointed at the ceiling (figure 6.10a). Bring the arms toward the legs. Keep the shoulder blades flat on the floor. Slowly lift the head so that the chin comes into contact with the chest (figure 6.10b). Leave the shoulders back and curl up the spine one segment at a time, hands reaching for the toes. Squeeze the knees and feet together. Perform a smooth curl-up with no jerking. The legs should not come up.

If you experience difficulty with the movement, try pointing the toes to the sides and squeezing the legs together before initiating movement. This simple move will keep the legs out of the curl-up. Hollow out the abdomen by drawing the abs back. Try to flatten the back and attempt the curl-up again. If this still presents difficulty, use a slight incline under the back until you can complete 12 repetitions.

The curl-up prepares the abdominal muscles for the next activity. Begin by lying on your back in a doorway with the right leg on a wall and the left leg through the doorway. Move into the wall until you feel an adequate hamstring stretch. Pull in the abs. The left leg should be bent at the knee with the foot flat on the floor. Slowly lift and straighten the left leg so that it is beside the right leg. Flatten the back and relax the shoulders. Place hands above your head and slowly lower the left leg until it touches the ground. Relax, take a breath, and slowly lift it back.

![Figure 6.10](image_url) Curl-ups: (a) lie on the floor with arms overhead; (b) reach for your toes.
If the low back comes off the ground during the movement or the hamstring stretch intensifies, you are not staying stable through the core. The quickest remedy is to put a small rolled towel under the left knee so that it does not have to go into full extension on the floor. Reduce the bulk of the knee roll each day until you no longer need it. This activity will prepare you for a new way to train abdominal muscles and will help resolve significant left-right differences in coordination and body awareness.

**LEG-LOWERING PROGRESSION WITH SUPPORT**

Lie on your back near a doorjamb, corner, or another narrow stable surface. Extend both legs and prop them against the support. Slide toward the support until you are close to a right angle. Go as far as you can. Relax with your arms by your side and keep your spine as long as possible. Legs should be as long as possible. Relax the feet or point the toes.

Lower one leg while keeping the other on the wall (figure 6.11a). Rest your heel on a small 6- to 8-inch block when you lower your leg. You may use a larger block if you need to. Reduce the height of the block as you gain flexibility and control. Touch the block and raise the leg back to the original position. Do 10 to 12 repetitions, then switch legs.

Once you have equal ability and control on each side, try to go to the floor (figure 6.11b). If originally you were not at a right angle, move closer to the wall before going lower with the leg. This will ensure that you get the maximum benefit from the exercise and can observe left-right differences.

![Figure 6.11](image)

Use these stretches and foundation drills as a warm-up and cool-down, or make them part of a workout for one week and retest. Check all movements, not just the one being focused on, and see what has happened. Sometimes the difference will be obvious; sometimes it will not. Be persistent and consistent and you will start to see change. Follow directions and work on the asymmetries (left-right differences) first and limitations (general stiffness noted on both left and right sides) second.
Seated Rotation Exercise Progressions
Seat Trunk rotation

Sit in the same cross legged position as the Seated Rotation stretch. Maintain equal balance on each buttock and spine in an upright position.

Inhale deeply. Exhale and slowly rotate shoulders to one side and look towards the shoulder. Hold for 3-5 seconds and slowly return to the start position.

Repeat on other side. Perform 10 repetitions in each direction.

Figure 75. Seated Rotation activity

Please note: If the athlete scores lower on one side compared to the other. Perform this stretch twice on the tighter side to every once on the other side. In other word perform the stretch 4 times on the tighter side and twice on the other side.
Seated Rotation

The seated rotation assessment shows how tightness in one area of the body can significantly affect the movement of another. Someone who is slightly stiff even getting into a cross-legged position will unknowingly flex and contort the spine to take stress off the hips. Doing this reduces the spine’s ability to effectively rotate left and right. If hip tightness isn’t the problem but the seated rotation is still difficult, then it is probably safe to say that most limited movement is in the spine, represented by general stiffness rotating right and left.

The secret to performing the seated rotation adequately is to keep an erect and elongated spine, pull in the abdomen, and keep the shoulders back. It is best to go through the movement screen before moving into this section because it is important to know what you naturally do, not what you are willing to do with appropriate cues. The body naturally has good mechanics. It is through bad habits, unnecessary tension, sedentary activities, and unbalanced exercise that natural efficiency is lost and bodies try to compensate. Improving ability in the seated rotation will reduce stress on the spine and improve overall posture.

SIDE-LYING ROTATION

Lie on your right side. Flex the left knee and hip slightly greater than 90 degrees. Place the right knee on top of the left ankle to lock into a rotated position. If necessary, use a ball or towel under the left knee for support. Rotate the shoulders to the left. Do not break contact between the left knee and the towel roll, ball, or floor. Maintain consistent pressure.

Reach up and out with the left arm (figure 6.12a). Do not force the movement into a backward rotation as if trying to lay the shoulders flat on the floor. Pick up the right arm and reach toward the ceiling (figure 6.12b). This will engage the abs. Do not move the lower body. Use the abs while reaching the right arm toward the ceiling to help rotate farther to the left. Maintain pressure on the ball or towel throughout the movement.

Figure 6.12 Side-lying rotation: (a) reach with the left arm; (b) reach with the right arm.
SHOULDER ROTATION

Lie on your left side. Flex the right knee and hip slightly greater than 90 degrees. Place the left knee on top of the right ankle to lock into a rotated position. If necessary, use a ball or towel under the right knee for support. Rotate the shoulders to the right. Do not break contact between the right knee and the towel roll, ball, or floor. Maintain consistent pressure.

Reach up and out with the right arm (figure 6.13a). Do not force the movement into a backward rotation as if trying to lay the shoulders flat on the floor. Rotate the right forearm, palm toward the floor, hand just above the buttocks. Keep the forearm flat on the floor and slide the hand up toward the mid-back while maintaining a retracted position with the scapula and rotated position with the spine (figure 6.13b).

Figure 6.13  Shoulder rotation: (a) reach with the right arm; (b) slide the hand to the mid-back.
TRUNK ROTATION

Lie on the floor with arms to the side and palms turned up (figure 6.14a). Shoulders should be retracted and abs should be pulled in. Hips and knees should be flexed to 90 degrees. Place a small bolster, foam roll, or medicine ball between the knees. Support the head with a towel if necessary.

Rotate the knees to one side while keeping the arms out (figure 6.14b). Keep the knees and hips flexed; make sure hips are flexed slightly more than 90 degrees. Keep the shoulders flat and retracted; keep the neck relaxed. Reaching each arm out will help maintain position. Maintain contact between the floor and the low back. The trunk should remain relaxed during the movement. Take specific note of left and right differences and work through those by relaxation and core stability. Return to the center and repeat.

Figure 6.14  Trunk rotation: (a) lie with arms at the sides, palms up; (b) rotate the knees to the side.

TRUNK STABILITY

This movement will reinforce developing mobility and create awareness if the trunk is weaker in one direction. Lie on the floor with the arms to the sides slightly flexed more than 90 degrees (figure 6.15a). One palm should be turned down; the other palm should be turned up. Shoulders should be retracted and abs should be pulled in. To increase shoulder mobility, rotate the right palm down as far as it will go while rotating the left palm as high as it will go. Keep the arms reaching out as far as possible, widening the distance between the fingertips of the hands.
Rotate the knees toward the palm that is turned down (Figure 6.15b). Keep shoulders flat and retracted. Keep the neck relaxed, supporting the head with a towel if necessary. Keep arms spread as wide as possible, maximizing the distance between fingertips. Reach the toes toward the ceiling and elongate the legs as much as possible. The spine should be flat and the abs should be pulled in. Remember, this is not a mobility move; it is a stability move. Therefore, the buttocks should remain flat throughout the entire time. Rotating the knees left and right should be done through adduction and abduction of the hips. The shoulders remain flat, with the scapula retracted and the neck relaxed.

This exercise reduces the rotation from the previous exercise, which targeted mobility. This is to reinforce stability and improve spine stability motor programming. If it is difficult to maintain a perfect vertical orientation of the legs, use a small folded towel under the tailbone to help flatten the back. As you progress, slowly reduce the bulk of the towel until you no longer need it.

Use threestretches or foundation drills as a warm-up and cool-down, or make them workout for one week and retest. Check all movements, not just the one being on, and see what has happened. Sometimes the difference will be obvious; it will not. Be persistent and consistent and you will start to see change. Follows and work on the asymmetries (left-right differences and limitational stiffness noted on both the left and right)