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INTRODUCTION

This manual contains information on several styles of flexibility training. By the end of this course, participants should be able to identify and utilize these methods to increase the range of motion needed to perform functional movements well.

To begin, we will look at few basic principles of flexibility training and define a few common terms.

BASIC CONCEPTS

There are two important terms to define when discussing an individual’s range of motion.

1. Flexibility: the range of motion that can be **PASSIVELY** displayed at a joint (i.e., a seated forward reach to stretch the hamstrings).

2. Mobility: the range of motion that can be **ACTIVELY** displayed at a joint (i.e., a straight-legged high kick in front of the body).

Flexibility will often reveal the maximum range of motion available at a joint because compounding factors such as load and speed are not involved. For this reason, one’s flexibility will often dictate how much mobility one can display in a “best-case” scenario. For ease of discussion, flexibility will be used as a catch-all term to describe available range of motion (ROM) throughout this manual.

Mobility will be contextually defined based on several factors. For example, the speed and muscular tension required during a movement will dramatically affect one’s ability to display mobility due to the nervous system’s governance of available range of motion. This is an important factor to consider when attempting to develop greater range of motion. If you want to develop great flexibility under load while moving quickly, your flexibility training should include quick movements under load.

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FLEXIBILITY AND CROSSFIT

This manual outlines several different styles of flexibility training. Before you begin working diligently on the techniques below, ask yourself honestly, “How much flexibility do I need?” Increased flexibility for the sake of flexibility alone is not a worthy pursuit if you are interested in fitness. Like any other attribute, too much can be a hindrance rather than a help.

For the most part, it is optimal to have only a small reserve of flexibility beyond what is needed for the performance of functional movements. Too much flexibility can result in positional laxity, instability of the joints and increased risk of injury. Splits and back bends are flashy and impressive to the average person but are often not functionally useful for anything other than theatrics.
INTRODUCTION

Consider the following positions. The range of motion of the joints and musculature required to perform them constitute a relatively complete picture of the major muscle groups and joint structures of the body:

- The bottom of a squat (particularly the overhead squat)
  - Hips, hamstrings, thoracic and lumbar spine, ankles and calves
- The bottom of a lunge
  - Hips, hamstrings, quadriceps, hip flexors
- The overhead position (particularly with a narrow/shoulder-width grip)
  - Thoracic spine, lats, pecs, shoulders
- The front-rack position
  - Thoracic spine, lats, pecs, shoulders and triceps, external rotation of the arms
- The set-up of a deadlift (or other pulling movements like the snatch)
  - Hamstrings, glutes, thoracic and lumbar spine
- The bottom of a dip or muscle-up
  - Pecs, lats, shoulders, thoracic spine

If the positions in the list above can be attained easily with good mechanics, there is little need for a dramatic increase in range of motion, and flexibility training should be considered mostly as a maintenance routine.

If these positions are not easily attained with good mechanics, increasing ROM can be a huge benefit to performance and safety. Individuals who struggle with these positions should pursue flexibility training as they would address any other weakness in their fitness: head-on with diligent practice.

Most people are acutely aware when they have difficulty with a position, but the methods used for gaining flexibility are often inefficient and tedious. The length of the muscle or some other mechanical property of the tissue is perceived as the limiting factor. Long, static-stretching grudge matches are often the common prescription for improvement. Static stretching can increase flexibility, but it does a poor job of addressing neurological restriction. For this reason, it is often not the most efficient way to increase ROM required for dynamic, athletic movement.

The nervous system plays a large role in governing our movement and will restrict ranges based on weakness (real or perceived) and unfamiliarity. Re-training the nervous system by regular exposure and strengthening of these positions can be a more efficient use of time. Methods that consider this concept often yield a more dramatic improvement than static stretching alone.

If you can break out of the mindset that increased flexibility must come from arduous, boring practice, you will find that improvements come relatively quickly with a little bit of diligence and hard work.
JOINT ROTATIONS

OVERVIEW

Joint rotations should be done every day to improve overall joint health and movement.

Why:
- Improve synovial-fluid circulation and blood flow.
- Increase core temperature of the body.
- Move and expose joints to their natural, full range of motion.

What:
- Movement that places joints through a full, controlled range of motion with minimal effort or loading.

When:
- First thing in the morning or as the first elements of a workout.

How:
- Starting with small motions, move the joint deliberately through its natural range.
- Pick at least one drill for each joint.
- Select a few more drills to emphasize joints that will be more involved in your workout or add more repetitions to the original drills you selected.

How Much:
- Minimum of 10 repetitions (each direction) of each movement or until motion is smooth and fluid.
- When performed as part of a complete workout, no more than approximately 5 minutes of total work.
- When performed as a stand-alone session, the duration is up to you, but stop before the point of muscular fatigue.

How Often:
- Can be performed every day (recommended).

The term “joint rotations” can be a bit misleading, because not all movements will include rotation. Joint rotation simply refers to unloaded movement that moves joints through their full ranges of motion with minimal effort. We are not looking for an acute stretch of the musculature, although athletes might experience some light stretching sensations.

Joint rotations serve as excellent daily practice as part of a warm-up or as the first movements after waking. Joint rotations encourage circulation of synovial fluid (fluid which lubricates joints), blood flow and controlled range of motion. They are also very useful for increasing the body’s core temperature while preparing the body and nervous system for more intense activities.

The minimum recommendation is typically 10 reps in each direction; however, many more can be done if desired. A common practice is to do as many repetitions as needed to feel that the joint is rotating smoothly and easily. It is recommended to start with a small, controlled rotation and gradually increase range of motion and speed. Working from the
extremities toward the center of the body is an easy way to stay organized (i.e., wrists → elbows → shoulders ankles → knees → hips).

If a joint is recovering from injury, use pain-free range of motion as a guide. You might have to limit yourself initially. Gentle, frequent rotations can be used to slowly improve and encourage a return to full range of motion. The increased blood flow can also help heal an injury by way of delivering necessary nutrients and clearing inflammatory compounds.

There are endless variations on these drills. The basics will serve you well, but if you find some alternatives you like, feel free to use them. However, do not feel the need to be creative at the expense of efficacy. If a drill seems convoluted or overcomplicated, it probably is. When in doubt, fall back on the basics.

Due to the infinite variations, it is possible to spend an inordinate amount of time working these movements, but most warm-up applications require only five to 10 minutes. Be consistent (i.e., daily practice), but don’t major in the minors! Spending all of your training time here at the expense of your primary workout is not the way forward!

You can also use some drills that involve a small amount of resistance or traction to encourage the use of the muscles responsible for active movement of the joint. Use this approach sparingly and remember the goal is circulation, encouragement of full range of motion, and increased core temperature and nervous system activity, NOT muscular fatigue/failure or a pronounced stretch.

There is a natural blurring between many joint rotation and dynamic stretching techniques. The primary difference: Joint rotations are often performed with control through the whole range of motion and are therefore less dynamic. Try to execute the movements smoothly instead of explosively. By contrast, dynamic stretching techniques often rely on change of direction just before the moment of stretch to be most effective.

Joint rotations do not create significant fatigue and encourage the natural movement of the joints. Including them as part of a daily routine is a very simple, effective and time-efficient practice to promote and maintain joint health. These movements are not often thought to improve flexibility, but their regular practice can have a great impact on overall movement quality.
UPPER-BODY JOINT ROTATIONS

WRISTS

Wrist Rotations

Make small circles at the wrist. Gradually increase range of motion. Work both directions.

Wrist Flexion/Extension

Flex and extend the wrist by pulling the fingers toward the torso, then pushing them away.
ELBOWS

Elbow Rotations

Make small circles at the elbow. Gradually increase range of motion. Work both directions. Be mindful to keep the motion restricted to the elbows, not the shoulders.

SHOULDERS

Shoulder Rotations (Arms at Sides)

Shrug the shoulders in small circles. Gradually increase range of motion. Work both directions.
**Straight-Arm Rotations (Thumbs-Up Position With External-Rotation Emphasis)**

Begin with the arms straight and the thumbs pointing up. Start with small rotations (above) and gradually work to large circles (below). Resist over-aching the back. Work both directions.

**Straight-Arm Rotations (Thumbs-Down Position With Internal-Rotation emphasis)**

Begin with the arms straight and the thumbs pointing down. As with the thumbs-up variation, start with small rotations and gradually work to large circles. Resist over-aching the back. Work both directions.

Straight-arm rotations can also be performed while holding a light band or PVC. If using a
Joint Rotations

When using a band, resist the urge to apply too much resistance.

**Scarecrow**

Begin with the arms bent at the elbow with the hands up. Keeping the arms in line with each other, push your palms down and toward the back wall. Start small and gradually increase range and speed. Do not allow the head to push forward or the shoulders to hunch.
Internal/External Rotation

Begin with both arms out by the sides. Look to one side and turn the palm up. Turn the opposite hand down (thumb toward floor). Reach out with as far as possible in this position before turning the opposite direction and rotating the hands.

NECK

Flexion/Extension

Stand tall and tuck the chin to the chest. Then look up and reach tall with the chin. During these movements, try to create as much length as possible through the neck. Start small and gradually increase range of motion.

Lateral Flexion/Extension

Stand tall and try to place your ear on your shoulder. Do not allow the shoulders to elevate (shrug). During these movements, try to create as much length as possible through the neck. Start small and gradually increase range of motion.
Rotation

Stand tall and look over one shoulder. Do not allow the shoulders to elevate (shrug) or the rest of the body to twist. During these movements, try to create as much length as possible through the neck. Start small and gradually increase range of motion.

You can combine these movements to perform head circles, but keep the movement controlled and deliberate.
LOWER-BODY JOINT ROTATIONS

ANKLE

Rotations

Make small circles at the ankle. Gradually increase range of motion and speed. Make sure to work both directions. This drill can be performed with the toe in contact with the ground to add some light resistance.

Inversion/Eversion

Turn the sole of the foot toward the middle of the body (inversion), then turn the sole of the foot away from the middle of the body (eversion). This movement is relatively subtle, so do not worry if the range of motion is small. This drill can be performed with the toe in contact with the ground to add some light resistance.
**Dorsiflexion/Plantarflexion**

Pull the toes toward the body (dorsiflexion), then point the toes toward the floor (plantarflexion).

**KNEES**

**Rotations**

Keeping the weight primarily toward the heels, make small ovals at the knees. Gradually increase range of motion and speed. Work both directions. Most of the movement should occur with the knees moving front to back; avoid excessive lateral (side-to-side) motion.

**Rotations + Hip Internal/External Rotation**

Lift one leg up. Draw a circle with the foot. Gradually increase range of motion and speed. Make sure to work both directions.
**Knee Flexion + Ankle Flexion**

Starting in the bottom of the squat, gently push your weight forward over one leg. Moving back and forth (Pictures 1 and 2 above) can emphasize movement at the knee. From the position in picture 2 you can move the heel toward the ground while keeping the knee forward to emphasize movement at the ankle.

Many of the hip techniques in the next section will also include the knee.

**HIPS**

**Rotations**

Take a relatively wide stance and make circles with the hips. Gradually increase range of motion and speed. Work both directions.

**Anterior/Posterior Tilt**

Rotate the pelvis to the anterior (attempt to stick your butt out or point your belly button to the floor). Then rotate the pelvis to the posterior (tuck the tailbone underneath the body). This movement is often subtle for most people, so don’t worry if the range of motion is small. You can also make small circles by tilting the hips laterally in addition to
the movements described above.

**Single-Leg Rotation**

Pull the knee as high as possible, then attempt to draw a large circle with the knee. Make sure to work both legs in both directions. You can also perform this motion from a kneeling starting position.

**Step-Over/-Under (Can Also Be Used as a Dynamic Stretch)**

Set up (or have a partner hold) a piece of PVC midway between your hip and knee. Step up and over the stick, pulling the knees as high as possible and making as large a circle as you can with the leg. Once on the other side, send your leg under the stick, aiming for a stance wider than that which you would use to squat. Drop the hips low and shift the
weight to the front leg as you move under the stick.

This drill is best placed at the end of a joint-rotation session once the limbs have been worked and warmed up. Make sure to work both directions.

Knee flexion is encouraged to allow more range of motion at the hip and provides some benefit to the knee as well. Beginners will often try to perform this with the legs relatively straight during the step over.

**Step-Over/-Under + Samson Stretch**

Begin as above. Once over the stick, send the leading leg under the stick, using a wider placement than before. As you are passing under the stick, rotate the torso to face away from the rack and raise the hands overhead in one smooth motion. Make sure both feet rotate or the knee will be in a compromised position. Return by going back under the stick and performing the Samson stretch in the opposite direction, followed by a step-over. Remain in motion. Make sure to work both directions. Start with a smaller step-under and gradually increase until the step covers as much distance as possible.
Seated Internal/External Rotation

Start seated as shown. Rotate to one side, attempting to place the knee to the floor while keeping the hips in contact with the ground. Return to start position and work the other side. If you like, you can place a band around the hips/knees (as shown) to provide light traction at the lumbar spine/pelvis.

Kneeling Hip Flexion/Extension

Start kneeling as shown. Allow the hips to sit back toward the heels. Return to the start position. Play around with the width of the legs. Try to keep the lumbar spine relatively neutral (not rounded) as you descend. You can also emphasize one side slightly by taking most of weight on one leg and attempting to sit on that heel.

You can place a band around the hips/knees (as shown) to provide light traction at the lumbar spine/pelvis, but it is not necessary.
**TORSO TECHNIQUES**

**Rotation**

Start standing with arms away from the body. Rotate the trunk to one side, allowing the back foot to pivot. Start small and gradually increase range of motion.

**Lateral Flexion**

Start standing with arms overhead. Lean to one side, then the other. Start small and gradually increase range of motion. Do not allow the hips to flex. Attempt to lengthen the spine as much as possible (reach tall in the standing position and reach as far away from the body as possible with the fingers in the side position).
Kneeling Flexion/Extension

Start kneeling with the spine in a neutral position. Arch your back and look up to extend the neck. Then round your back and tuck your chin (look toward your knees). Start small and gradually increase range of motion. This drill can be done with a light band placed around the hips and knees to provide some traction at the lumbar spine and hips. It can also be performed standing (shown below).
COMBINATION MOVEMENTS

These drills are best placed at the end of a joint-rotation session. They require more coordination and start to prep the athlete for more movement-specific challenges. These combinations are excellent warm-up drills for the hips and spine. Remember that in this context we are not looking for an acute stretch but joint movement. Remain in motion and don’t worry about trying to find a stretch.

Squatting Variations

Start in the bottom of a squat. Place the elbows inside the legs. Keeping the spine as long as possible, reach overhead with one arm, then the other. Start small and gradually increase range of motion by attempting to reach behind you with your extended arm.

From this position you can also work spinal flexion and extension by alternating between arching the back and looking up, then rounding the back and looking down between your feet.

Lunging

Start in a long-lunge position with the rear leg straight, the hands on the floor and the arms extended. Rotate the torso and attempt to place the chest along the inner thigh. Then rotate the opposite direction, trying to lay the spine on the inner thigh. Try to keep the spine as long as possible and the back leg straight. Start small and gradually increase range of motion by attempting to reach behind you with your extended arm. Make sure you work from both a right-foot and left-foot lunge.
As a variation, you can also work to move the elbow of the arm next to your front leg toward the floor. When performing this motion as part of a joint-rotation series, remain in motion and don’t worry about attempting to stretch in the position.

**Standing**

Start standing with a slightly offset stance (as shown). Rotate the torso, fold at the waist and attempt to place the palm on the floor close to the instep of your front foot. Return to the start position, then rotate the opposite direction, and try to place the opposite palm on the floor. Try to keep the spine as long as possible and the back leg straight. Start small and gradually increase range of motion by attempting to reach behind you with your extended arm.

From this position you can also work to move the elbow of the arm (next to your front leg) toward the floor. When performing this motion as part of a joint-rotation series, remain in motion and don’t worry about attempting to stretch in the position.

As discussed previously, many combinations and variations can be created from the basics. Here are a few guidelines and reminders:

- Start from the extremities and work toward the core.
- Start with small ranges of motion and gradually increase.
- Keep the movements controlled, deliberate and smooth.
- You are NOT looking to hold positions or stretch (yet).
- Start with simple movements before complex combinations.
- Perform 10 reps (each direction) minimum or work until the movement becomes smooth and fluid.
- You shouldn’t take more than approximately 5 minutes if performing joint rotations as part of a complete workout.

To create a routine, choose at least one drill from each category and work your way through. Then select a few more drills that relate specifically to the movements you will encounter later in the workout.

For example: If the workout contains a significant overhead component, select a few more drills in the shoulder and torso categories. If the workout contains a significant squatting
component, select a few more drills from the hips and torso categories.

Alternatively, you can stick with fewer drills and simply include more repetitions of the movements that target the joints that will be taxed most during the workout. You need not complete all the drills listed here every time you use joint rotations.
DYNAMIC STRETCHING

OVERVIEW

Why:
• Develop control at the limits of range of motion.
• Re-set myotatic stretch reflex (MSR) sensitivity (see below).
• Increase core temperature and prepare the body for more intense activity.

What:
• Movements that quickly approach and recover from a joint’s end range of motion.
• A change of direction deliberately BEFORE the stretch reflex is felt (i.e., a stretching sensation is experienced).

When:
• Best placed immediately after joint rotations.
• Can be performed daily (after joint rotations).

How:
• Using quick motions, approach a joint’s end range of motion.
• Deliberately reverse the movement BEFORE a stretch is felt.
• Begin with moderate speed and ROM.
• As the set continues, you might find you can go further and faster before experiencing a stretch. Gradually increase speed and ROM, but make sure you do not go too far and start experiencing an acute stretch of the muscle.

How Much:
• Do as many reps as needed to achieve your maximum range for the day. Stop at that point.
• When performed as part of a complete workout, dynamic stretching should take approximately 5 minutes.
• When dynamic stretching is performed as a stand-alone session, the duration is up to you, but stop before the point of fatigue.

How Often:
• Can be performed every day (recommended) when implemented correctly.

Dynamic stretching is a type of movement preparation that is often misunderstood and therefore underutilized. The goal is to quickly approach and recover from a joint’s natural end range of motion. By teaching the body to change direction slightly BEFORE a stretch is felt, the nervous system becomes more accustomed to that range.

This neurological adaptation is one of the best ways to increase your flexibility quickly. It is often not the length of the muscle itself that restricts a position. Rather, it is the protective mechanisms of the nervous system that limit positions from which the body is ill-prepared to recover. By teaching the body to recover from these difficult positions in motion, the nervous system becomes more comfortable in these ranges under these conditions.

When approaching this range in the future, the nervous system will be more likely to allow...
unimpeded expression. For this technique to be MOST effective, the movement must be reversed BEFORE a stretch is felt. This will create the greatest likelihood of ‘resetting’ the threshold of the MSR.

The MSR creates an involuntary contraction in a muscle when it is lengthened. This reflex is constantly activated by the subconscious to adjust posture. An acute example is experienced when you are nodding-off in a seated position: The neck extensors become slack, and as they approach their end range of motion the MSR pulls the head out of its free-fall toward your chest. You are jerked awake. This reflex is also the basis for plyometric training: A rebound or change of direction often involves the MSR. The theory of plyometrics is that a muscle contracted voluntarily with the addition of the involuntary MSR will involve more muscle-fiber recruitment than a voluntary contraction alone.

If the body quickly shifts into a position approaching end range (or a range that is determined to be dangerous or uncontrolled by the nervous system), the MSR attempts to return the body to its original position. If you have ever slipped on a freshly polished floor, you have experienced the MSR in action. As you slip, your legs start moving apart. The body perceives this as dangerous and the MSR forcefully pulls your feet back together. This reflex is invaluable. We are not looking to eliminate it. However, the nervous system often sets conservative timing and positioning for MSR firing due to perceived weakness, lack of control or unfamiliarity. By performing controlled movements in and out of end range of motion, we can teach the nervous system to be less reactive. This is why it is critical to reverse the motion BEFORE experiencing a stretching sensation; if you do not, you are simply reinforcing the nervous system’s current set point.

Recall that flexibility and mobility are context specific. This fact is often not understood or overlooked entirely. Easing into the bottom of the squat position slowly over the course of 30 minutes using conventional static stretches does not guarantee that this position will be available under a different set of circumstances. Similarly, running 30 minutes a day at a slow pace will not better prepare someone for 100-meter maximum-effort sprints.

Moving into a position quickly or while loaded changes the nervous system’s perception of the safety and control of that position. If we want to be able to display range of motion quickly, we need to regularly practice moving quickly in the required range of motion. It is also important to performing these movements with a mindfulness of the whole body. To develop useful flexibility, it is a good idea to practice from the posture in which you will display it. If you push for more range of motion in a poor position (i.e., with a flexed spine), that range still might not accessible from a better position (i.e., with a neutral spine).

Many joint-rotation techniques naturally overlap with dynamic stretching. The key difference is that joint rotations are often performed with control and smooth execution throughout the movement. Dynamic stretches are still controlled but can utilize momentum and more explosive movement. Some joint-rotation techniques can be performed as dynamic stretches simply by changing how they are performed; emphasizing change of direction and speed will create more of the dynamic-stretching effect.

Another common term used to describe some dynamic stretching is dynamic range of motion (DROM) training. This type of movement is excellent as part of warm-up. It not only promotes ROM and increased core temperature but also ramps up the nervous
system’s tolerance for intense activity. Make sure these techniques are performed with attention. It’s very easy to get distracted and simply “go through the motions,” which limits the benefits.

As we’ve seen with joint rotations, dynamic stretching has many variations. It’s not necessary for the movements to be complicated to be effective. As with joint rotations, dynamic-stretching sessions should be brief when used as part of a larger workout: approximately 5 minutes is enough. An easy way to begin: Work all the way through your joint rotations, then start over again with dynamic stretches. For example:

- Lower-body rotations.
- Upper-body rotations.
- Lower-body dynamic stretches.
- Upper-body dynamic stretches.

As you become more comfortable, you can complete the joint rotations for one area of the body, then move directly into a dynamic stretching set for that same part of the body. For example:

- Ankle, knee, hip rotations.
- Front and side kicks (dynamic stretches).
- Wrist, elbow and shoulder rotations.
- Arms swings/flexion and extension (dynamic stretches).
LOWER-BODY DYNAMIC STRETCHES

CALVES

Start with the hands on the floor, weight in the balls of the feet and hips high. From this position, move one heel toward the ground, reversing the movement BEFORE the stretch is felt. Gradually increase ROM and speed. Experiment with the distance between the hands and feet. You can do one leg at a time or alternate.

Alternatively, you can perform a similar stretch standing on the edge of a stair or bumper plate. The movement is essentially a calf raise. Always be mindful to reverse direction before a stretch is felt.

HAMSTRINGS

Front Kicks

Stand on one leg and kick forward, aiming slightly across the body to the opposite hand. Keep both legs straight and do not allow the spine to round or hunch. Don’t get sloppy to kick the leg higher! Reverse direction BEFORE a stretch is felt. Gradually increase ROM and speed. Make sure to work both legs. Hold onto the upright of a squat rack or rig if you have trouble with balance or posture.
HAMSTRINGS ADDUCTORS

Start in the position shown above. Attempt to push the hips toward the ground and the outstretched foot away from the body, then reverse the movement BEFORE the stretch is felt. Try to keep the spine neutral (a little rounding is OK) and the heel down. Gradually increase ROM and speed. Make sure to work both legs. You can hold onto a light weight or the upright of a squat rack if you have trouble with balance or posture.

QUADRICEPS

Butt Kick

Stand on one leg and kick the heel toward the butt. Reverse direction BEFORE a stretch is felt. Try to keep the knee pointing toward the ground, and do not let the lower back arch. Be diligent because it is easy to get sloppy with this drill. Gradually increase ROM and speed.

You can work one leg at a time or bounce back and forth between both legs.
ADDUCTORS

Side Kick

Stand on one leg and kick sideways away from the body. Keep both legs straight and do not allow significant postural deviation (avoid hunching/rounding). Don’t get sloppy to kick the leg higher! Reverse direction BEFORE a stretch is felt. Gradually increase ROM and speed. Make sure to work both legs. Hold onto the upright of a squat rack or rig if you have trouble with balance or posture.

ADDUCTORS

Inside Round Kick

Stand on one leg with the opposite leg slightly behind you. Kick sideways away from the body. Before feeling a stretch, pull the leg across the body in a circle toward your opposite hand. Allow the foot to touch the ground before resetting for the next rep.

Keep both legs straight and do not allow significant postural deviation (avoid hunching/rounding). Don’t get sloppy to kick the leg higher! Gradually increase ROM and speed. Make sure to work both legs. Hold onto the upright of a squat rack or rig if you have trouble with balance or posture. Once you are comfortable with the movement, you can alternate reps between the outside round kick and the side kick because the final position of the former is the start position of the latter. You can do this drill with a bent knee in the beginning if you have difficulty with the straight-leg movement.
**ABDUCTORS/GLUTES**

**Outside Round Kick**

Stand on one leg with the opposite leg slightly behind the front. Kick sideway across the body. Before feeling a stretch, pull the leg across the body in a circle toward your opposite hand. Allow the foot to touch the ground before resetting for the next rep.

Keep both legs straight and do not allow significant postural deviation (avoid hunching/rounding). Don’t get sloppy to kick the leg higher! Gradually increase ROM and speed. Make sure to work both legs. Hold onto the upright of a squat rack or rig if you have trouble with balance or posture. Once you are comfortable with the movement, you can alternate reps between the inside round kick and the outside round kick because the final position of the former is the start position of the latter. You can do this drill with a bent knee in the beginning if you have difficulty with the straight-leg movement.

**HIP FLEXORS**

**Back Kick**

Stand on one leg and kick backward. As the kicking leg extends, keep both legs straight. Keep the hips squared and don’t let the kicking leg rise/rotate (if the toes start pointing out instead of toward the floor, the hips are not being held square). It’s OK if the lumbar spine extends, but don’t let it get too excessive. Reverse direction BEFORE stretch is felt. Gradually increase ROM and speed. Make sure to work both legs.
HIP FLEXORS

Lunge

Start in a lunge position. Push the hips toward the floor, then raise them back up. Reverse the motion before the stretch is felt. Gradually increase ROM and speed. A longer step will increase the difficulty. Try not to let the low back extend too much in this position (a little is OK). Do not let the chest drop to the front leg. The range of motion and speed of this movement will be far less than those of most of the other lower-body drills in this section. This is OK! You can also perform this drill starting from the floor (Picture 3 above).
UPPER-BODY DYNAMIC STRETCHES

Shoulder Flexion/Extension

Begin with one arm above the head and one arm by your side. Keep both elbows extended. Bring the arm above your head down and push the hand toward the back wall. Bring the arm by your side above your head and reach back. In either instance, reverse the motion BEFORE you feel a stretch. Start small and gradually increase range and speed. Do not allow the head to push forward or low back to over-arch.

Bent-Arm Shoulder Retraction/Protraction

Begin with the arms bent at the elbow. Wrap your arms around your torso, then pull the elbows behind your body. Change the angle of arm movement from rep to rep. During this drill it is OK to allow the upper back to round and arch because this will create motion of the thoracic spine. Start small and gradually increase range and speed. Reverse the motion BEFORE you feel a stretch.
Beat Swing

Hanging from a pull-up bar, push the chest forward and pull the heels back, then pull the chest backward and the push the toes forward. It is OK to allow the back arch and round, but remain in control. Think about creating great length from the fingers to the toes throughout the whole movement. Start small and gradually increase range and speed. Reverse the motion BEFORE you feel a stretch.

Rack Position

Start with a bar in the rack at approximately shoulder height (put some weight on the bar to keep it stable). Keeping the fingers loose, push the elbow up. Start small and gradually increase range of motion and speed. Reverse the direction BEFORE you feel a stretch. An alternative is to practice with both arms at the same time. During the single-arm version, do not allow the torso to rotate.
DYNAMIC STRETCHING

Lats/Torso

Start with a light band attached to an upright. Stand far enough away that there is light tension on the band. Reach toward the rig, then reverse the movement BEFORE you feel a stretch. Start small and gradually increase range of motion and speed.

Torso

Start with a shoulder-width (or slightly wider) grip on a stick. Lie on a medicine ball and reach back toward the ground. Focus on lengthening the entire spine. It is normal for the lower back to arch. Reverse the movement BEFORE you feel a stretch. Start small and gradually increase ROM. This drill will not be as dynamic as many of the others.

A few reminders:

- Reverse the direction of the movement before a stretch is felt.
- Do as many reps as needed to find your maximum range for the day, then stop.
- Start with small ROM and gradually get bigger.
- You are NOT looking to hold these positions; remain in motion.
- Dynamic stretching shouldn’t take more than about five minutes to finish if it’s part of a complete workout
- Dynamic stretching is best performed after joint rotations.

To create a routine, choose two to three movements for the lower body and then two to three for the upper body. You can select a few more drills that relate specifically to the movements in the day’s workout. Another good approach is to choose an additional drill.
or two to work on areas that give you difficulty.

For the less experienced or less flexible, consider working through each selected movement, then repeat the sequence. This can help build some familiarity with the drills and the appropriate ROM for each. For the more experienced or more flexible, running through each drill once should be enough.

After completing your joint rotations and dynamic stretches, you should be warmed up and in a ready state. If you are using these stretches as part of a complete workout, this ready state is a great time to start working on specific techniques or ramping up the load for the movements you’ll be performing in the workout.
LOADED STRETCHING

These techniques are best used for significant flexibility gains. They can dramatically improve your ROM relatively quickly.

OVERVIEW

Why:
• Increase strength at the end range of a movement, conditioning the nervous system to allow these positions more readily.
• Utilize neuromuscular phenomena to achieve greater ROM.

What:
• Using several techniques to actively contract muscles at the limits of ROM.

When:
• In-motion stretches can be done sparingly before a workout. Avoid muscular fatigue.
• In-motion stretches performed as a standalone session can be used aggressively.
• Proprioceptive neuromuscular facilitation (PNF) and isometric stretching can be done sparingly post workout, but are best used in stand-alone sessions.

How:
1. **In-motion technique:** Begin close to the limits of your flexibility, come out of the stretch slightly by contracting the muscle(s) being stretched, then allow the stretch to get a little deeper. You do not need to hold positions very long.
2. **Isometric technique:** Begin close to the limits of your flexibility. Using your own bodyweight or an external object, hold position isometrically for up to a minute. Slowly come out of the stretch and rest.
3. **PNF technique:** Begin close to the limits of your flexibility. Using a partner or fixed object, contract the muscle(s) being stretched for 10 seconds, relax and actively move into a deeper stretch.

How Much:
1. **In-motion technique:** 2-3 sets of 5-10 reps per movement.
2. **Isometric technique:** Up to one minute of contraction followed by rest. Repeat for 3-5 sets per movement.
3. **PNF technique:** 3-5 “reps” (cycles of hold/contract/relax) for 1-3 sets.

How Often:
• Should NOT be performed every day.
• 1-3 sessions per week should be enough.

Loaded stretching, like dynamic stretching, is often misunderstood and underutilized. The goal is to improve strength when at or approaching the end ROM. By strengthening these positions, the nervous system becomes more accustomed to that range and therefore more likely to allow it in the future. Remember, ROM is context specific: When heavily loaded, you are not as likely to achieve the same positions as when you are lightly loaded! If our goal is to display range under load, we must train under load! These techniques are excellent for developing strength at or approaching end ROM. Many functional
movements can also be used as excellent loaded stretches.

A deliberately performed overhead squat with an increasingly narrow grip is an excellent loaded stretch. Become proficient with this movement and you will have enough ROM in most of the major joint structures of the body to perform almost any other functional movement.

Remember, neurological adaptation is one of the most profound ways to increase your flexibility quickly. Expression of ROM is often not limited by the length of the muscle itself but by the nervous system’s reluctance to allow a position from which the body is ill-prepared to recover. By strengthening the body in these difficult positions, the nervous system becomes less likely to create a stretch reflex when the positions are approached because the muscular tension experienced becomes more “normal.”

A few neuromuscular phenomena help with this goal:

Golgi Tendon Reflex

The Golgi tendon organ (GTO) is a receptor found at the origins and insertions of muscles. Its job is to sense change in muscular tension. When the tension is deemed to be too high (i.e., enough to tear the muscle or connective tissue) the Golgi tendon reflex overrides your conscious efforts to contract the muscle and forces relaxation. This reflex can be so powerful that it overrides the involuntary myotatic stretch reflex (involuntary muscle contraction that occurs as the muscle lengthens).

You’ve experienced the effects of the Golgi tendon reflex when failing a heavy lift. Consider a heavy squat. In the bottom of the squat, your hamstrings and adductors are in a stretched position. The myotatic stretch reflex and your voluntary muscular efforts are attempting to contract these muscles to return you to a standing position. However, the load is too heavy, and despite being in a stretched position the muscles relax suddenly after straining against the load. Understanding this principle, we can approximate this response by contracting the stretched muscle to force a release of muscular tension and override the stretch reflex.

As a side note, changes to the threshold of the Golgi tendon reflex are also observed when you become stronger. Although gaining muscle can create a larger number of available motor units (collections of muscle fibers within a muscle), it does not guarantee
that more motor units will contract during a given effort. The Golgi tendon reflex is set very conservatively in most untrained individuals and will force the relaxation of a muscle well before a significant number of motor units have contributed to the contraction. With training, your body learns to contract more motor units in the muscle without being shut down by the Golgi tendon reflex. Even in very trained individuals, the nervous system only allows a fraction of the available motor units within a muscle to contribute to an action. This is why training for strength is based around contractions that force more motor unit recruitment per rep (heavy loads, low reps) instead of simply fatiguing a lower number of motor units (high reps, low loads).

**Reciprocal Inhibition**

We are usually not consciously aware of many of the nervous system's mechanisms. Some of these mechanisms are used to improve efficiency and economy of movement. Reciprocal inhibition, in simple terms, is when the antagonist muscle groups relax while the agonists are contracting.

This phenomenon easy to see in a simple movement such as a dumbbell curl: the biceps (agonists) contract while the triceps (antagonists) relax. It doesn't make sense for the triceps to contract, as this would oppose the motion created by the biceps. It would be similar to driving with one foot on the brake and one foot on the gas. The nervous system recognizes this potential problem and unconsciously relaxes the antagonist muscles to improve movement efficiency. We can capitalize on this principle by actively pulling ourselves into a deeper stretch after contracting and relaxing the muscle we are stretching.

Proprioceptive neuromuscular facilitation (PNF) stretching attempts to exploit these principles as much as possible. Observe these mechanisms in action using a simple supine hamstring stretch performed using PNF principles:

Starting in the position above, the athlete moves the leg to a position of moderate stretch. The hamstrings are then consciously contracted in this position (isometrically –the leg does not move back toward the ground). The stretch reflex that was initially experienced is “dampened” by the increased muscular tension (approximation of the Golgi tendon reflex). When the hamstrings are then consciously relaxed, the stretch is no longer as acute. Capitalizing on this, the athlete immediately and deliberately moves the leg toward the head (instead of pulling it toward his head with his arms). By engaging the hips flexors (pulling the foot toward the head) and thus inhibiting the hamstrings, the muscles are relaxed further. A new, deeper position can be achieved relatively easily.
In these styles of loaded stretches, the contraction does not need be sudden, explosive or an all-out effort. It is best to gradually increase muscular tension. In the case of the isometric or PNF stretches, only increase tension in the muscle to the point that the static position is NOT overcome (i.e., don’t push yourself out of position).

Although these techniques can improve flexibility dramatically, take a measured approach and treat them as you would a heavy lifting session: A few times a week is enough. If you are a beginner (read: your flexibility is not very good), start slowly with light resistance and focus on position and movement quality. Intensity comes later. If you are already flexible, less frequent training (once per week or every other week) is all that will be needed to maintain strength and familiarity with these positions. The focus should be on greater contractions, not necessarily more ROM. Also, consider your capacity relative to ideal movement positions. If you already can easily achieve the points of performance in a movement, you do not need to spend significant time there. Remember, too much flexibility can be detrimental to other desirable attributes! Once you can achieve the positions discussed, you likely have more than enough functional flexibility. The splits and extreme positions are fun, but increased range of motion does not directly translate to better performance.

Many of these techniques will alter your proprioception and coordination upon completion. Therefore, it is best to place them at the end of a session. If you choose to do them in a stand-alone session, it is best to do so toward the end of the day.
LOWER BODY IN MOTION TECHNIQUES

CALVES/ANKLES

Dorsiflexion

Start with a band looped around the foot. You can use a heavy band for this. Pull the toe toward the face until you experience a mild stretch. Push away from the stretch (point your toes), then pull back into a slightly deeper stretch. Repeat on each ankle for 2-3 sets of 5-10 reps, with each set/rep pulling into a slightly deeper stretch. Experiment with a bent and straight leg.

Inversion/Eversion

Start with a band looped around the foot. You can use a heavy band. With your outside arm, grab the band as close to your foot as you can, then pull it toward your stomach, increasing tension on just the one side until the you experience a mild stretch. Push away from the stretch (turn the sole of the foot toward the middle of the body), then pull back into a slightly deeper stretch. Repeat on each ankle for 2-3 sets of 5-10 reps, with each set/rep pulling into a slightly deeper stretch. Repeat the same drill while increasing tension.
on the other side of the band and practicing ankle eversion (turn the sole of the foot away from the middle of the body (below).

Hamstrings - Banded

Start with a band looped around the foot. You can use a heavy band. Pull the leg toward the head while keeping the knees straight until you find a mild stretch. Bend the leg slightly (alleviating the stretch) then straighten the leg back to the position of stretch. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs. An alternative to this stretch: Keep the leg straight and attempt to push the heel toward the floor slightly, then pull it back toward the face (below).
Stiff-Legged Deadlift

Start standing and hold a moderate/light weight. Keeping the legs relatively straight and spine neutral, lower the weight until you find a mild stretch. Raise the weight slightly (alleviating the stretch) then go back to the position of stretch. Repeat for 3 sets 5-10 reps, moving slightly deeper each rep. Starting on an elevated surface (shown) allows for more range if you have enough flexibility for the weight to touch the ground with straight legs.

ADDUCTORS/HAMSTRINGS

Start with a band looped around the foot. You can use a heavy band. Pull the leg to the outside of the body while keeping the knees straight until you find a mild stretch. Bend the leg slightly (alleviating the stretch), then straighten the leg back to the position of stretch. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs. An alternative to this stretch: Keep the leg straight and attempt to push the feet back together, then pull the leg back toward the outside of the body (below).
Cossack Stretch

Start standing in a wide stance. Sink toward one heel, keeping the other heel on the floor. Staying low, shift to the opposite heel. Try to keep the spine relatively straight. Repeat for 3 sets of 5-10 reps, trying to keep the hips lower during each rep (minimize how much the hips rise while transitioning). Holding on to a light weight or upright structure can assist with balance. As you become more flexible, start in a wider stance.

ABDUCTORS/GLUTES

Start with a band looped around the foot. You can use a heavy band for this. Pull the leg across the body while keeping the knees straight until you find a mild stretch. Bend the leg slightly (alleviating the stretch), then straighten the leg back to the position of stretch. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs. An alternative to this stretch: Keep the leg straight and attempt to push the feet back together, then pull the leg back toward the outside of the body (below).
GLUTES

Start with a band looped around the foot. You can use a moderate band. With a bent leg, pull the leg across the body until you find a mild stretch in the glutes. Push the lower leg toward the middle of the body (alleviating the stretch), then pull the foot back to the position of stretch. Experiment with slightly different angles of pushing/pulling to find the best stretch for you. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs.

QUADRICEPS

Start with a band looped around the foot. Use a moderate band. Pull the leg toward the hips until you find a mild stretch. Straighten the leg slightly (alleviating the stretch), then pull the foot back to the position of stretch. To accentuate this stretch, do not allow the back to arch and actively tuck the pelvis by squeezing the glutes. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs.

Alternative setup: Wrap the band around the upright of a rig before looping it around the foot.

QUADRICEPS/HIP FLEXORS

Start with a band looped around the foot. Use a relatively light band to start, as this position can be awkward. Keeping the legs straight, raise one leg with band assistance until you find a mild stretch. Bend the leg slightly (alleviating the stretch) then push the foot
back to the position of stretch. To accentuate this stretch, do not allow the back to arch and actively tuck the pelvis by squeezing the glutes. Repeat in position for 5-10 reps, then move the leg into a deeper stretch and repeat the sequence for a total of 3 sets of 5-10 reps. Make sure to work both legs.

Alternative setup: Wrap the band around the upright of a rig before looping it around the foot.
Start with a moderate band attached to a pull-up bar. Experiment with various positions; try to reach toward and then pull away from the bar for a few reps before moving to another position. Make sure to work both arms. This stretch is set up the same way as the dynamic stretch but with the emphasis on more resistance and more contraction of the muscle being stretched.

Variations

Start with a moderate band attached to a pull-up bar. Support one arm in the band as shown and place the free hand over the banded arm. Step forward. Experiment with various positions; to reach back toward the bar and then pull away for a few reps before moving to another position. Make sure to work both arms. This stretch is set up the same way as the dynamic stretch but with the emphasis on more resistance and more contraction of the muscle being stretched.
Latissimus/Overhead Position

Start hanging from a pull-up bar with a shoulder-width grip. Allow the shoulders to elevate, then pull the body up by depressing the shoulders. Try to lower back down a bit deeper. Repeat for 5-10 reps, then move the hands slightly closer together and repeat the sequence for a total of 3 sets of 5-10 reps. Change the grip (underhand/supinate) and repeat.

PECTORALS/BICEPS

Start with the hands in the rings. Keeping the arms straight, walk forward and bend the legs slightly until you find a stretch in the pecs, shoulders or biceps. Resist the stretch by attempting to pull the hands back in front of the body (use the legs to assist), which will relieve the stretch. Then lower back down to a slightly deeper stretch. Repeat for 5-10 reps. Experiment with different hands positions and arm angles and repeat the sequence for a total of 3 sets of 5-10 reps. An alternative: Perform this stretch with bent arms (below).
Pectorals/Biceps – Skin the Cat

CAUTION – this is a very demanding stretch. Build up to it slowly. Start hanging from a pull-up bar. Pull into an inverted position. Pike the legs (as shown) or tuck the knees to the chest. Slowly lower the feet toward the floor until you reach a stretch in the upper body. Reverse slightly, then sink a little deeper. Repeat for 5-10 reps, then move the hands slightly closer together and repeat the sequence for a total of 3 sets of 5-10 reps. You can perform this movement in a pike position (shown), or bend the legs and tuck them into the chest, which will be slightly easier.

As an alternative, you can use the rings. Lower them close to the floor if you are new to the movement.
LOWER BODY PNF TECHNIQUES

- Hold 20 seconds in a light stretch.
- Contract 10 seconds, building up tension slowly.
- Move to new position until stretch is felt.
- Continue this cycle for 3-5 reps.
- Come out of the stretch and rest, then repeat for 1-3 sets.

LOWER BODY PNF TECHNIQUES

CALVES/ANKLES

With the toes of one foot against a box and the heel on the ground, start in a position of light stretch and hold. Take a deep breath and contract the calves isometrically by pushing the foot into the box toward the ground. Breath out deliberately and try to relax the entire body. During this moment of release, pull the toes toward the head and move the torso closer to the box until a new stretch is felt. Repeat this cycle 3-5 times on each leg. Experiment with straight- and bent-leg positions.

You can also perform a variation of this as shown below:

Place your toes on a dumbbell. Place a weight on the legs and allow the ankles to flex into a light stretch. Contract the calves isometrically by pushing the toes into the step. Do not contract so hard that the ankle moves! Relax and pull the toes toward the shins. Repeat the cycle 3-5 times.
HAMSTRINGS

With your heel on a box, start in a position of light stretch and hold. Keep the back relatively neutral. Take a deep breath and contract the hamstrings isometrically by pushing the foot into the box. Breath out deliberately and try to relax the entire body. During this moment of release, pull the torso closer to the leg until a new stretch is felt. Repeat this cycle 3-5 times on each leg.

The stretch can also be performed as shown below with a heavy band. If using the banded variation, make sure you don’t “win” (move the leg toward the floor, overcoming the resistance of the band) when contracting the hamstrings.

HAMSTRINGS/ADDUCTORS

Start in a straddle position in a light stretch and hold. Keep the back relatively neutral. Turn toward one foot. Take a deep breath and contract the hamstrings isometrically by pushing the foot into floor. Breath out deliberately and try to relax the entire body. During this moment of release, pull the torso closer to the leg until a new stretch is felt. Repeat this cycle 3-5 times on each leg.

This stretch an also be performed as shown below without rotating the torso. This will
emphasize the hamstrings less and the muscles of the torso/low back more. As you move to each new position, attempt to turn the chest toward the ceiling. Reaching the hand toward the foot will intensify this stretch.

An introductory version of this stretch can be performed from a box with bent legs. This will emphasize the effect at the torso.

ADDUCTORS/LOW BACK

Start in a straddle position in a light stretch and hold. Start with the back relatively neutral. If you can’t get a neutral spine in the start position, bring the legs closer together until you can. Take a deep breath and contract the adductors isometrically by pushing the feet into floor. Breath out deliberately and try to relax the entire body. During this moment of release, pull the torso closer to the floor, trying to lengthen the spine by reaching as far forward as possible. Actively push the feet farther apart until a new stretch is felt. Repeat this cycle 3-5 times.
HIP FLEXORS

In a lunge, start in a position of light stretch and hold. Keep the back relatively neutral. Do not lean on your front leg. Take a deep breath and contract the hip flexors isometrically by pushing the back foot into the floor and attempting to straighten the back leg. Breath out deliberately and try to relax the entire body. During this moment of release, push the back foot away and allow the torso to sink until a new stretch is felt. Repeat this cycle 3-5 times on each leg. Use parallettes placed beside you to assist with balance and position in the beginning. Make sure to keep the hips square (do not allow them to rotate).

This stretch can also be performed as shown below using a box or platform for the back foot.

QUADRICEPS

Start on one knee in front of a wall, with the back knee flexed and the toes against the wall. Start in a position of light stretch and hold. Keep the back neutral and tuck the pelvis by squeezing the glutes. Do not lean on your front leg. Take a deep breath and contract the quads isometrically by pushing the back foot away from your hand, attempting to extend the knee. Breath out deliberately and try to relax the entire body. During this
moment of release, pull the heel toward the body until a new stretch is felt. Repeat this cycle 3-5 times on each leg.

This stretch can also be performed with the foot placed against a wall or upright surface. Padding under the knee is recommended, as the technique can be uncomfortable enough without the distraction of grinding your kneecap into the floor.

**ABDUCTORS/GLUTES**

Using a box, externally rotate the femur to place the shin on top of the box. Start in a position of light stretch and hold. Take a deep breath and contract isometrically by pushing attempting to rotate the lower leg into the box. Breath out deliberately and try to relax the entire body. During this moment of release, pull the torso toward the box until a new stretch is felt. Repeat this cycle 3-5 times on each leg. Changing the angle at the knee by bringing the foot closer to your body or further away from it, will alter this stretch. Typically, further the foot is from the body, the more the stretch will be felt.

This stretch can also be performed on the floor (shown below). Use parallettes placed beside you to assist with balance and position in the beginning. Try to keep the hips square (do not allow them to rotate) and avoid leaning forward over the front leg.
UPPER BODY PNF TECHNIQUES

PECTORALS/DELTOIDS/BICEPS

Lying prone, start with the arm outstretched beside the body. Try to keep the armpit in contact with the floor. Roll the torso toward the back of the hand until a light stretch is experienced, then hold. Take a deep breath and contract isometrically by pushing the palm of the straight arm into the floor. Breath out deliberately and try to relax the entire body. During this moment of release, rotate the torso a little more until a new stretch is found. Repeat this cycle 3-5 times. Experiment with the position of the hands (as shown below) to modify the effect. The ROM of this stretch will be much less than that of many other stretches.

SHOULDERS/PECS/LATS/THORACIC SPINE

Kneeling in front of a box, place your palms on top of the box and drop the chest toward the floor. Start in a position of light stretch and hold. Keep the back relatively neutral, but some extension is OK. Take a deep breath and contract isometrically by pushing the palms straight down into the box. Breath out deliberately and try to relax the entire body. During this moment of release, attempt to pull the arms away from the box as you allow the torso to sink to a new stretch. Repeat this cycle 3-5 times. Experiment with the width of the hands.
Placing the thumbs up will create a more difficult stretch (below left). Bending the elbows will place more emphasis on the triceps (bottom right). Any of these variations can be performed with a single arm if desired.

**SHOULDERS/PECS/BICEPS/THORACIC SPINE**

Seated on the floor, place the hands on the floor behind the shoulders with the fingers pointing away from you. Start in a position of light stretch and hold. Keep the chest up and the fingers pointing away from the body. Take a deep breath and contract isometrically by trying to bring the arms toward the hips. Breath out deliberately and try to relax the entire body. During this moment of release, push the arms away from the body and allow the hips to slide forward until a new stretch is felt. Do not allow the hand placement to widen during this process. Holding onto the edge of a mat might help with this. Repeat this cycle 3-5 times. Experiment with the width of the hands – a wider grip will be easier in the beginning.

This stretch can also be performed with bent arms. Bending the elbows will place more emphasis on the chest and anterior deltoids (bottom left). These stretches can also be performed with the assistance of a box if needed (bottom right).
SHOULDER/SPINE

Start in a bridge position and hold. Take a deep breath and contract isometrically by pushing the hands into the floor. Breath out deliberately and try to relax the entire body. During this moment of release, slightly extend the knees until a new stretch is felt. Repeat this cycle 3-5 times. Experiment with the width of the hands – a wider grip will be easier in the beginning.

This stretch is very demanding! Simply holding this position as an isometric stretch might be enough in the beginning. Build up slowly to the full PNF version!

**Isometrics:**

Many of the “in-motion” and PNF techniques shown above can be converted into an isometric stretch. Simply find a position of moderate, loaded stretch and maintain a moderate contraction within the muscle. You can work up to 1 minute. Come out of the position and rest, then repeat for 3-5 “reps.” Choose movements that lend themselves to loading either by gravity and the body’s own weight or by external load.

Example of an isometric adductor stretch (left) and an isometric hamstring stretch (right).

A few reminders:

**In Motion:**

- Use them sparingly if done pre-workout.
- Perform 2-3 sets of 5-10 “reps” per movement.
- Start in a moderate stretch, pull out of the stretch by contracting the muscle, then pull to a slightly deeper stretch.
PNF

- Best performed as stand-alone sessions.
- Start in a moderate stretch, isometrically contract the muscle for 10 seconds, relax and allow a deeper stretch.
- 1-3 sets of 3-5 “reps” of holding, contracting and relaxing per stretch.
- Actively attempt to relax. Keep breathing deep and smooth.
- Should not be performed every day! 1-3 sessions per week is more than enough.
STATIC STRETCHING

OVERVIEW
Static stretching can be performed at the end of a session or as a stand-alone session. These techniques are best suited to down-regulate the nervous system after training and relax the athlete. Static stretching should not be the priority if you are looking to improve ROM and control quickly.

Why:
- Return muscle tone to a less excited (less contracted) level; restore pre-workout ROM.
- Promote nervous-system relaxation.

What:
- Maintaining a stretch for 1-2 minutes.

When:
- Post workout.
- As a stand-alone session.

How:
- Find a moderate stretch and maintain the position for 1-2 minutes.
- Mindset matters: Actively try to relax your whole body, not just the stretched area. Focus on smooth, relaxed breathing.
- Posture matters: Stretch from the posture in which you want to become flexible.

How Much:
- Select 5-10 stretches for a stand-alone session.
- Post workout, select 2-5 stretches that target the muscles most affected by the workout.

How Often:
- Static stretching can be performed every day, but don’t overdo it. Prioritize these stretches as relaxation and cool-down techniques. For increased ROM, and control of that ROM, prioritize the other techniques outlined in the manual.

In North America, static stretching is the method most people consider when they are concerned with gaining flexibility. This method considers tissue length as a factor that limits range of motion. However, as explained, it is the nervous system’s response to a position or set of conditions that typically has a greater impact on the ability to display ROM. Some tissues should remain un-stretched; connective tissue (tendons and ligaments) are primarily made up of fibrous collagens that will not return to pre-stretched lengths. This can lead to instability in the joint, a reduction in the ability of the joint to handle forces applied to it and ultimately injury.

Static stretching should be reconsidered and used primarily for relaxation and “ramping down” the nervous system, not as your go-to technique for increasing useful ROM. For example, static stretches are great as a cool-down after tough training but are usually not best for developing the bottom position of your overhead squat.
Training your mindset during static stretching can be very useful. As contradictory as it sounds, actively attempt to relax. Focus on smooth, deep breaths (imagine blowing out many candles in front of you) and attempt to eliminate any conscious tension in your body, not just in the muscles being stretched. A mindset of acceptance is necessary; the positions will likely be a bit uncomfortable, but that is OK. Accepting this is the first step to relaxing.

Longer periods of static stretching can decrease power production of the muscles immediately following the stretch and should therefore generally be avoided pre-workout.

Occasionally, it is appropriate to use a shorter static stretch (10-20 seconds) pre-workout to improve posture for an upcoming movement. However, as a general rule, if an athlete needs a lengthy stretching protocol before achieving a position, he or she is not yet ready to add much intensity (i.e., load) to that position.

Remember, posture matters during static stretches. For example, if you want your hamstrings to be flexible in positions that require a neutral spine, stretch your hamstrings while maintaining a neutral spine! Pay attention to the details of the position instead of simply engaging in a grudge match with yourself. For this reason, many functional movements can be used as excellent static stretches:

- Bottom of a squat.
- Overhead position.
- Bottom of a ring dip with the feet on the floor.
- Passively hanging from a pull-up bar.
- Front-rack position.

Static stretching can be done regularly, but don’t overdo it! There is no need to push the limits of these positions, especially if you are already flexible. These stretches have many variations. This manual will focus on a few basics, but feel free to experiment with other variations.
PASSIVE STRETCHING

LOWER BODY

HAMSTRINGS

Place the heel of one foot on a box in front of you. Keeping the spine neutral, find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed.

Alternatives, sit with the legs together on the ground and lean forward. Or from one knee as pictured below:

You can also work each hamstring from a straddle position (pictured below). Start in a gentle straddle stretch, rotate the torso to one side and attempt to lay the chest over the leg. Keep the spine as neutral as possible.
PASSIVE STRETCHING

QUADRICEPS/HIP FLEXORS

Start on one knee in front of a wall, with the back knee flexed and the toes against the wall. Keeping the spine neutral, find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. Do not allow the hips to rotate anteriorly or the spine to overextend. Maintaining some tension in the glutes can help you hold the correct position.

ADDUCTORS

Start in a seated straddle position. Keeping the spine neutral, find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. You can emphasize one leg at a time as well as the trunk and lats (pictured below). Attempt to lay the spine along the top of the thigh.
Another variation of this stretch can be performed on a box, which might allow a position that’s easier to maintain. This position will also emphasize the stretch at the torso/lats.

**GLUTES**

From a lunge position, externally rotate the front femur to bring the shin to the floor in front of you. Keeping the spine neutral, find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. Do not allow the hips to rotate anteriorly or the spine to overextend. Keep the torso over the hips. Moving the front foot further away from the hips will increase the stretch. You can also perform this stretch on a box, which might allow a position that’s easier to maintain.
TFL/IT BAND

Begin in a seated position on the floor, adduct one leg to bring the outside of the ankle to the floor outside the opposite shoulder. The other foot remains flat on the ground with the knee flexed. Maintain this position for 1-2 minutes. This stretch is typically less acute than most others for the lower body.

CALVES

Place the toes of one foot against a box and the heel on the ground. Find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. Moving the body closer to the box will increase the stretch. A useful variation can be done as shown below; holding a weight on the legs and placing the toes on a dumbbell will increase the intensity of the stretch.
LOWER-BODY COMPLEX
Follow the sequence below for an easy lower-body routine:
PASSIVE STRETCHING

UPPER BODY

PECTORALS/SHOULDERS
Lying prone, start with the arm outstretched beside the body. Try to keep the armpit in contact with the floor. Roll the torso toward the back of the hand. Find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. Rolling the body toward the arm on the floor will increase the stretch.

[Image]

Seated on the floor, place the hands on the floor behind the shoulders with the fingers pointing away from you. Find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. Moving the hips further away from the shoulders will increase the stretch. This stretch can be performed with both straight and bent arms (picture 2), and many other variations exist (below).

[Images]
LATS/SHOULDERS
Kneeling in front of a box, place your hands on top of the box with your thumbs up and drop the chest toward the floor. Find a moderate stretch and maintain it for 1-2 minutes. Attempt to release tension in the entire body and keep your breathing smooth and relaxed. This stretch can be performed with both straight and bent arms (picture 2).

LATS
Hanging from the bar in a relatively passive position can stretch the overhead position. Moving the hands closer together will increase the stretch.

In a side bend, reach toward an upright and grab it with both hands. Maintain the position for 1-2 minutes. Attempting to rotate your chest toward the ceiling will increase this stretch. The lower arm does not need to be straight (pictured).
THORACIC SPINE:
Seated on the floor holding a piece of PVC with both hands, lean back to place the mid and upper back on a medicine ball. Reach back and hold the position for 1-2 minutes. Attempt to expand the chest. The closer the grip on the PVC pipe, the more demanding the stretch will be.

The bridge position is also a great thoracic spine stretch; however, it can be quite demanding. Holding this stretch for 1-2 minutes can be quite challenging. Aim for much shorter durations initially.

SHOULDERS/TRICEPS – (RACK POSITION FOCUS)
Find the rack position and hold for 1-2 minutes. Make sure to not overextend the spine. Loading the bar will usually help you attain this position.

Take a PVC pipe and hold it behind your head. With your front hand, grab the stick and attempt to pull it across the body.
REAR DELTS
Lying prone on the floor, horizontally adduct one shoulder to bring the straight arm underneath the body. Maintain the position for 1-2 minutes. Rolling the body toward the outstretched hand while attempting to keep the shoulder on the ground can increase this stretch. Sliding the knee on the side of the stretched arm toward the shoulder can also increase this stretch.

A few reminders:
• Use static stretches to relax the body and mind.
• Static stretches can be performed frequently but shouldn’t be viewed as the primary choice for increasing ROM.
• Maintain a moderate stretch for 1-2 minutes.
• Actively attempt to relax, and keep breathing deep and smooth.

To create a routine, choose 2-3 movements for the lower body and 2-3 movements for the upper body. You can select a few more stretches that relate specifically to the movements you have encountered in your workout.
SAMPLE ROUTINES

The following pages will include some sample routines that can be used to counteract common problems seen in foundational movements.

Many variations are possible, so do not feel limited to only the sample that is included. Once you have identified where you are experiencing difficulty, you can use what you have learned to create a pre-workout or stand-alone session.

For a general pre-workout template, pick between 3-5 joint rotations and 3-5 dynamic stretches that target the movement you are looking to improve. Remember that the total time spent here should not be excessive – leave time for practicing the movement.

For a general stand-alone session, choose 2-3 PNF-style stretches and add 1-2 isometric or in-motion loaded stretches. These sessions can be quite taxing and usually take longer than you think. Thirty minutes of focused work are more beneficial than an endless list of exercises approached half-heartedly.
BOTTOM OF THE SQUAT

ISSUE: Lumbar spine rounds or pelvis rotates at bottom of squat.

POTENTIAL INFLEXIBILITY: hamstrings, glutes or thoracic spine.

EXERCISES TO CHOOSE FROM:

| Daily: | All lower-body and torso joint-rotation techniques, bottom-of-squat torso rotations. Ideally page numbers follow for each for quick reference once formatting is complete. |
| Dynamic Warm-Up: | Straight kicks, stepping over/under drills, banded kneeling drills, prone banded glute step-through, seated torso bend. |
| Stand-Alone: | PNF hamstring stretch, PNF glute stretch, PNF shoulder stretch, bottom-of-squat holds. |
SAMPLE ROUTINES

SAMPLE

*Bottom of the Squat Issue: Lumbar spine rounds or pelvis rotates at bottom of squat.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
<td></td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Kneeling spine flexion/extension with band x 10</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>page 20</strong></td>
<td></td>
</tr>
<tr>
<td>Kneeling hip flexion/extension x 10</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>page 18</strong></td>
<td></td>
</tr>
<tr>
<td>Front kick x 2 sets of 10 each leg</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Banded glute step-through x 3 sets of 5 on each leg</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>page 43</strong></td>
<td></td>
</tr>
</tbody>
</table>
**Bottom of the Squat Issue: Lumbar spine rounds or pelvis rotates at bottom of squat.**

<table>
<thead>
<tr>
<th><strong>STAND-ALONE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF hamstring stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>PNF glute stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Bottom-of-squat hold x 3 x 1 minute</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>
BOTTOM OF THE SQUAT

ISSUE: Difficulty keeping torso upright/angle of torso drops significantly.

POTENTIAL INFLEXIBILITY: calves, ankles.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All lower-body and torso joint-rotation techniques, bottom-of-squat ankle flexion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Calve walking, bottom-of-squat heel step-downs, banded ankle movements.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF calve stretch, banded ankle movements.</td>
</tr>
</tbody>
</table>
SAMPLE Routines

**SAMPLE**

*Bottom of the Squat Issue: Difficulty keeping torso upright/angle of torso drops significantly.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
</tr>
<tr>
<td>Single-leg step-over x 10 each direction, each leg</td>
</tr>
</tbody>
</table>

- **page 16**

- **Bottom-of-squat ankle flexion**

- **page 15**

- **Calve walking x 2 sets of 20** (total, alternating legs)

- **page 27**

- **Banded ankle dorsiflexion/plantarflexion x 2 sets of 10 each leg (vary position of the knee)**

- **page 40**
Bottom of the Squat Issue: Difficulty keeping torso upright/angle of torso drops significantly.

**STAND-ALONE**

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Sets</th>
<th>Reps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banded ankle dorsiflexion/plantarflexion x 3 sets of 10 each leg</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Banded ankle eversion/inversion x 2 sets of 10 each leg</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>PNF single-leg calf stretch on box x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
<td>3</td>
<td>3 cycles</td>
</tr>
</tbody>
</table>

*Page 40*

*Page 49*

Bottom-of-squat hold x 3 x 1 minute

*Page 49*
## BOTTOM OF THE SQUAT

**ISSUE:** Difficulty achieving depth, difficulty keeping knees out.

**POTENTIAL INFLEXIBILITY:** Adductors, hamstrings.

### EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All lower-body and torso joint-rotation techniques, bottom-of-squat hold with elbows driving knees out.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Straight kicks, round kicks, back kicks, stepping over/under drills, banded kneeling drills, prone banded adductor step-through, cossack lunge.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF hamstring stretch, PNF/weighted straddle stretch, PNF/loaded bottom-of-squat stretch.</td>
</tr>
</tbody>
</table>
SAMPLE
Bottom of the Squat Issue: Difficulty achieving depth, difficulty keeping knees out.

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
<td></td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Stepping over/under stick drills x 10 each direction</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>Banded seated internal/external rotation x 10</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Front kick x 2 sets of 10 each leg</td>
<td></td>
</tr>
<tr>
<td>Side kick x 2 sets of 10 each leg</td>
<td></td>
</tr>
<tr>
<td>Cossack lunge (dynamic version) x 2 sets of 10 each leg</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>
**Bottom of the Squat Issue: Difficulty achieving depth, difficulty keeping knees out.**

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF hamstring stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>page 50</td>
</tr>
<tr>
<td>PNF straddle stretch reaching forward x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>page 51</td>
</tr>
<tr>
<td>Bottom-of-squat hold x 3 x 1 minute</td>
</tr>
</tbody>
</table>
AT THE BEGINNING OR BOTTOM OF THE SQUAT

ISSUE: Spine overextends.

POTENTIAL INFLEXIBILITY: Quads, hip flexors.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All lower-body and torso joint-rotation techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Back kicks, butt kicks, round kicks, dynamic lunge stretch.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF hip-flexor stretch, PNF quad stretch.</td>
</tr>
</tbody>
</table>

This issue requires you to pay strict attention to keeping the spine neutral during these techniques!
**SAMPLE ROUTINES**

**SAMPLE**

*At the Beginning or Bottom of the Squat Issue: Spine overextends.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
</tr>
<tr>
<td>Stepping over/under stick drills with Samson stretch x 10 each direction</td>
</tr>
</tbody>
</table>

*page 17*

- Butt kick x 2 sets of 20 alternating legs. Keep knee pointing down and spine neutral!

*page 28*

- Back kick x 2 sets of 10 each leg

*page 30*

- Lunge stretch (dynamic version) x 2 sets of 10 each leg

*page 31*
### Sample Routines

**At the Beginning or Bottom of the Squat Issue: Spine overextends.**

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
<th><img src="image-url" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF hip-flexor stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
<td><a href="#">page 31</a></td>
</tr>
<tr>
<td>PNF quad stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
<td><a href="#">page 52</a></td>
</tr>
</tbody>
</table>
OVERHEAD

ISSUE: Difficulty getting the bar overhead (especially in a pressing/narrow grip).

POTENTIAL INFLEXIBILITY: Lats, pecs, thoracic spine.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, especially scarecrow, standing spine flexion/extension/lateral flexion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Shoulder flexion/extension, pass-through with stick or band, pass-through on ball, dynamic hanging from pull-up bar, beat swing, banded dynamic variations.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch on box, bridge, PNF prone single-arm pec stretch, PNF seated straight-arm stretch.</td>
</tr>
</tbody>
</table>
SAMPLE Routines

Overhead Issue: Difficulty getting the bar overhead (especially in a pressing/narrow grip).

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
</tr>
<tr>
<td>Arm circles x 10 each direction</td>
</tr>
<tr>
<td>Scarecrow x 10</td>
</tr>
<tr>
<td>Standing spine flexion/extension, and standing lateral extension x 10 each direction</td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
</tr>
<tr>
<td>Beat swing x 2 x 10</td>
</tr>
<tr>
<td>Single-arm banded dynamic stretch x 2 x 10</td>
</tr>
</tbody>
</table>
Overhead Issue: Difficulty getting the bar overhead (especially in a pressing/narrow grip).

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
</table>
| PNF shoulder stretch on box  
  x 3 sets of 3 cycles, 10-second contraction, 30-second hold  
  page 54 |
| PNF seated shoulder stretch  
  x 3 sets of 3 cycles, 10-second contraction, 30-second hold  
  page 55 |
| Bridge hold x 3 x best effort  
  page 56 |
OVERHEAD

ISSUE: Upper back is rounded at rack or remains rounded overhead.

POTENTIAL INFLEXIBILITY: Lats, pecs, thoracic spine.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, especially scarecrow, standing spine flexion/extension/lateral flexion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Shoulder flexion/extension, pass-through on ball, dynamic hanging from pull-up bar, beat swing, banded dynamic variations.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch on box, bridge, PNF seated straight-arm stretch.</td>
</tr>
</tbody>
</table>
### SAMPLE

**Overhead Issue: Upper back is rounded at rack or remains rounded overhead.**

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Arm circles x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Scarecrow x 10</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>Standing spine flexion/extension and standing lateral extension x 10 each direction</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Beat swing x 2 x 10</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>Dynamic hanging stretch on pull-up bar x 2 x 10</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Overhead Issue: Upper back is rounded at rack or remains rounded overhead.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF shoulder stretch on box x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>page 54</td>
</tr>
<tr>
<td>PNF seated shoulder stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>page 55</td>
</tr>
<tr>
<td>Bridge hold x 3 x best effort</td>
</tr>
<tr>
<td>page 56</td>
</tr>
</tbody>
</table>
FRONT RACK

**ISSUE:** Upper back is rounded at rack (even with elbows high).

**POTENTIAL INFLEXIBILITY:** Thoracic spine.

**EXERCISES TO CHOOSE FROM:**

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, especially scarecrow, standing spine flexion/extension/lateral flexion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Shoulder flexion/extension, pass-through on ball, dynamic hanging from pull-up bar, beat swing, banded dynamic variations.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch on box, bridge, PNF seated straight-arm stretch.</td>
</tr>
</tbody>
</table>
SAMPLE

*Front Rack Issue: Upper back is rounded at rack (even with elbows high).*

**PRE-WORKOUT**

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Arm circles x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Scarecrow x 10</td>
<td></td>
</tr>
<tr>
<td>Standing spine flexion/extention and standing lateral extension x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
<td></td>
</tr>
<tr>
<td>Single-arm rack position x 2 x 10 each arm</td>
<td></td>
</tr>
<tr>
<td>Beat swing x 2 x 10</td>
<td></td>
</tr>
</tbody>
</table>
### SAMPLE ROUTINES

*Front Rack  Issue: Upper back is rounded at rack (even with elbows high).*

<table>
<thead>
<tr>
<th><strong>STAND-ALONE</strong></th>
<th></th>
</tr>
</thead>
</table>
| PNF shoulder stretch on box x 3 sets of 3 cycles, 10-second contraction, 30-second hold | ![PNF Shoulder Stretch](image1.png)  
*page 54* |
| PNF seated shoulder stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold | ![PNF Seated Shoulder Stretch](image2.png)  
*page 55* |
| Bridge hold x 3 x best effort | ![Bridge Hold](image3.png)  
*page 56* |
FRONT RACK

**ISSUE:** Elbows low in rack position.

**POTENTIAL INFLEXIBILITY:** Lats, pecs, triceps.

**EXERCISES TO CHOOSE FROM:**

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, especially scarecrow, standing spine flexion/extension/lateral flexion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Shoulder flexion/extension, pass-through on ball, dynamic hanging from pull-up bar, beat swing, banded dynamic variations, single-arm rack position.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch on box with bent arms, bridge, PNF seated straight-arm stretch, PNF seated lateral reach.</td>
</tr>
</tbody>
</table>
**SAMPLE**

*Front Rack Issue: Elbows low in rack position.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Arm circles x 10 each direction</td>
<td></td>
</tr>
<tr>
<td>Scarecrow x 10</td>
<td><img src="image1" alt="Scarecrow" /></td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
<td><img src="image2" alt="Arm extension/flexion" /></td>
</tr>
<tr>
<td>Bent-arm retraction/protraction x 10</td>
<td><img src="image3" alt="Bent-arm retraction/protraction" /></td>
</tr>
<tr>
<td>Single-arm rack position x 2 x 10 each arm</td>
<td><img src="image4" alt="Single-arm rack position" /></td>
</tr>
<tr>
<td>Banded flagpole reach x 2 x 10 each arm</td>
<td><img src="image5" alt="Banded flagpole reach" /></td>
</tr>
</tbody>
</table>
Front Rack Issue: Elbows low in rack position.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin the cat x 2 sets of 5 reps</td>
</tr>
<tr>
<td><a href="#">page 48</a></td>
</tr>
<tr>
<td>PNF shoulder stretch on box with bent arms x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td><a href="#">page 66</a></td>
</tr>
<tr>
<td>PNF seated lateral reach x 3 sets of 3 cycles, 10-second contraction, 30-second hold (each direction)</td>
</tr>
<tr>
<td><a href="#">page 51</a></td>
</tr>
</tbody>
</table>
FRONT RACK

ISSUE: Palms of the hands face toward each other (instead of up).

POTENTIAL INFLEXIBILITY: External rotation of shoulders.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, especially scarecrow.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Shoulder flexion/extension, pass-through on ball, dynamic hanging from pull-up bar, overhead squat hold with palms up, single-arm rack position.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch on box with bent arms, bridge, PNF seated straight-arm stretch, PNF seated lateral reach.</td>
</tr>
</tbody>
</table>
SAMPLE ROUTINES

SAMPLE
Front Rack Issue: Palms of the hands face toward each other (instead of up).

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder internal/external rotation x 10 each direction</td>
</tr>
<tr>
<td>Scarecrow x 10\</td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
</tr>
<tr>
<td>Bent-arm retraction/ protraction x 10</td>
</tr>
<tr>
<td>Single-arm rack position x 2 x 10 each arm</td>
</tr>
<tr>
<td>Overhead-squat hold with palms up x 3 x 30 seconds</td>
</tr>
</tbody>
</table>

page 11

page 10

page 32

page 33
Front Rack Issue: Palms of the hands face toward each other (instead of up).

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin the cat x 2 sets of 5 reps</td>
</tr>
<tr>
<td>PNF shoulder stretch on box with bent arms x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>PNF stick-behind-the-head stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold (each arm)</td>
</tr>
</tbody>
</table>
LUNGE POSITION

ISSUE: Lumbar spine overextends at bottom.

POTENTIAL INFLEXIBILITY: Quads, hip flexors.

EXERCISES TO CHOOSE FROM:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily:</td>
<td>All lower-body and torso joint-rotation techniques.</td>
</tr>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Back kicks, butt kicks, round kicks, dynamic lunge stretch.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF hip-flexor stretch, PNF quad stretch,..</td>
</tr>
</tbody>
</table>

This issue requires you to pay strict attention to keeping the spine neutral during these techniques!
**SAMPLE ROUTINES**

**SAMPLE**

*Lunge Position Issue: Lumbar spine overextends at bottom.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
</tr>
<tr>
<td>Stepping over/under stick drills with Samson stretch x 10 each direction</td>
</tr>
</tbody>
</table>

*page 17*

<table>
<thead>
<tr>
<th>Butt kick x 2 sets of 20 alternating legs. Keep knee pointing down and spine neutral!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back kick x 2 sets of 10 each leg</td>
</tr>
<tr>
<td>Lunge stretch (dynamic version) x 2 sets of 10 each leg</td>
</tr>
</tbody>
</table>

*page 28*  
*page 30*  
*page 31*
**Lunge Position Issue: Lumbar spine overextends at bottom.**

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
</table>
| **PNF hip-flexor stretch x 3**
  sets of 3 cycles (each leg),
  10-second contraction,
  30-second hold |
| ![Image of hip-flexor stretch] |
| **PNF quad stretch x 3**
  sets of 3 cycles, 10-second contraction,
  30-second hold |
| ![Image of quad stretch] |

*page 31*

*page 52*
LUNGE POSITION

ISSUE: Difficulty achieving depth.

POTENTIAL INFLEXIBILITY: Glutes, adductors.

EXERCISES TO CHOOSE FROM:

| Daily: | All lower-body and torso joint-rotation techniques, bottom-of-lunge torso rotations. |
| Dynamic Warm-Up: | Straight kicks, round kicks, back kicks, dynamic lunge stretch, banded kneeling drills, prone banded glute step-through, cossack lunge. |
| Stand-Alone: | PNF hamstring stretch, PNF/weighted straddle stretch, PNF/loaded bottom-of-squat stretch. |

This issue requires you to pay strict attention to keeping the spine neutral during these techniques!
SAMPLE

*Lunge Position Issue: Difficulty achieving depth.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip rotations x 10 each direction</td>
</tr>
<tr>
<td>Bottom-of-lunge torso rotations/reach x 10 each leg</td>
</tr>
<tr>
<td>Inside and outside round kick x 10 each leg, each direction</td>
</tr>
<tr>
<td>Dynamic lunge x 10 each leg</td>
</tr>
<tr>
<td>Cossack lunge (dynamic version) x 10 each leg</td>
</tr>
<tr>
<td>Prone banded glute step-through x 2 x 10 each leg</td>
</tr>
</tbody>
</table>

*Page numbers refer to the page number where each exercise is described.*
### Lunge Position Issue: Difficulty achieving depth.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
<th><img src="image1.png" alt="Image" /></th>
<th><img src="image2.png" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Banded glute step-through x 3 sets of 10 reps each leg</td>
<td>page 43</td>
<td></td>
</tr>
<tr>
<td>PNF glute stretch on box x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
<td>page 53</td>
<td></td>
</tr>
<tr>
<td>PNF straddle stretch reaching forward x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
<td>page 51</td>
<td></td>
</tr>
</tbody>
</table>
DEADLIFT/PULLING SET-UP

ISSUE: Lumbar spine rounded, cannot achieve neutral spine at set-up position.

POTENTIAL INFLEXIBILITY: Hamstrings, glutes.

EXERCISES TO CHOOSE FROM:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>All lower-body and torso joint-rotation techniques, torso extension/flexion, torso lateral flexion/extension.</td>
</tr>
<tr>
<td>Dynamic Warm-Up</td>
<td>Straight kicks, stepping over/under drills, banded kneeling drills, prone banded glute step-through, banded hamstring step-through, stiff-legged deadlift.</td>
</tr>
<tr>
<td>Stand-Alone</td>
<td>PNF hamstring stretch, PNF glute stretch, isometric stiff-legged deadlift hold.</td>
</tr>
</tbody>
</table>
SAMPLE ROUTINES

**SAMPLE**

*Deadlift/Pulling Set-Up  Issue: Lumbar spine rounded, cannot achieve neutral spine at set-up position.*

<table>
<thead>
<tr>
<th><strong>PRE-WORKOUT</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot</td>
<td>![Image of ankle rotations]</td>
</tr>
<tr>
<td>and direction</td>
<td></td>
</tr>
<tr>
<td>Knee rotations x 10 each</td>
<td>![Image of knee rotations]</td>
</tr>
<tr>
<td>direction</td>
<td></td>
</tr>
<tr>
<td>Hip rotations x 10 each</td>
<td>![Image of hip rotations]</td>
</tr>
<tr>
<td>direction</td>
<td></td>
</tr>
<tr>
<td>Kneeling spine flexion/extension</td>
<td>![Image of kneeling spine flexion/extension]</td>
</tr>
<tr>
<td>with band x 10</td>
<td></td>
</tr>
<tr>
<td>Straight kick x 2 sets of 10</td>
<td>![Image of straight kick]</td>
</tr>
<tr>
<td>each leg</td>
<td></td>
</tr>
<tr>
<td>Banded glute step-through x 3</td>
<td>![Image of banded glute step-through]</td>
</tr>
<tr>
<td>sets of 5 on each leg</td>
<td></td>
</tr>
<tr>
<td>Banded hamstring step-through x 3</td>
<td>![Image of banded hamstring step-through]</td>
</tr>
<tr>
<td>sets of 5 on each leg</td>
<td></td>
</tr>
</tbody>
</table>
**Deadlift/Pulling Set-Up**  Issue: Lumbar spine rounded, cannot achieve neutral spine at set-up position.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone PNF hamstring stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>PNF glute stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td>Stiff-legged deadlift hold x 3 x 1 minute</td>
</tr>
</tbody>
</table>

*page 56*
DEADLIFT/PULLING SET-UP

ISSUE: Lumbar spine overextends in set-up position.

ISSUE: Spine overextends.

POTENTIAL INFLEXIBILITY: Quads, hip flexors.

EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily</th>
<th>All lower-body and torso joint-rotation techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up</td>
<td>Back kicks, butt kicks, round kicks, dynamic lunge stretch.</td>
</tr>
<tr>
<td>Stand-Alone</td>
<td>PNF hip-flexor stretch, PNF quad stretch.</td>
</tr>
</tbody>
</table>

This issue requires you to pay strict attention to keeping the spine neutral during these techniques!
**SAMPLE ROUTINES**

*Deadlift/Pulling Set-Up Issue: Lumbar spine overextends in set-up position. Issue: Spine overextends.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle rotations x 10 each foot and direction</td>
</tr>
<tr>
<td>Knee rotations x 10 each direction</td>
</tr>
<tr>
<td>Hip rotations x 10 each direction</td>
</tr>
<tr>
<td>Stepping over/under stick drills with Samson stretch x 10 each direction</td>
</tr>
</tbody>
</table>

*page 17*

<table>
<thead>
<tr>
<th>Butt kick x 2 sets of 20 alternating legs. Keep knee pointing down and spine neutral!</th>
</tr>
</thead>
</table>

*page 28*

<table>
<thead>
<tr>
<th>Back kick x 2 sets of 10 each leg</th>
</tr>
</thead>
</table>

*page 30*

<table>
<thead>
<tr>
<th>Lunge stretch (dynamic version) x 2 sets of 10 each leg</th>
</tr>
</thead>
</table>

*page 31*
Deadlift/Pulling Set-Up  Issue: Lumbar spine overextends in set-up position. Issue: Spine overextends.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF hip-flexor stretch x 3 sets of 3 cycles (each leg), 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td><strong>page 31</strong></td>
</tr>
<tr>
<td>PNF quad stretch x 3 cycles, 10-second contraction, 30-second hold</td>
</tr>
<tr>
<td><strong>page 52</strong></td>
</tr>
</tbody>
</table>
DEADLIFT/PULLING SET-UP

**ISSUE:** Thoracic spine rounds, cannot achieve neutral spine at set-up position.

**POTENTIAL INFLEXIBILITY:** Thoracic spine.

**EXERCISES TO CHOOSE FROM:**

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All lower-body and torso joint-rotation techniques, torso extension/flexion, torso lateral flexion/extension.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Pass-through with stick or band, ball drill, hanging from pull-up bar, overhead holds, seated torso reach.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch, bridge.</td>
</tr>
</tbody>
</table>

**SAMPLE**

*Deadlift/Pulling Set-Up Issue: Thoracic spine rounds, cannot achieve neutral spine at set-up position.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
</tr>
<tr>
<td>Arm circles x 10 each direction</td>
</tr>
<tr>
<td>Scarecrow x 10 each direction</td>
</tr>
</tbody>
</table>

*page 10*

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kneeling spine flexion/extension x 10</td>
</tr>
</tbody>
</table>

*page 20*

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing spine lateral flexion x 10</td>
</tr>
</tbody>
</table>

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beat swing x 2 x 10</td>
</tr>
</tbody>
</table>

*page 33*
Deadlift/Pulling Set-Up Issue: Thoracic spine rounds, cannot achieve neutral spine at set-up position.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PNF shoulder stretch on box x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
<td><img src="image1" alt="PNF shoulder stretch on box" /> page 54</td>
</tr>
<tr>
<td>PNF seated shoulder stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
<td><img src="image2" alt="PNF seated shoulder stretch" /> page 55</td>
</tr>
<tr>
<td>Bridge hold x 3 x best effort</td>
<td><img src="image3" alt="Bridge hold x 3 x best effort" /> page 56</td>
</tr>
</tbody>
</table>
## BOTTOM OF A DIP

**ISSUE:** Difficulty achieving depth, elbows do not remain behind athlete.

**POTENTIAL INFLEXIBILITY:** Pecs, lats.

### EXERCISES TO CHOOSE FROM:

<table>
<thead>
<tr>
<th>Daily:</th>
<th>All upper-body and torso joint-rotation techniques, racked-barbell elbows-up drills.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Warm-Up:</td>
<td>Pass-through with stick or band, ball drill, hanging from pull-up bar, overhead holds, flagpole reach, skin-the-cat variations.</td>
</tr>
<tr>
<td>Stand-Alone:</td>
<td>PNF shoulder stretch with straight and bent arms, bridge, lying shoulder/pec stretch, ring stretches/skin the cat, “arms –back” pec stretch</td>
</tr>
</tbody>
</table>
SAMPLE ROUTINES

**SAMPLE**
*Bottom of a Dip*  *Issue: Difficulty achieving depth, elbows do not remain behind athlete.*

<table>
<thead>
<tr>
<th>PRE-WORKOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder shrugs x 10 each direction</td>
</tr>
<tr>
<td>Pass-through x 10 each direction</td>
</tr>
<tr>
<td>Scarecrow x 10 each direction</td>
</tr>
<tr>
<td>Internal, external shoulder rotation x 10 each direction</td>
</tr>
<tr>
<td>Arm extension/flexion x 10</td>
</tr>
<tr>
<td>Beat swing x 2 x 10</td>
</tr>
</tbody>
</table>

*page 10*

*page 11*

*page 33*
**Bottom of a Dip**  
**Issue:** Difficulty achieving depth, elbows do not remain behind athlete.

<table>
<thead>
<tr>
<th>STAND-ALONE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin the cat 3 sets of 5</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td><em>page 48</em></td>
<td></td>
</tr>
<tr>
<td>PNF seated bent-arm shoulder stretch x 3 sets of 3 cycles, 10-second contraction, 30-second hold</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>PNF prone single-arm arm-bar stretch</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>