

The Functional Movement Screen
and Exercise Progressions
Manual



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ADVANCED MOVEMENT SCREENING AND EXERCISE PROGRESSIONS

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INTRODUCTION TO THE FUNCTION MOVEMENT SCREEN SYSTEM

The Core Training System includes The Functional Movement Screen and corresponding corrective exercises combine to create a cohesive core training program. This manual is designed to provide education, research and innovation to sports medicine, athletic training and fitness professionals. It can be used for physical therapists, strength coaches and athletic trainers working specifically with competitive athletes as well as personal trainers who will be applying their skills toward improving an individual's active lifestyle or fitness goals.

A focal point of this program is that significant limitations or right and left side imbalances exist in some individuals at very basic levels of movement. These limitations and imbalances should not be overlooked. The body should be free of restrictions and free of imbalances prior to training, conditioning, competition and fitness activities. The significant limitations in left-right imbalances drastically distort motor learning, movement perception, body awareness and mechanics. They rob the body of efficiency and are very often hidden by those individuals who learn to compensate and substitute with other movement patterns.

It is important to read and understand the science and background section of this manual in order to appreciate the role movement screens can play in developing a more holistic approach to rehabilitation, strength and conditioning, and fitness programs. This system was originally developed for the athlete; however, the personal trainer should be able to easily draw a parallel to the same problems and conditions confronting the individual interested in fitness. In many situations, the body's ability to move through its most basic and fundamental movements goes un-assessed. This is the one common denominator between the personal trainer, the athletic trainer, the strength and conditioning specialist, the physical therapist and all other individuals working from rehabilitation through performance enhancement. This is why we feel this program can serve a wide variety of professionals and in doing so, communicate and reinforce a common ground and systematic approach that involves new and innovative assessment and corrective exercise techniques.

BENEFITS OF THE CORE TRAINING SYSTEM

- Improves functional and athletic performance
- Helps to reduce the potential for training and sports injuries
- Provides a simple grading system to assess athlete/client movement
- Can be easily utilized in both the athletic/sports medicine and general fitness professionals
- Identifies physical imbalances or weaknesses
- Rehabilitates imbalances and strengthens weaknesses with simple corrective exercises
- Allows trainers to better individualize training programs for greater athlete/client results
- Teaches the trainer and athlete/client to identify the difference between movement quality and movement quantity
- Allows athletic trainers, strength and conditioning specialists, personal trainers and physical therapists to identify current injury trends and stats as they relate to the prevention of non-contact injuries.
- Allows trainers to identify potential cause and effect relationships of micro-trauma as well chronic injuries in relation to movement asymmetries

ADVANCED MOVEMENT SCREENING AND EXERCISE PROGRESSIONS

It seems more and more of today's individual's are working harder to become stronger and healthier. These individuals are constantly working to improve their activities by increasing their flexibility, strength, endurance, and power. A tremendous amount of athletes and individuals are performing high-level activities even though they are inefficient in their fundamental movements. These individuals create poor movement patterns, train around a pre-existing problem or simply do not train their weakness during their strength and conditioning programs. In today's evolving training and conditioning market, athletes and individuals have access to a huge arsenal of equipment and workout programs; however, the best equipment and programs cannot produce if the fundamental weaknesses are not exposed.

The idea is to individualize each workout program based on the person's weak link. This weak link is a physical or functional limitation. In order to isolate the weak link, the body's fundamental movement patterns should be considered. Most people will not begin strength and conditioning or rehabilitative programs by determining if they have adequate movement patterns. This makes it essential to assess an individual's fundamental movements prior to beginning a rehabilitative or strength and conditioning program. By looking at the movement patterns and not just one area, a weak link can be identified. This will enable the individual, strength and conditioning coach, athletic trainer or fitness professional to focus on that area. If this weak link is not identified, the body will compensate, causing inefficient movements. It is this type of inefficiency that can cause a decrease in performance and an increase in injuries.

The Functional Movement Screen and training system attempts to pinpoint these weak links and alleviate them. This system is a process that identifies the weak link in the movement pattern and then assigns exercises to correct it. When this is accomplished, the individual or athlete will have greater movement efficiency, which will lead to improved performance and hopefully a decrease in injury potential. This system consists of The Functional Movement Screen, Core Training and Reactive Neuromuscular Training. (1)

PERFORMANCE PYRAMID

In order to better understand this system's philosophy, we have devised what we call "The Performance Pyramid." The performance pyramid is a simple diagram constructed to give you a mental image and understanding of human movement and movement patterns. It is constructed of three (3) rectangles of diminishing size, with one rectangle building upon another. Each of these rectangles represents a certain type of movement. The pyramid must always be constructed from the bottom up and must always have a tapered appearance (a broad base and a narrow top).

The first rectangular pillar is the base platform or foundation. It represents the ability to move through fundamental patterns.

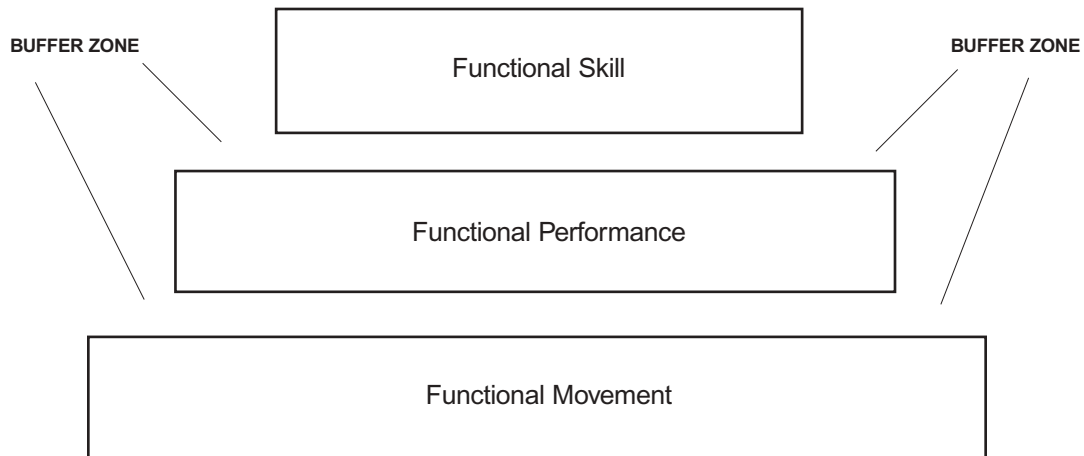
The second rectangular pillar is concerned with performance. Once you have established your ability to move, you must look at how efficient you are at that movement. This movement efficiency is defined as power. This is not your specific power; this is your general, measurable power (or gross athleticism). An example of a test of gross athleticism is the vertical leap. First of all, gravity affects all bodies equally; therefore, the vertical leap does not discriminate unfairly against body size. Secondly, even though jumping is very important in some sports (basketball and volleyball) and rarely even considered in others (cycling and marathon running), it demonstrates your ability to produce or generate power.

It is very important from a training standpoint to be able to compare individuals of different sports in a general format. The first two rectangular pillars allow us to make this comparison of functional movement ability and power, so that athletes can learn from each other and different training regimes. Moreover, it is important not to get sports-specific with testing at this level of the performance pyramid. Sport-specificity at this point of testing will reduce the ability to compare one athlete to another and to learn from them. It is also important not to do too many tests at this level. The more tests you do, the more you complicate matters. A few simple movements will let you know how efficient the athlete is at generating power.

The last pillar of the pyramid is sport specific skill. This pillar constitutes a battery of tests to assess the athlete's ability to do a given activity, play a specific sport, or a specific position within that sport. It looks at the competition statistics and any specific testing relative to that sport.

The performance pyramid is only a athlete's map and not the territory. Each level of the pyramid should be considered as a ratio of the athlete's score over the optimum score within the category. Consider four (4) basic appearances of the pyramid. These are simple generalizations, but do represent how the pyramid can help guide the conditioning program.

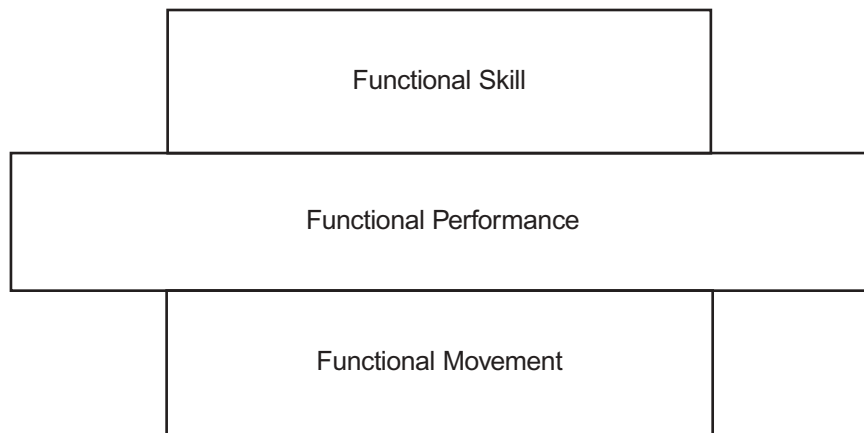
1. The Optimum Performance Pyramid



The first pyramid we will discuss is the optimal pyramid, which represents a type of athlete whose movement patterns (demonstrated by the movement screen), movement efficiency (demonstrated by performance testing) and sports skill (demonstrated by sports specific testing and sport statistics) are balanced and adequate. This does not mean that they cannot improve; however, any improvement should not upset the balance and appearance of the performance pyramid.

The optimum performance pyramid has a broad base with a slightly smaller rectangular pillar in the middle section and an even smaller rectangular pillar on the top. This demonstrates an individual who has appropriate or optimal functional movement. This individual possesses the ability to explore a full range of movement, demonstrating body control and movement awareness throughout numerous positions. Next, the individual has demonstrated a requisite amount of power. Compared to normative data, this individual also has demonstrated average or above-average general power production. This means the individual utilizes well-coordinated linking movements or kinetic linking. This simply means that during a test such as the vertical leap, the individual loads the body in a crouched position and throws the arms, then slightly extends the trunk, and then finally explodes through legs in a well timed, well-coordinated effort so that no movement is wasted and optimal efficiency is present. This individual has the potential to learn other kinetic linking movements and power production movements with appropriate time, practice and analysis. Lastly, the third rectangular pillar demonstrates an average or optimal amount of sports-specific or activity-specific skill. Note how the broad base creates a buffer zone for the second pillar, and the second pillar creates a buffer zone for the top pillar. These buffer zones are extremely important. Without the buffer zone, a warning flag should go up and you should be concerned that there may be potential for injury, or at least be assured that power and efficiency could be greatly improved. This buffer zone simply demonstrates the fact that the individual's functional movements are more than adequate to handle the amount of power that they can generate. Referring to the top of the pyramid, the power generated can more than control the skill that they possess.

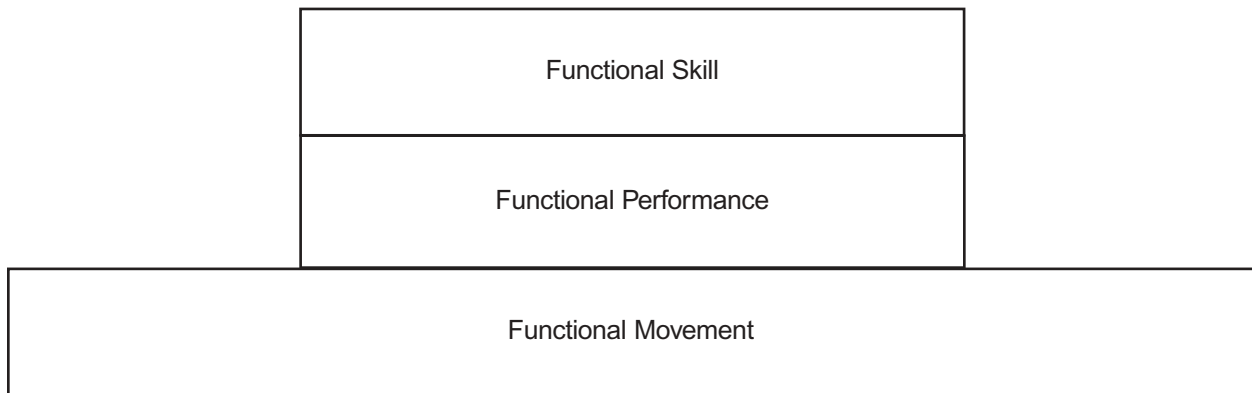
2. The "Over Powered" Performance Pyramid



The second pyramid will demonstrate athletes who are overpowered. This does not mean that they are too strong – it only means that their ability to generate power exceeds their ability to move freely. The way to rectify this problem is to improve the athletes' movement patterns while maintaining their current level of power.

This pyramid represents the individual who scores very poorly on mobility and stability tests, but very highly on power production (the second pillar) and adequately in skill (the third pillar). Their ability to move freely in simple and basic positions is limited by poor flexibility or poor stability in some of the movement patterns. This causes them to have a less than optimal functional movement score that would appear as a smaller rectangular pillar at the base. This individual's performance does not really have the appearance of a pyramid. The base (functional movement) and the power (functional performance) seem to be inverted in size. This individual is generating a significant amount of power with many restrictions and limitations in functional movement. Many highly skilled and well-trained athletes will appear this way when their performance is looked at in the form of a performance pyramid. This athlete may have never experienced an injury and may be performing better than they ever have. But if this individual chooses to train, the best focus for training would be on functional movement patterns. Removing the limitations to functional movement would provide a broader base and create a greater buffer zone. There may not be an immediate, tangible improvement in performance. As a matter of fact, sports-specific performance and power production may remain the same or even go down slightly as mobility and stability improve. However, it is unlikely that this individual would improve in general power production or sports-specific skill to any large degree without first improving general fundamental basic movement patterns. Therefore, whether this individual targets functional movement patterns for injury prevention or as a way to realize untapped performance, they will eventually see improvements.

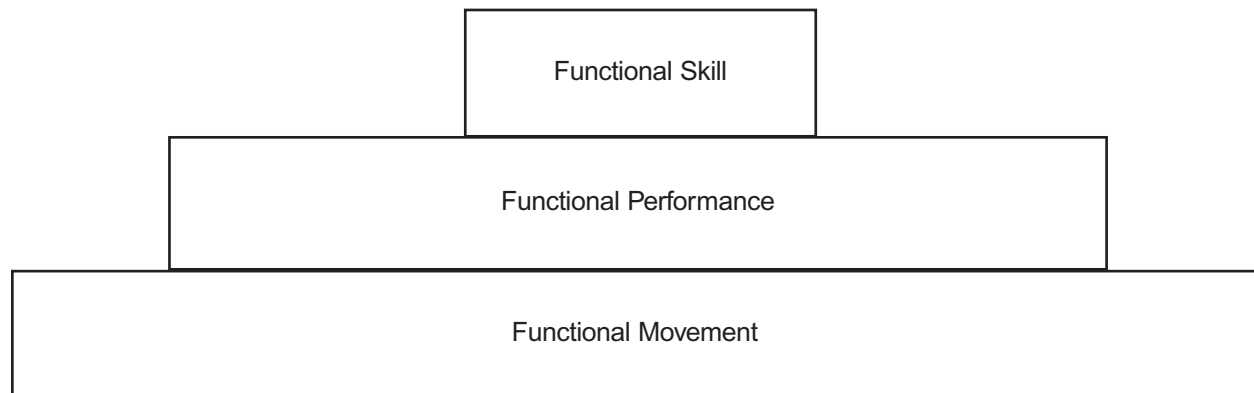
3. The "Under Powered" Performance Pyramid



The third pyramid represents underpowered athletes who have excellent freedom of movement, but whose efficiency is poor and could stand improvement. This individual should be involved in training and conditioning that would improve efficiency or power without negatively affecting the movement patterns.

This pyramid represents the individual who demonstrates a broad base and optimal movement patterns with very, very poor power production at the second level of the pyramid, and then demonstrates optimal or above average skill in a specific movement. This individual has the requisite movement patterns to perform multiple tasks, activities and sports skills, but lacks gross athleticism or the ability to produce power in simple movement patterns. This individual would benefit greatly from power training, plyometric training, or weight training. It is important that they maintain functional movement patterns as they gain strength, power, endurance and speed, but this reserve of power will create the buffer zone for sports-specific skill. It will also improve their efficiency. Consider the example of a young pitcher who has extremely good mobility and stability and has honed his pitching skills through video analysis and expert instruction. This individual must use a very high level of energy expenditure (to pitch effectively) for a short amount of time. This individual does not need to be on a mobility or stability program and probably does not need to tinker with pitching mechanics to realize improvement in pitching. This individual should create better strength, power and endurance reserves within the body. Therefore, improving gross athleticism so a buffer zone would exist between the second and third pillar of the pyramid. This buffer zone would allow the individual to pitch at the same level of effectiveness with a higher level of efficiency or a lower level of energy expenditure. As this individual improves power, we may not see maximum pitching speed change at all. However, we should see (under normal circumstances) consistency, endurance and recovery between pitching bouts all improve.

4. The "Under Skilled" Performance Pyramid



The last pyramid represents athletes who are under-skilled. This is a situation where the movement pattern and efficiency, or power generation in the first two blocks of the pyramid, are adequate. However, analysis of skill and sport performance demonstrates an overall weakness or below-average performance. Athletes in this category appear to be appropriately conditioned but not appropriately skilled. A training program specifically designed around sports skill fundamentals and techniques would be the best investment of time for this individual.

This pyramid demonstrates an optimal functional movement pillar, an optimal functional performance pillar and a below-average specific-skill pillar. This is simply an individual who either naturally or through work has appropriate functional movement patterns and good power production, but has not had effective mastery of sports skill. This individual would probably benefit most from technique training to refine or improve mechanics or to develop a greater awareness of the movement needed to perform skill at a higher level. The whole purpose for the testing proposed in this book is to allow you to acquire the information to construct a simple performance pyramid. It will consistently target the areas where focus should be applied. Through seasons and through training, the performance pyramid will continually change for some individuals; for others, they will always remain the same. Some individuals will naturally have the ability to generate power but will consistently have to work on functional movement patterns, to maintain optimal freedom of movement. Other individuals will naturally have excellent freedom of movement and movement patterns but will need to use supplementary training to maintain a level of gross athleticism and power production. Other individuals will find that they consistently need to work on fundamentals and sports skills, while others are naturally gifted with sports skills and should invest their time through conditioning. The performance pyramid also explains why simply replicating the program of another individual will not consistently yield the level of results it yields for that individual. Many coaches and athletes over the years have somehow intuitively used this type of approach to consistently expose the category with the greatest weakness and then work on that category. The performance pyramid is a simple and effective way to keep body balance in check. It's also a nice visual for the athlete.

MOBILITY & STABILITY

The terms mobility and stability are often misunderstood and should be more specifically defined. Mobility is the combination of muscle flexibility, joint range of motion and a body segment's freedom of movement. Stability (often referred to as ligamentous integrity about a joint) is the ability to maintain posture and/or control motion. Stability can be divided into two categories--static stability and dynamic stability. Static stability is most often assessed during orthopedic testing. Static stability can be demonstrated during a single-leg stance. Dynamic stability is often overlooked during orthopedic testing, but is utilized during functional movements. An example of dynamic stability can be demonstrated when the abdominal musculature stabilizes the trunk during functional activities such as the vertical leap or 40-yard sprint. Some athletes will exhibit strong static stabilizers, but weak dynamic stabilizers. These athletes and others will compromise their correct movement patterns in order to perform at their highest levels.

Athletes will always sacrifice quality of motion to maintain quantity of motion and in turn develop compensatory movement patterns in order to overcome functional deficits. An example of this is how an athlete will develop hip stiffness due to athletic participation. This is a result of the muscle hypertrophy and movement patterns that occur due to training and participation in field and court sports. When the hips become stiff in the end ranges of flexion, extension and adduction, the lumbar spine will have to sacrifice its stability at the expense of greater mobility. Excessive flexion, extension and rotation will occur at the lumbar spine in an attempt to compensate for a relative decreased stride length during running caused by the stiffness in the hips. Therefore, an athlete who has a slight decrease in range of motion may not have a great reduction in 40-yard-dash speed since they will compensate by using poor body mechanics. This compensatory movement pattern is a temporary strategy and, although straight-ahead speed may be maintained, the ability to decelerate, cut and avoid obstacles may be altered. This situation will predispose the athlete to develop micro trauma, or excessive wear and tear on the body.

Testing functional movement allows the sports medicine and conditioning team to understand the interaction between mobility and stability. The combination of poor mobility and stability is the source of many common athletic problems. Athletes demonstrating poor functional movement patterns should seek to regain these fundamental building blocks before focusing on other attributes of fitness such as strength, speed, power and endurance. Innumerable unnecessary injuries have occurred because athletes have focused more on the quantity of their workout statistics (sets, reps and weight) than the quality and technique of their movements. A common example of this is the squat. Many athletes will continue to lift greater amounts of weight during training even though they cannot perform a deep, full range-of-motion squat.

Often an athlete will have high marks in performance testing and low marks in The Functional Movement Screen™, indicating that they are functioning on a fine line, predisposing them to a non-contact injury and identifying the fact that they are making significant compensations that will, at best, only temporarily allow for high-level performance. These imbalances in movement will likely lead to micro trauma and chronic injuries throughout the body. The word imbalance indicates that the muscular forces about a certain joint or body segment are not equal, thus creating joint stress and reduced control. A baseball pitcher can be used as an analogy for such an imbalance, considering that the pitch is a repetitive, one-sided rotation and single-arm activity. Imbalances may be identified between the left and right sides of the body as well as the medial/lateral and/or the anterior/posterior aspects of a specific joint.

As children grow and develop in a normal environment, they completely balance themselves by running, jumping, pushing, pulling, throwing and kicking things. Most children, once they gain body control, can pass the Functional Movement Screen™ with minimal difficulty. During adolescence and puberty, asymmetrical growth occurs between the legs and the upper torso. This imbalance brings about changes in the child's movement patterns. The lower extremity almost always demonstrates stiffness in the hips and ankles, including tightness in the lateral hip musculature and hamstrings. This creates an obvious awkwardness to adolescent movement. Many adolescents are able to rebalance themselves after puberty while some continue to display the same movement patterns through adulthood. It just so happens that most court and field sports are begun during the adolescent years, thereby imposing a secondary demand onto the movement system. Therefore, it is important to constantly check the Reebok Functional Movement Screen™ to make sure that imbalances are not being used as cornerstones in the foundation of the athlete's total structure.

The Functional Movement Screen™ simply demonstrates the quality of movement an athlete possesses to build all other athletic ability and skill. If the foundation is solid and the score on The Functional Movement Screen™ is high, it is recommended that the athlete participate in current training methods. However, if the Functional Movement Screen™ score is low and the performance testing is above average, it is in the best interest of the athlete to return to basic mobility and stability exercises in order to regain some of the foundation abilities that have been lost.

The Functional Movement Screen™ includes seven tests that assess mobility and stability. The scoring system requires critical judgment by the tester. However, clear and objective criteria have been established to maximize the objectivity of this screening tool. The Functional Movement Screen™ was designed to minimize unnecessary non-contact injuries currently sustained in court and field sports. It can also assist the strength and conditioning or sports medicine professional with an individualized exercise prescription that is tailored to the athlete's movement strategy. The exercise routine should serve to enhance performance and prevent injury while improving the athlete's functional deficits. It is the responsibility of the strength and conditioning and sports medicine professional (utilizing tools such as the Functional Movement Screen™) to constantly expose an athlete to his/her greatest weakness. This will improve the effectiveness of the current conditioning program and help the athlete to enjoy improved performance while preventing unnecessary non-contact injuries.

Functional Movement Screen: Test Administration Process

The Functional Movement Screen™ is a screening process that can be administered very quickly and easily and requires little space. These aspects were considered greatly when devising this screening process due to the time and space constraints placed on sports medicine professionals and trainers in their respective settings. The Functional Movement Screen™ is best administered when certain things are considered: the number of individuals being tested, the amount of space you have, and the number of people assisting you.

If you are performing the test on just one individual, it is quite simple to perform the test. It is best when testing a person individually to follow the test in succession as it goes with the manual. By doing it this way, the standing tests are done first and the individual is given somewhat of a warm-up, with the deep squat being the first test.

When performing the screen on a large number of athletes or clients, it is best to either set up times every five minutes for the participants to come in or have different stations set up to do the testing. The best scenario is set-up stations in a gym area with a certain number of individuals going to each testing station, getting started, and then moving to the next designated test. This scenario depends on the amount of assistance and space that you have for testing.

It is important to remember that this is a screening process and the purpose of the screen is not to make a diagnosis. The Functional Movement Screen™ is studying fundamental movement patterns in an effort to determine the weak link in a person's movements. This also makes it important to perform the entire screen prior to attempting to interpret the score. The tester must take into consideration the scores from all tests in order to make a proper deduction about the person's functional movement patterns.

When performing each test, the individual is given three attempts to perform the movement as described; the best of the three attempts is scored. The tester should remember that if the individual performs the movement perfectly on the first attempt, then there is no need to perform any more movements. However, it should be noted that the tester should score the best attempt stringently and if there is a question, score it low. The tester must remember to record both scores for each extremity or side, but the lowest score is used for the total score.

It is recommended that you retest every few weeks, to assess and to document progress.

Functional Movement Screen: Test Administration Process

Athlete/Client profile: the athlete/client should have successfully completed traditional assessments and health history questionnaires before beginning either the Reebok 7 or 5 Pt. Movement Screen. If the athlete/client is currently being treated for an ailment, then this problem should be alleviated prior to performing the screen. It should be noted that certain tests in the screen can be utilized to assist in the therapeutic exercise protocol; however, a full screen should be performed once the problem has been fixed.

Clothing: the athlete/client should wear clothing that does not inhibit movements. If possible, the client should wear form-fitting clothes to better observe movements and compensations.

Shoes: the screens can be done with the athlete/client wearing normal comfortable workout shoes. If the client has a prescription for orthotics, it is recommended that they be worn.

Warm-up: although it is not necessary to have the athlete/client warm-up before doing the screen, several minutes of movement for the athlete/client to feel more comfortable is acceptable. Since there is no additional weight added to the athlete/client, and the screens are designed to uncover limitations to movement, extensive warm-up is not required.

Cueing the movements: it is recommended to use as little cueing as possible, as the goal of the screen is to uncover imbalances. Too much cueing could result in the athlete/client "fixing" the movement instead of doing it the way they normally would do.

EQUIPMENT/TOOLS

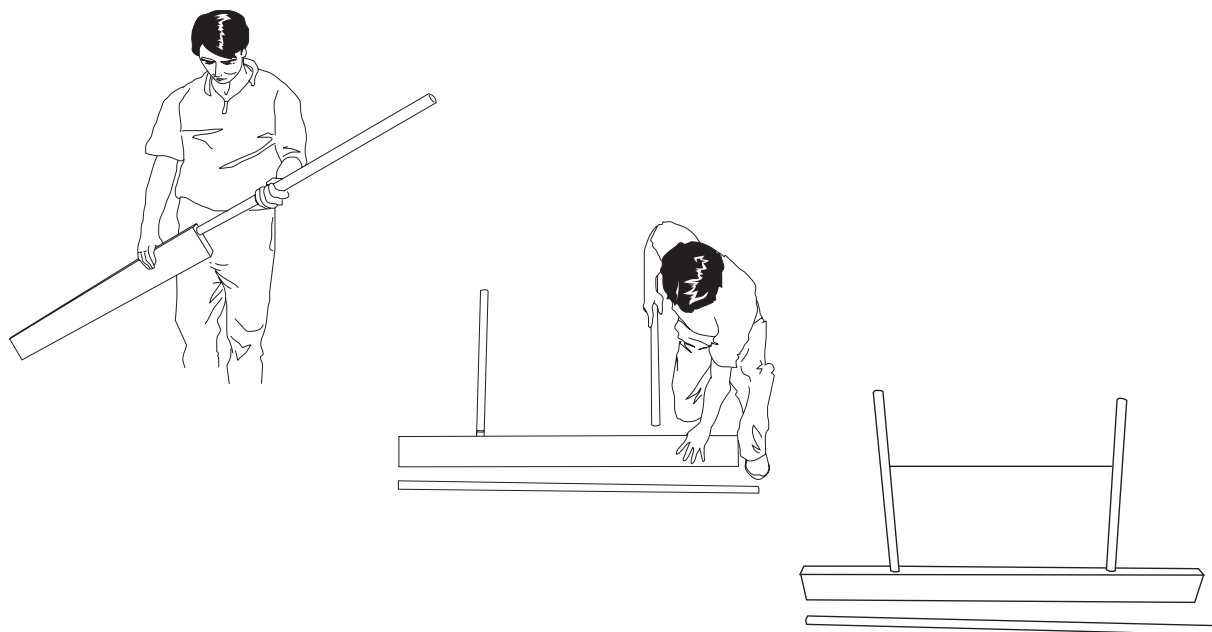
In order to test and evaluate the fundamental movement patterns in the body, certain equipment is required. The Functional Movement Screen™ is designed to utilize minimal equipment with very little expense being invested into testing individuals. The Functional Movement Screen™ places the body into positions that will challenge fundamental movements and detect where the body's own compensatory movement patterns will be apparent. The individual's weaknesses during the movements will be the focus during the testing. However, certain equipment is needed in order to provide for compensations, body relative testing, and reliability between testers. The equipment is very light, inexpensive and user-friendly, which makes it easy to carry and manipulate during testing.

2x6 Board: This is used to carry the equipment and add compensation for the deep squat test. It is also utilized in the in-line lunge, active straight leg raise and rotary stability tests for reliability and references during test.

5Ft. Dowel: This is used for deep squat, in-line lunge, hurdle step and active straight leg raise. The dowel is used in these test for reliability, improve scoring and to make the testing more functional.

Hurdle: This is used for the hurdle step which allows for body relative testing and improved scoring.

Tape Measure: This is used for the shoulder mobility and in-line lunge for scoring purposes and to measure tibia height to make test body relative.



The equipment is all self-contained in the 2x6 board. The pieces are removed from inside the board and the two small dowel pieces are inserted in the holes on the 2x6 board. The string is then placed around the two pieces and this makes up the hurdle. (see appendix for ordering information)

SCORING

The scoring for The Functional Movement Screen™ consists of four possibilities. The scores range from zero to three, three being the best possible score. The four basic scores are quite simple in philosophy. An individual is given a score of zero if at any time during the testing he/she has pain anywhere in the body. If there is pain, a score of zero is given and the painful area is noted. A score of one is given if the person is unable to complete the movement pattern or is unable to even get into the position to perform the movement. A score of two is given if the person is able to complete the movement but must compensate in some way to perform the fundamental movement. A score of three is given if the person performs the movement correctly without any compensation. The score sheet contains an area used for comments; this area should be utilized when scoring to make notes about the individual's specific movement problems.

A majority of the tests in The Functional Movement Screen™ test right and left sides respectively; it is important that both sides are scored. The lower score of the two sides is recorded and is counted toward the total; however, it is important to note on the score sheet that there is an imbalance in right and left sides.

There are three tests that have clearing screens added to the test which is graded as positive or negative. These clearing movements only consider pain. If a person has pain then that portion of the test is positive and if there is no pain, then that portion is negative. This does affect the total score for that particular test. If a person receives a positive grade on the clearing screen, then the score for that test will be zero. It is important to record the scores for each test on the score sheet for future reference, even if the final score is a zero.

The scores for the right and left sides and the scores for the tests, which are associated with the clearing screens, should all be recorded. These numbers will assist the sports medicine professional when he/she performs a more thorough evaluation of that particular area. However, it is important to note that only the lowest score is recorded and considered when tallying the total score. The best score that you can attain on The Functional Movement Screen™ is 21. (See sample score sheet)

THE FUNCTIONAL MOVEMENT SCREEN™

1. DEEP SQUAT

5. ACTIVE STRAIGHT LEG RAISE

2. HURDLE STEP

6. TRUNK STABILITY PUSH-UP

3. IN-LINE LUNGE

7. ROTARY STABILITY

4. SHOULDER MOBILITY

Deep Squat

Purpose:

The squat is a movement needed in most athletic events. It is the ready position and is required for most power movements involving the lower extremities. The deep squat is a test that challenges total body mechanics when performed properly. The deep squat is used to assess bilateral, symmetrical, functional mobility of the hips, knees, and ankles. The dowel held overhead assesses bilateral, symmetrical mobility of the shoulders, as well as the thoracic spine.

Description:

The individual assumes the starting position by placing his/her feet approximately shoulder width apart with the feet aligned in the sagittal plane. The individual then adjusts their hands on the dowel to assume a 90-degree angle of the elbows with the dowel overhead. Next, the dowel is pressed overhead with the shoulders flexed and abducted, and the elbows extended. The individual is then instructed to descend slowly into a squat position. The squat position should be assumed with the heels on the floor, head and chest facing forward and the dowel maximally pressed overhead. The individual may repeat the movement up to three times. If the criteria for a score of III is not achieved, the athlete is then asked to perform the test with a 2 x 6 board under their heels.

Tips for testing:

- When in doubt, score it low.
- Try not to interpret the score while testing.
- Make sure if you have a question to view individual from the side.

Verbal Instructions:

“Hold the dowel with both hands over your head in order for both your shoulders and elbows to maintain a 90 degree angle. Now, press the dowel over your head and hold it there.”

“Place your feet in a comfortable position, approximately shoulder width or slightly greater than shoulder width apart. Point your toes forward and keep them pointing forward.”

“While maintaining an upright posture, the dowel over your head, and your heels on the floor, descend into a deep squat in order for your thighs to break parallel with the floor.” (Score the subject)

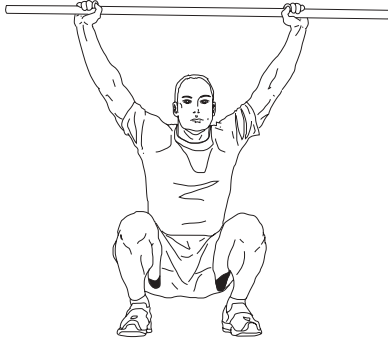
“Return to the starting position.” (Repeat 3 times if necessary)

Repeat the instructions as stated above using a 2 x 6 beneath the subject’s heels if necessary.

Deep Squat Testing Procedure

III

- Upper torso is parallel with tibia or toward vertical
- Femur below horizontal
- Knees are aligned over feet
- Dowel aligned over feet



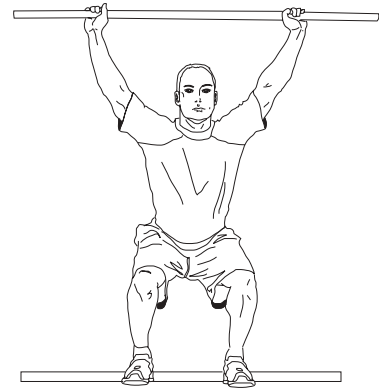
II

- Upper torso is parallel with tibia or toward vertical
- Femur is below horizontal
- Knees are aligned over feet
- Dowel is aligned over feet



I

- Tibia and upper torso are not parallel
- Femur is not below horizontal
- Knees are not aligned over feet
- Lumbar flexion is noted



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Deep Squat

The ability to perform the Deep Squat requires closed-kinetic chain dorsiflexion of the ankles, flexion of the knees and hips, and extension of the thoracic spine, as well as flexion and abduction of the shoulders. Poor performance of this test can be the result of several factors. Limited mobility in the upper torso can be attributed to poor glenohumeral and/or thoracic spine mobility. Limited mobility in the lower extremity including poor closed-kinetic chain dorsiflexion of the ankles or poor flexion of the hips may also cause poor test performance.

When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using standard goniometric measurements. Previous testing has identified the fact that when an athlete achieves a score of **II**, minor limitations most often exist either with closed-kinetic chain dorsiflexion of the ankle or extension of the thoracic spine. When an athlete achieves a score of **I** or less, gross limitations may exist with the motions mentioned above as well as flexion of the hip.

Deep Squat

Score of 3

Deep Squat Progression
(maintenance)

Medicine Ball Program

- Standing Chop/Lift
- Core Board hop/Lift
- Lateral Wall Drill
- Deep Squatting Overhead Bounce Pass

Score of 2

Stretches

Recommended not mandatory

Corrective Exercises

- Coreboard Deep Squat Progression- Bottom-Up (decrease heel lift by half-inch each progression)
- Coreboard Squat Reach

Self Stretches

- Wall Sit
- Wall Sit with Shoulder Press (or one arm press if 2 arm if not possible – do this for stretch mob score of 1)
- Dorsiflexion Stretch

If you have a toe touch, proceed to deep squat progression with a heel lift (same size as test, do not remove).

Score of 1

Partner Stretch

- Prone Quad Stretch (Perform Hamstring Curl and Contract/Relax)

Corrective Exercises

If you do not have a toe touch, perform the Toe Touch progression until you achieve full toe touch and proceed to deep squat progression as above.

Continue this program until a score of 2 is received on the deep squat test (with or without core board).

Hurdle Step

Purpose:

The hurdle step is designed to challenge the body's proper stride mechanics during a stepping motion. The movement requires proper coordination and stability between the hips and torso during the stepping motion, as well as single leg stance stability. The hurdle step assesses bilateral functional mobility and stability of the hips, knees and ankles.

Description:

The individual assumes the starting position by first placing the feet together and aligning the toes touching the base of the hurdle. The hurdle is then adjusted to the height of the athlete's tibial tuberosity. The dowel is positioned across the shoulders below the neck. The individual is then asked to step over the hurdle and touch their heel to the floor while maintaining the stance leg in an extended position. The moving leg is then returned to the starting position. The hurdle Step should be performed slowly and as many as 3 times bilaterally. If one repetition is completed bilaterally meeting the criteria below a score of III is given.

Tips for testing:

- Score the leg that is stepping over the hurdle.
- Make sure the individual maintains a stable torso.
- Make sure the toes keep in contact with the hurdle during and after each repetition.
- Tell individual not to lock knees during test.
- Maintain proper alignment with the string and the tibial tuberosity.
- When in doubt score low.
- Do not try to interpret the score when testing.

Verbal Instruction:

"Place the Dowel across your shoulders. Now, stand comfortably with your feet together and your toes against the base of the Hurdle."

"While maintaining an upright posture, step over the hurdle without touching the string."

"Touch the floor with your heel and return to the starting position."

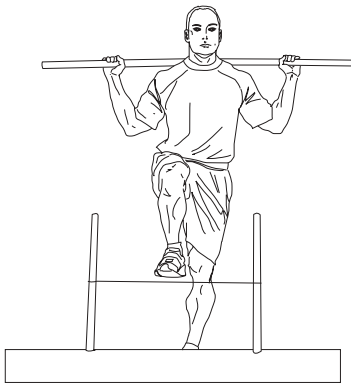
Repeat instructions 2 and 3 for the left foot. (Score the subject)

Repeat 3 times per side if necessary.

Hurdle Step Testing Procedure

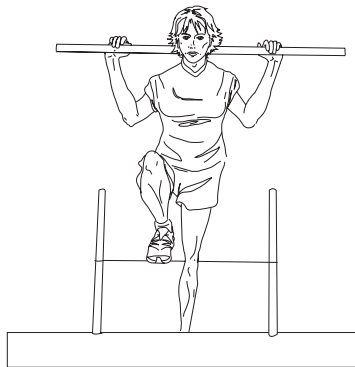
III

- Hips, knees and ankles remain aligned in the sagittal plane
- Minimal to no movement is noted in lumbar spine
- Dowel and hurdle remain parallel



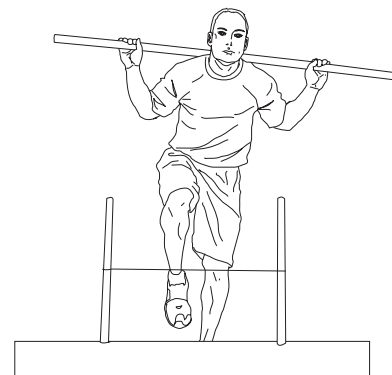
II

- Alignment is lost between hips, knees and ankles
- Movement is noted in lumbar spine
- Dowel and hurdle do not remain parallel



I

- Contact between foot and hurdle
- Loss of balance is noted



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Hurdle Step

Performing the hurdle step test requires stance-leg stability of the ankle, knee and hip, as well as maximal closed-kinetic chain extension of the hip. The hurdle step also requires step-leg open-kinetic chain dorsiflexion of the ankle and flexion of the knee and hip. In addition, the athlete must also display adequate balance because the test imposes a need for dynamic stability.

Poor performance during this test can be the result of several factors. It may simply be due to poor stability of the stance leg or poor mobility of the step leg. Imposing maximal hip flexion of one leg while maintaining apparent hip extension of the opposite leg requires the athlete to demonstrate relative bilateral, asymmetric hip mobility.

When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using standard goniometric measurements of the joints, as well as muscular flexibility tests such as the Thomas test or Kendall's test for hip flexor tightness. Previous testing has identified that when an athlete achieves a score of **II**, minor limitations most often exist with ankle dorsiflexion and/or hip flexion with the step leg. When an athlete scores **I** or less, relative asymmetric hip immobility may exist, secondary to an anterior tilted pelvis and poor trunk stability.

Hurdle Step

Score of 3	Score of 2	Score of 1
<p>Maintenance with Coreboard Program</p>	<p>Stretches Recommended not mandatory</p>	<p>Partner Stretch • Prone Hip Flexor (Perform Hamstring Curl and Contract/Relax)</p>
<p>Medicine Ball Progression (Begin on floor advance to Coreboard)</p> <ul style="list-style-type: none"> • Standing Static Closed Chop/Lift • Standing Static Open- Chop/Lift • Standing Dynamic Open- Chop (Hip Ext) • Standing Wall Drill- Closed Lift (Hip Flexion) 	<p>Self Stretches</p> <ul style="list-style-type: none"> • Stride • Stride w/ spinal rotation • Stride w/ hip external rotation <p>Corrective Exercise</p> <ul style="list-style-type: none"> • Standing Hip-Hug Stretch <p>Corrective Exercise</p> <ul style="list-style-type: none"> • Core board - Mountain Climber with Hip Flex/Ext • Coreboard - Standing Hip Hug 	

In-Line Lunge

Purpose:

This test attempts to place the body in a position that will focus on the stresses simulated during rotational, decelerating and lateral type movements. The in-line lunge is a test that places the lower extremity in a scissored position, challenging the body's trunk and extremities to resist rotation and maintain proper alignment. This test assesses hip and ankle mobility and stability, quadriceps flexibility and knee stability.

Description:

The tester attains the individual's tibia length, by either measuring it from the floor to the tibia tuberosity or acquiring it from the height of the string during the hurdle step test. The individual is then asked to place the end of their heel on the end of the board. The previous tibia measurement is then applied from the end of the toes of the foot on the board and a mark is made. The dowel is placed behind the back, touching the head, thoracic spine and sacrum. The hand opposite to the front foot should be the hand grasping the dowel at the cervical spine. The other hand grasps the dowel at the lumbar spine. The individual then steps out on the board placing the heel of the opposite foot at the indicated mark on the board. The individual then lowers the back knee enough to touch the board behind the heel of the front foot and then returns to starting position. The lunge is performed up to three times bilaterally in a slow, controlled fashion. If one repetition is completed successfully, then a three is given.

Tips for testing:

- The front leg identifies the side being scored.
- Dowel remains in contact with head, thoracic spine and sacrum.
- The front heel remains in contact with the board and back heel touches board when returning to starting position.
- When in doubt score low.
- Watch for loss of balance.
- Remain close to individual in case he/she has a loss of balance.

Verbal Instruction:

"Hold the dowel with both hands and position it along your spine with your right hand against the back of your neck and your left hand against your low back."

"Step onto the 2 x 6 with your right foot along the back edge and place your left foot with the heel just past (length of the tibia) the black line (or mark). Point your toes forward and keep them pointing forward."

"While maintaining an upright posture, descend into a lunge, touching your right knee along the black line (or mark) behind your left heel. Maintain contact with the dowel against the head, thoracic spine and sacrum."

"Return to the starting position, making sure to place the right heel flat on the board."

Repeat instructions 1 through 4 with the left side. (Score the subject)

Repeat 3 times per side if necessary

In-Line Lunge Testing Procedure

III

- Dowel contacts remain with L-spine extension
- No torso movement is noted
- Dowel and feet remain in sagittal plane
- Knee touches board behind heel of front foot



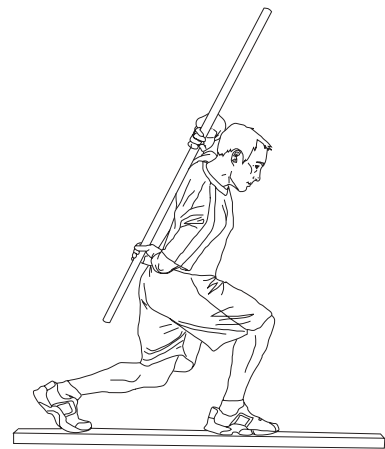
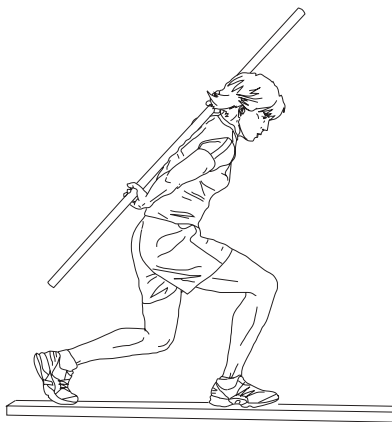
II

- Dowel contacts do not remain with L-spine extension
- Movement is noted in torso
- Dowel and feet do not remain in sagittal plane
- Knee does not touch behind heel of front foot



I

- Loss of balance is noted



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For In-Line Lunge

The ability to perform the in-line lunge test requires stance leg stability of the ankle, knee and hip as well as apparent closed kinetic-chain hip abduction. The in-line lunge also requires step-leg mobility of hip abduction, ankle dorsiflexion, and rectus femoris flexibility. The athlete must also display adequate balance due to the lateral stress imposed.

Poor performance during this test can be the result of several factors. First, hip mobility may be inadequate in either the stance leg or the step leg. Second, the stance-leg knee or ankle may not have the required stability as the athlete performs the lunge. Finally, an imbalance between relative adductor weakness and abductor tightness in one or both hips may cause poor test performance. There may also be limitations in the thoracic spine region which may inhibit the athlete from performing the test properly.

When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using standard goniometric measurements of the joints as well as muscular flexibility tests such as the Thomas test or Kendall's test for hip flexor tightness. Previous testing has identified that when an athlete achieves a score of **II**, minor limitations often exist with mobility of one or both hips. When an athlete scores **I** or less, a relative asymmetry between stability and mobility may occur around one or both hips.

In-Line Lunge

Score of 3	Score of 2	Score of 1
Maintenance Core board Progressions	Stretches Recommended not mandatory	Partner Stretches • Thomas Test Stretch
Medicine Ball Progressions • Chop Open(Lat/Ant) • Lift Closed(Lat/Ant) • Dynamic w/ wall	Corrective Exercise • Core board Hip Ext. Rotation w/ stride Self Stretches • Gastroc/Soleus • Leg Lock Bridge Passive Lock (Opposite Arm Holding Flexed Hip) • Lunge Stride and Twist Progression	• Latissmus Dorsi Stretch (Int/Ext with Hip Ext)

Shoulder Mobility

Purpose:

The shoulder mobility screen assesses bilateral shoulder range of motion, combining internal rotation with adduction and extension, and external rotation with abduction and flexion. It also requires normal scapular mobility and thoracic spine extension.

Description:

The tester first determines the hand length by measuring the distance from the distal wrist crease to the tip of the third digit. The individual begins standing with feet together, and remains in this position throughout the test. The individual is instructed to make a fist with each hand, placing the thumb inside the fist. They are then asked to assume a maximally adducted, extended and internally rotated position with one shoulder, and a maximally abducted, flexed and externally rotated position with the other. During the test the hands should remain in a fist and they should be placed on the back in one smooth motion. The tester then measures the distance between the two closest bony prominences. Perform the shoulder mobility test as many as 3 times bilaterally.

Clearing exam:

There is a clearing exam at the end of the shoulder mobility test. This movement is not scored; it is simply performed to observe a pain response. If pain is produced, a positive is recorded and a score of zero is given to the entire shoulder mobility test. This clearing exam is necessary because shoulder impingement can sometimes go undetected by shoulder mobility testing alone.

Tips for testing:

- The flexed shoulder identifies the side being scored.
- If the hand measurement is exactly the same as the distance between the two points, then score low.
- The clearing test overrides the score on the rest of the test.
- Make sure individual does not try to “walk” the hands toward each other.

Verbal Instruction:

While in a comfortable standing position, instruct the subject to:

“Make a fist with the thumbs tucked in the fist.”

“In a single motion, place your right fist over your head on to your back and your left fist behind your back, attempting to touch the fists.”

“Do not move your hands closer after their initial placement.” (Measure the distance between the fists. The closest proximity for each)

Repeat instruction 2 with the opposite hand placement. (Score the subject)

Active Shoulder Stability Verbal Instruction:

“Place your right hand on your left shoulder.”

“While maintaining that hand placement, raise your right elbow toward your forehead.”

Ask the subject: “Do you feel any pain?”

Repeat instructions 1 through 3 with the left side. (Score the subject)

Shoulder Mobility Testing Procedure

III

- Fists are within one hand length



II

- Fists are within one and a half hand lengths



I

- Fists are not within one and half hand lengths



The individual places his/her hand on the opposite shoulder and then attempts to point the elbow upward. If there is pain associated with this movement, a score of zero is given. It is recommended that a thorough evaluation of the shoulder be done. This screen should be performed bilaterally. If the individual does receive a positive score, both scores should be documented for future reference.



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Shoulder Mobility

The ability to perform the shoulder mobility test requires shoulder mobility in a combination of motions, including abduction/external rotation, flexion/extension and adduction/internal rotation. It also requires scapular and thoracic spine mobility.

Poor performance during this test can be the result of several causes, one of which is the widely accepted explanation that increased external rotation is gained at the expense of internal rotation in overhead-throwing athletes. Excessive development and shortening of the pectoralis minor or latissimus dorsi muscles can cause postural alterations of forward or rounded shoulders. Finally, a scapulothoracic dysfunction may be present, resulting in decreased glenohumeral mobility secondary to poor scapulothoracic mobility or stability.

When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using standard goniometric measurements of the joints as well as muscular flexibility tests such as Kendall's test for pectoralis minor and latissimus dorsi tightness. Previous testing has identified that when an athlete achieves a score of **II**, minor postural changes or shortening of isolated axio-humeral or scapulo-humeral muscles exist. When an athlete scores **I** or less, a scapulothoracic dysfunction may exist.

Shoulder Mobility

Score of 3	Score of 2	Score of 1
Maintenance	Stretches	Partner Stretch
Warm-up	Recommended not mandatory	• Traction w/ Int/Ext rotation
	Corrective Exercise	Corrective Exercise
	• Coreboard Rock and Reach	• Wall Sit w/ Shoulder Press
	• Coreboard Squat Reach	• Sidelying Torso Twist w/ Shoulder ROM(forearm flat)

Active Straight Leg Raise

Purpose:

The active straight leg raise tests the ability to disassociate the lower extremity while maintaining stability in the torso. The active straight leg raise test assesses active hamstring and gastroc-soleus flexibility while maintaining a stable pelvis and active extension of the opposite leg.

Description:

The individual first assumes the starting position by lying supine with the arms in an anatomical position and head flat on the floor. The board is placed under the knees. The tester then identifies mid-point between the anterior superior iliac spine (ASIS) and mid-point of the patella, the dowel is then placed at this position perpendicular to the ground. Next, the individual is instructed to lift the test leg with a dorsiflexed ankle and an extended knee. During the test the opposite knee should remain in contact with the board, the toes should remain pointed upward, and the head remain flat on the floor. Once the end range position is achieved, and the malleolus is located past the dowel, then the score is recorded per the criteria. If the malleolus does not pass the dowel then the dowel, is aligned along the medial malleolus of the test leg, perpendicular to the floor and scored per the criteria. The active straight leg raise test should be performed as many as 3 times bilaterally.

Tips for testing:

- The flexed hip identifies the side being scored.
- Make sure leg on floor does not externally rotate at the hip.
- Both knees remain extended and the knee on the extended hip remains touching the board.
- If the dowel resides at exactly the mid-point, score low.

Verbal Instruction:

“Lay on your back with the back of your knees against the 2 x 6, arms at your side, palms facing up, and toes pointing up.”

“Lift the toes of your right foot toward your shin. With your legs remaining straight and toes pointing toward the ceiling/sky, raise your right leg as high as possible, without any movement occurring in left leg.” (Measure lift in relation to opposite leg)

Repeat instruction 2 with the left side. (Score the subject)

Active Straight Leg Raise Testing Procedure

III

- Ankle/Dowel resides between mid-thigh and ASIS



II

- Ankle/Dowel resides between mid-thigh and mid-patella/joint line



I

- Ankle/Dowel resides below mid-patella/joint line



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Active Straight Leg Raise

The ability to perform the active straight leg raise test requires functional hamstring flexibility, which is the flexibility that is available during training and competition. This is different from passive flexibility, which is more commonly assessed. The athlete is also required to demonstrate adequate hip mobility of the opposite leg as well as lower abdominal stability.

Poor performance during this test can be the result of several factors. First, the athlete may have poor functional hamstring flexibility. Second, the athlete may have inadequate mobility of the opposite hip, stemming from iliopsoas inflexibility associated with an anteriorly tilted pelvis. If this limitation is gross, true active hamstring flexibility will not be realized. A combination of these factors will demonstrate an athlete's relative bilateral, asymmetric hip mobility. Like the hurdle step test, the active straight leg raise test reveals relative hip mobility. However, this test is more specific to the limitations imposed by the muscles of the hamstrings and the iliopsoas.

When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by Kendall's sit-and-reach test as well as the 90-90 straight leg raise test for hamstring flexibility. The Thomas test can be used to identify iliopsoas flexibility. Previous testing has identified that when an athlete achieves a score of **II**, minor asymmetric hip mobility limitations or moderate isolated, unilateral muscle tightness may exist. When an athlete scores **I** or less, relative hip mobility limitations are gross.

Active Straight Leg Raise

Score of 3	Score of 2	Score of 1
Maintenance	Stretches	Partner Stretch
Coreboard Dip Bridge	Recommended not mandatory	• Straight Leg Raise (contract/Relax)
Coreboard Single Leg Lowering	Corrective Exercise	
	• Single Leg Lowering I(Passive)	
	Corrective Exercise	
	• Single Leg Lowering II(Active)	
	• Coreboard Single Leg Bridge	

Trunk Stability Push-Up

Purpose:

The trunk stability push-up tests the ability to stabilize the spine in an anterior and posterior plane during a closed-chain upper body movement. It assesses trunk stability in the sagittal plane while a symmetrical upper-extremity motion is performed.

Description:

The individual assumes a prone position with the feet together. The hands are then placed shoulder width apart at the appropriate position per the criteria. The knees are then fully extended and the ankles are dorsiflexed. The individual is asked to perform one push-up in this position. The body should be lifted as a unit. There should be no lag in the lumbar spine when performing this push-up. If the individual cannot perform a push-up in this position, the hands are lowered to the appropriate position per the criteria.

Clearing exam:

A clearing exam is performed at the end of the trunk stability push-up test. This movement is not scored; it is simply performed to observe a pain response. If pain is produced, a positive is recorded and a score of four is given to the entire push-up test. This clearing exam is necessary because back pain can sometimes go undetected by movement screening.

Tips for testing:

- Tell them to lift the body as a unit.
- Make sure original hand position is maintained and the hands do not slide down when they prepare to lift.
- Make sure their chest and stomach come off the floor at the same instance.
- When in doubt, score it low.
- The clearing test overrides the test score.

Verbal Instruction:

“Lay on your stomach with your hands positioned shoulder width apart (appropriate hand placement).”

- Males: Thumbs in line with the forehead
- Females: Thumbs in line with the chin.

“Raise your toes toward your shin and place them on the ground. Extend your knees off of the ground.”

“Maintain a rigid torso, raise yourself as one unit with no lag in the low back into a push-up position.”

Repeat 3 times if necessary.

Repeat instructions 1 through 3 with appropriate hand placement if necessary. (Score the subject)

Prone Press-up Verbal Instruction:

While lying on their stomach, instruct the subject to:

“Place both hands (palms down) beneath your shoulders.”

“Press your chest off of the floor by extending your elbows, arching your back as much as possible, keeping your hips in contact with the floor.”

Ask the subject: “Do you feel any pain?” (Score the subject)

Trunk Stability Push-Up Testing Procedure

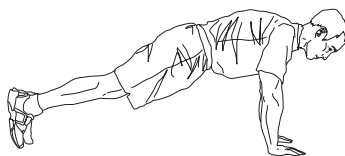
III

- Males perform 1 repetition with thumbs aligned with the top of the forehead
- Females perform 1 repetition with thumbs aligned with chin



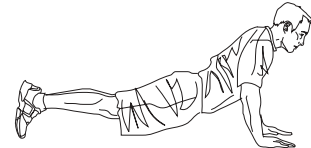
II

- Males perform 1 repetition with thumbs aligned with chin
- Females perform 1 repetition with thumbs aligned with clavicle

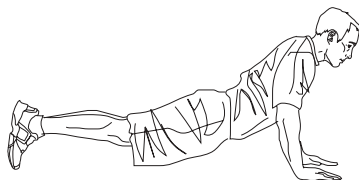


I

- Males are unable to perform 1 repetition with hands aligned with chin
- Females are unable to perform 1 repetition with thumbs aligned with clavicle



Spinal extension can be cleared by performing a press-up in the push-up position. If there is pain associated with this motion, a zero is given and a more thorough evaluation should be performed. If the individual does receive a positive score both scores should be documented for future reference.



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Trunk Stability Push-Up

The ability to perform the trunk stability push-up requires symmetric trunk stability in the sagittal plane during a symmetric upper extremity movement. Many functional activities in sport require the trunk stabilizers to transfer force symmetrically from the upper extremities to the lower extremities and vice versa. Movements such as rebounding in basketball, overhead blocking in volleyball, or pass blocking in football are common examples of this type of energy transfer. If the trunk does not have adequate stability during these activities, kinetic energy will be dispersed, leading to poor functional performance as well as increased potential for micro traumatic injury.

Poor performance during this test can be attributed simply to poor stability of the trunk stabilizers. When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using Kendall's test for upper and lower abdominal strength.

Trunk Stability Push-Up

Score of 3

Maintenance

- Coreboard Above 90 degree push-up
- Coreboard Push-up Hand Clap

Score of 2

Corrective Exercise

- Push-up Walkout
- Coreboard Push-up w/ leg curl
- Progress to normal push-up increase sets/reps

Score of 1

Corrective Exercise

- Incline Push-up progress to Score of 2(begin approx. 2ft. reduce 6in. during progression)

Rotary Stability

Purpose:

This test is a complex movement requiring proper neuromuscular coordination and energy transfer from one segment of the body to another through the torso. The rotary stability test assesses multi-plane trunk stability during a combined upper and lower extremity motion.

Description:

The individual assumes the starting position in quadruped with their shoulders and hips at 90 degrees relative to the torso. The knees are positioned at 90 degrees and the ankles should remain dorsiflexed. The board is then placed between the knees and hands so they are in contact with the board. The individual then flexes the shoulder and extends the same side hip and knee. The leg and hand are only raised enough to clear the floor by approximately 6 inches. The elbow, hand, and knee that are lifted should all remain in line with the board. The torso should also remain in the same plane as the board. The same shoulder is then extended and the knee flexed enough for the elbow and knee to touch. This is performed bilaterally for up to 3 repetitions. If a score of III is not attained, then the individual performs a diagonal pattern using the opposite shoulder and hip in the same manner as described above.

Clearing exam:

A clearing exam is performed at the end of the rotary stability test. This movement is not scored; it is simply performed to observe a pain response. If pain is produced, a positive is recorded and a score of zero is given to the entire rotary stability test. This clearing exam is necessary because back pain can sometimes go undetected by movement screening.

Tips for testing:

Scoring is identified by the upper extremity movement on the score sheet, but even if someone gets a three, both diagonal patterns must be performed and scored. The information should be noted on the score sheet.

- Make sure the knee and elbow remain over the board and the back remains flat.
- Make sure the elbow and knee touch during the flexion part of the movement.
- Provide cueing to let the individual know that he/she does not need to raise the hip and arm above 6 inches off of the floor.
- When in doubt, score low.

Verbal Instruction:

In a hands and knees position, instruct the subject to:

“Position your shoulders and hips at 90 degrees with your thumbs and knees touching the sides of the 2 x 6.”

“Lift both your right arm and leg off of the ground, pointing the arm forward and leg backward. Next, touch your right elbow and knee over the board. Again, return to the extended position. Perform this movement keeping your back as flat as possible.”

“Return to the starting position.” Repeat instructions 2 and 3 with the left side. If necessary, instruct the subject to use a diagonal pattern of right arm and left leg. Repeat diagonal pattern with left arm and right leg. (Score the subject)

Passive Spinal Flexion Verbal Instruction:

While in a hands and knee position, instruct the subject to:

“While maintaining contact with your hands on the floor, rock back to your heels.”

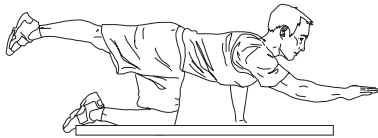
“Now, lower your chest to your knees, reaching your arms in front of you on the floor.”

Ask the subject “Do you feel any pain?” (Score the subject)

Rotary Stability Testing Procedure

III

- Performs 1 correct unilateral repetition while keeping spine parallel to board
- Knee and elbow touch in line over the board



II

- Performs 1 correct diagonal repetition while keeping spine parallel to board
- Knee and elbow touch in line over the board

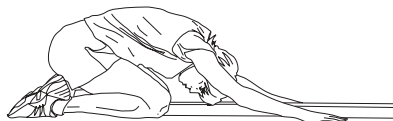


I

- Inability to perform diagonal repetitions



Spinal flexion can be cleared by first assuming a quadrupedal position and then rocking back and touching the buttocks to the heels and the chest to the highs. The hands should remain in front of the body reaching out as far as possible. If there is pain associated with this motion a zero is given. If the individual does receive a positive score both scores should be documented for future reference.



0 - The athlete will receive a score of zero if pain is associated with any portion of this test. A medical professional should perform a thorough evaluation of the painful area.

Clinical Implications For Rotary Stability

The ability to perform the rotary stability test requires asymmetric trunk stability in both sagittal and transverse planes during asymmetric upper and lower extremity movement. Many functional activities in sport require the trunk stabilizers to transfer force asymmetrically from the lower extremities to the upper extremities and vice versa. Running and exploding out of a down stance in football and track are common examples of this type of energy transfer. If the trunk does not have adequate stability during these activities, kinetic energy will be dispersed, leading to poor performance as well as increased potential for injury.

Poor performance during this test can be attributed simply to poor asymmetric stability of the trunk stabilizers. When an athlete achieves a score less than **III**, the limiting factor must be identified. Clinical documentation of these limitations can be obtained by using Kendall's test for upper and lower abdominal strength.

Rotary Stability

Score of 3

Maintenance

Coreboard Diagonals w/

Score of 2

Corrective Exercise

- Coreboard Progression
(Feet on board/ Hands on board)
- 90 deg. Hip Flexed Abd./Add.
w/o assistance(unilateral)

Score of 1

Partner Stability

- 90 deg. Hip Flexed Abd./Add.
w/assistance (unilateral)

Self Stability

- Rolling

SCORING INTERPRETATION AND RECORDING

When performing the Functional Movement Screen™ it is important to remember not to begin making decisions or try to interpret the weak link on a person before finishing the entire screen. The tester may find that two or three tests uncover a weak area, but without looking at all seven movements, another more important weakness may be overlooked. By performing the entire screen, you may further pinpoint an area of weakness that was uncovered in the first two or three tests performed. Once you have finished the entire screening process it is time to figure out where the individual's functional movement problems may be and from that make recommendations on improving them.

The first aspect of the screen that needs to be addressed is any tests on which the individual received a zero. If a person received a zero on one or more of the tests, they need to have that area evaluated by a sports medicine professional. It should be noted to the sports medicine professional what movement caused the pain. It is in the person's best interest not to continue with an exercise progression until this painful area has been evaluated. The individual should be re-tested once the painful area has been resolved because a zero on any aspect of this screen will greatly affect not only the overall score, but each individual test itself.

The next aspect of the interpretation would be to begin looking for any asymmetries involving a score of one. This would give the individual an overall score of one, but the person may have scored a three or two on one side of the body and a one on the other. A right or left side mobility or stability imbalance will increase the chances of the individual having a breakdown in their body, causing an injury. This is why it is important to begin looking at asymmetries first. If a person receives a score of one and there is an imbalance, certain mechanical laws are being compromised and the individual is likely to be causing micro-trauma to certain areas during activity. This imbalance will certainly lead to greater problems and is definitely affecting performance.

If the person does not have any asymmetries with a score of one, then bilateral scores of one are assessed. The individual who scores a one is exhibiting gross mobility or stability problems and is causing high degrees of stress on the body during activities. It is likely that a person with a score of one, either with or without an imbalance, will need hands-on therapeutic activities will be needed to overcome the mobility or stability weakness.

Once you have established that there are no scores of one, you then begin looking for imbalances with the score of two. The individual will have a score of two on one side and a three on the other. This person is certainly moving better than a person who has a one, but again, with an imbalance they are still breaking certain mechanical laws which will lead to micro-trauma. This imbalance should still take precedence because of the issue that imbalances in mobility and stability will lead to greater chance of injuries.

The next score that should be addressed is a person who has bilateral scores of two. This person does not exhibit adequate mobility and stability in order to perform fundamental movements, thereby causing breakdowns during higher levels of activity. This person can overcome their weakness quicker, but without

proper intervention they will likely continue to compensate for their lack of mobility or stability. This compensation will lead to a decrease in the quality of their fundamental movements and an increase in the micro-trauma that is occurring during activity. This individual must work on their weakness through therapeutic activities, but with a score of two, their deficits will not be as difficult to overcome.

The individual who has a perfect score and has adequate fundamental movement patterns throughout still must work to maintain their level of functional movement. This individual must continue to incorporate proper movement mechanics during activities in order to keep their fundamental movement patterns at an optimum. It is important to continue to screen an individual who scores perfectly on The Functional Movement Screen to monitor their workout regimen, making sure that they are maintaining proper movement mechanics.

If there is a person who scores below a three and does not have any imbalances, then it is up to the clinician to use their best judgment when interpreting the scores. It is recommended to take into account the goals and sport specific activities related to the individual being tested when determining the area in which to improve upon. It is also recommended that the Deep Squat be improved first, primarily because this movement requires adequate upper and lower body movement mechanics when done properly.

The goal of the Functional Movement Screen™ is to locate the body's weak link in a movement pattern and improve it through therapeutic exercise. It should be noted that the tester continues to re-test each individual periodically once they begin their therapeutic exercise regime. By doing this, the tester can check for improvements, making sure they are not losing the fundamental movements they have attained.

Interpretation of Sample Scores

Sample Score Sheet: Athlete/Client 1

TEST	RAW SC	FINAL	COMMENTS
DEEP SQUAT	2	2	
HURDLE ST. L	2	2	
HURDLE ST. R	2		
IN-LINE LUN. L	2		
IN-LINE LUN. R	3		
SHO. MOB. L	1	1	
SHO. MOB. R	3		
ACTIVE IMP. L	-		
ACTIVE IMP. R	-		
ASLR L	2	2	
ASLR R	3		
TSPU	2	2	
EXT	-		
ROT. STAB. L	2	2	
ROT. STAB. R	2		
FLX	-		
TOTAL		13	

Interpretation of the Functional Movement Screen Score of Athlete/Client 1

This athlete/client has an obvious imbalance in the shoulder, with a score of a 1 on the left side and a 3 on the right side. Typically what you will see is a person who has limited internal rotation on the involved side when you have an imbalance of this sort. In this scenario, the limited internal rotation would be on the right side. In this case it would be best to perform a more detailed shoulder examination to see where the limitations lie. Goniometric measurements can be taken to quantify the imbalance and flexibility and mobility therapeutic activity should be undertaken to improve range of motion and decrease the imbalance.

The In-line Lunge and Active Straight Leg Raise also have imbalances; however, these imbalances occur with a 2 and 3 which demonstrates that the limitations are not as severe as the shoulder. Once the shoulder mobility has improved, the screen should be performed again in order to see any improvements. An improvement in shoulder mobility will certainly affect the In-line Lunge score which may eliminate that imbalance. However, these imbalances can also be addressed initially with certain therapeutic activity focused on improving the lunging and leg raising movements.

There are certain areas that can be focused on when determining the reasoning for imbalances in the In-line Lunge and Active Straight Leg Raise. The person received a two on the Deep Squat which may mean that the individual may have a decrease in mobility in the ankle and a problem with the pelvic rhythm, causing poor hip mobility. This will most certainly carry over into an imbalance with the Active Straight Leg Raise and In-line Lunge. Knowing this the initial focus of the evaluation should focus on ankle mobility and abdominal and pelvic rhythm or coordination.

Interpretation of Sample Scores

Sample Score Sheet: Athlete/Client 2

TEST	RAW SC	FINAL	COMMENTS
HURDLE ST. L	2	2	
HURDLE ST. R	3	2	
IN-LINE LUN. L	2		
IN-LINE LUN. R	2	3	
SHO. MOB. L	3		
SHO. MOB. R	3		
ACTIVE IMP. L	-	2	
ACTIVE IMP. R	-		
ASLR L	2	3	
ASLR R	2		
TSPU	3	2	
EXT	-		
ROT. STAB. L	2		
ROT. STAB. R	2	17	
FLX	-		
TOTAL			

Interpretation of the Functional Movement Screen Score of Athlete/Client 2

This athlete/client scores a 17, which is a fairly high score; however, there is still an imbalance with this individual that may lead to future problems. This imbalance is where you should focus first when further evaluating the individual. The imbalance is obvious, but as you review the scores, you will see that the individual scores well on the Deep Squat and Trunk Stability Push-up but demonstrates problems with the Hurdle Step, In-line Lunge and Active Straight Leg Raise. This indicates a problem during asymmetric movements when the legs are in a scissored position. This type of position combines dynamic mobility and stability during activities. An inability to perform this movement may indicate a problem due to more dynamic mobility and stability problems which may be secondary to poor dynamic stability and proprioceptive ability in the trunk and/or poor dynamic mobility in the extremities. The evaluation should focus on this area in a dynamic scenario, looking for an imbalance which may become apparent. Single-leg stance, abdominal stability and lower extremity mobility should be addressed during the evaluation. This person, because of the high score, may be ready for higher-level therapeutic activities focusing on the asymmetrical dynamic problems.

Interpretation of Sample Scores

Sample Score Sheet: Athlete/Client 3

TEST	RAW SC	FINAL	COMMENTS
DEEP SQUAT	2	2	
HURDLE ST. L	2	2	
HURDLE ST. R	2		
IN-LINE LUN. L	2	2	
IN-LINE LUN. R	2		
SHO. MOB. L	2	2	
SHO. MOB. R	3		
ACTIVE IMP. L	-		
ACTIVE IMP. R	-		
ASLR L	3	2	
ASLR R	2		
TSPU	3	0	
EXT	+		
ROT. STAB. L	2	2	
ROT. STAB. R	3		
FLX	-		
TOTAL		12	

Interpretation of the Functional Movement Screen Score of Athlete/Client 3

The interpretation for athlete 3 is obvious, a thorough evaluation of the painful area must be determined. When a score of 0 is given on the Trunk Stability Push-up due to a painful prone press-up, it is typical for the lumbar spine to be the area of pathology. The sports medicine professional must rule out pathology in this region before proceeding with therapeutic activity. The other scores in the screen should not be overlooked; these scores may aid the sports medicine professional in the evaluation.

There are imbalances in the shoulder and active straight leg raise that must be addressed. An evaluation should be performed in these areas in order to prescribe therapeutic exercise to overcome the imbalances.

Interpretation of Sample Scores

Sample Score Sheet: Athlete

TEST	RAW SC	FINAL	COMMENTS
DEEP SQUAT	2	2	
HURDLE ST. L	2	2	
HURDLE ST. R	2		
IN-LINE LUN. L	2	2	
IN-LINE LUN. R	2		
SHO. MOB. L	2	2	
SHO. MOB. R	2		
ACTIVE IMP. L	-		
ACTIVE IMP. R	-		
ASLR L	2	2	
ASLR R	2		
TSPU	2	2	
EXT	-		
ROT. STAB. L	2	2	
ROT. STAB. R	2		
FLX	-		
TOTAL		14	

Interpretation of the Functional Movement Screen Score of Athlete/Client 4

Athlete/Client number 4 has a score of 14, with scores of two on all tests and no imbalances. In this scenario, there is nothing obvious showing the sports medicine professional where to begin their evaluation. In this case they must use his/her best judgment when determining what to improve upon. In most cases, the sports medicine professional may have made notes during the testing which may need to be addressed when making recommendations for improvement. The individual's sport specific movements should also be taken into consideration when determining which area to focus on. For example, it may be best to focus on improving the Hurdle Step for a sprinter because this type of fundamental movement is imperative during their sport. The In-Line Lunge or Shoulder Mobility may be the best place to begin for an overhead athlete such as a baseball player or tennis player. It is our recommendation that the Deep Squat score be rectified prior to improving other scores if nothing else is apparent.

We feel the deep squat should be focused on in this scenario because this movement requires upper and lower body mechanics to work together in order to fulfill the requirements of the movement pattern. The deep squat requires mobility of the lower extremities, shoulder, thoracic spine and proper muscular coordination between the trunk and hips. Since this test influences so many different areas of the body, it should also have an effect on other test scores as well. By improving the weak area in the deep squat--whether it is a mobility or coordination problem it should have a positive effect in other areas.

CORRECTIVE EXERCISE PHILOSOPHY

The exercises in this manual are in no way a complete representation of all the exercise techniques and programs that can help improve functional movement patterns. The authors, however, have offered some basic stretches, exercises and movement pattern drills to get you started in the right direction. Ultimately, the best stretch, exercise or movement pattern drill would be the one that changes the score on the Functional Movement Screen efficiently and effectively. This means that the exercise that changes function would be considered the most functional and appropriate exercise for that individual at that time.

The most important goal of the corrective exercise program is to focus on one movement pattern at a time. Always consider left and right asymmetries and adjust the ratio of left-and right-sided exercise accordingly. This means that if there is an imbalance between the right and left side of the body, greater focus will be placed on the area of greatest limitation(ex. 1 set on right and 3 sets on left). This is done to achieve balance and symmetry, and can be checked by re-screening. These exercises can be used as a warm-up to a normal exercise routine or supersets with other more strenuous exercises to make sure the movement pattern continues to improve. These exercises can also be utilized as an efficient cool-down. They in no way are designed to replace a workout. They only complement the existing program.

It is important to continue to re-check a poor movement pattern once you feel it has started to improve. This will allow you and the individual to change the exercise routine to focus on other, inefficient movements, or progress the routine to challenge the system further. This re-test will also allow you to check yourself in order to see if your exercise prescription is making an improvement in the individual's movement pattern.

It will be very beneficial to utilize the exercise flow sheets to assist you in your exercise prescription. The exercise progressions in this manual are just the basic exercises that focus on more specific problems in the movement patterns. The exercise progressions in the videos were designed to place more of a challenge on the system. The exercises in the video progress the exercises by incorporating more difficult movements that require higher-level proprioceptive and neuromuscular feedback to accomplish.

The Functional Movement Screen™ Exercise Progressions for Corrective Exercises for 7 Point Screen

Deep Squat Corrective Exercises-

Partner Stretch Prone Quad Stretch

Wall Sit

Dorsiflexion Stretch

Hurdle Step

Partner Prone Hip Flexor Stretch

Stride with Hip External Rotation

Stride Stretch with/without Spinal Rotation

In-line Lunge

Partner Thomas Test Stretch

Gastroc/Soleus Stretch

Latissimus Dorsi/External Rotation Stretch

Leg Lock Bridge

Shoulder Mobility

Partner Traction w/ Int/Ext Rotation

Wall Sit with Shoulder Press

Active Straight Leg Raise

Partner Straight Leg Raise

Single Leg Lowering Progression

Trunk Stability Push-Up

Incline Push-up

Push-up Walkout

Rotary Stability

Bilateral Hip Flexed Rotation Abd/Add.

Hip Flexed Torso Rotation

Rolling

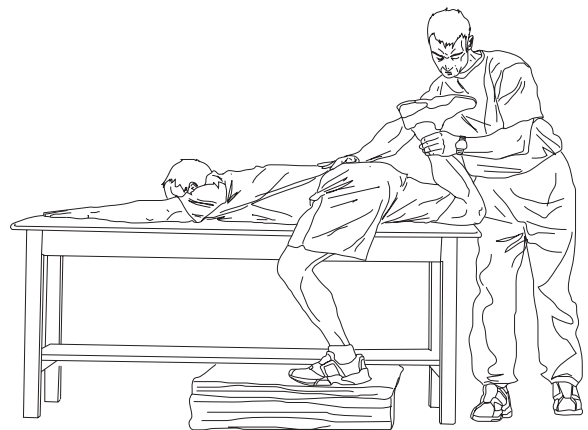
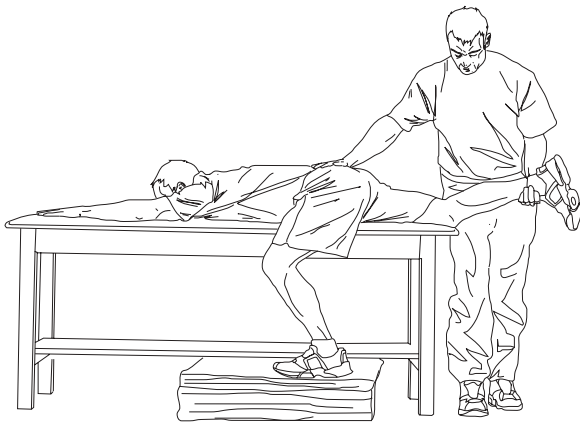
Deep Squat Corrective Exercise Progressions

Partner Stretch Prone Quadriceps Stretch

Starting Position- Lying prone with involved side on table and knee extended. The opposite foot is placed on the floor with the hip flexed in order to attain a neutral spine.

Execution at a Glance- The athlete actively flexes his/her knee until a slight stretch is felt in the quadriceps 5-7 times. The partner then places his/her hand on the anterior aspect of the lower leg passively flexing the knee until a stretch is felt. This is held 5-10 seconds. The athlete then extends the knee against slight resistance. This is repeated 3-5 times. Range of motion is increased with each repetition.

Safety Tips and Verbal Cueing- Maintain alignment with the lower extremity and torso. Take special note of right and left asymmetries, focusing on the weakness.



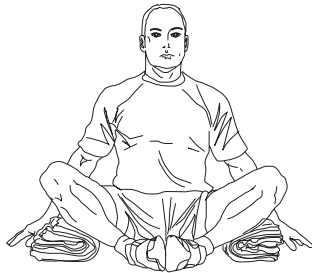
Self-Stretches

Wall Sit with Dorsiflexion

Starting Position- Seated with the Lumbar Spine/S-I joint flat against a wall. Flex, externally rotate the hips and flex the knees, bringing the feet toward the torso, placing the bottoms of the feet together and ankles dorsiflexed.

Execution at a Glance- The position is maintained for approximately 5-10 minutes; pillows can be placed under the thighs and knees.

Safety Tips and Verbal Cues- Begin slowly and increase time when the person feels comfortable with the activity. Utilize pillows under the thighs and knees to decrease pressure on the knees and hips. Take special note of right and left asymmetries, focusing on the weakness.

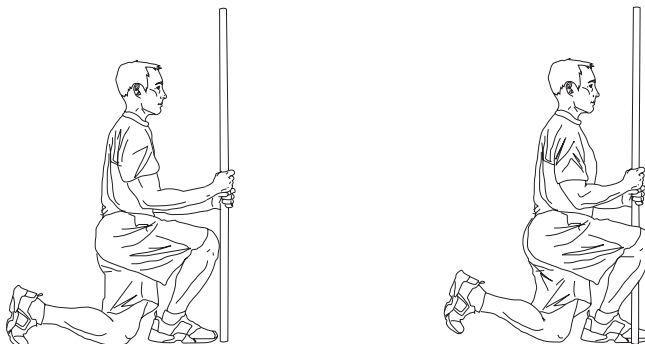


Kneeling Dorsiflexion

Starting Position- Athlete assumes a half-kneeling position with feet wider than mid-line. The front foot should be in rotated medially. The hands placed on the dowel with the low back flattened and abdominals drawn inward. The dowel is placed along the lateral aspect of the foot.

Execution at a Glance- Shift forward, taking the front knee over the foot, but in line with the second toe. The heel should remain down.

Safety Tips and Verbal Cues- The stretch may be felt in the front of the ankle or to the rear of the ankle above the heel. To increase the intensity, lessen the distance between the two feet. Keep the heel down and foot in-line. Maintain a tall and erect spine. Take special note of right and left asymmetries, focusing on the weakness.

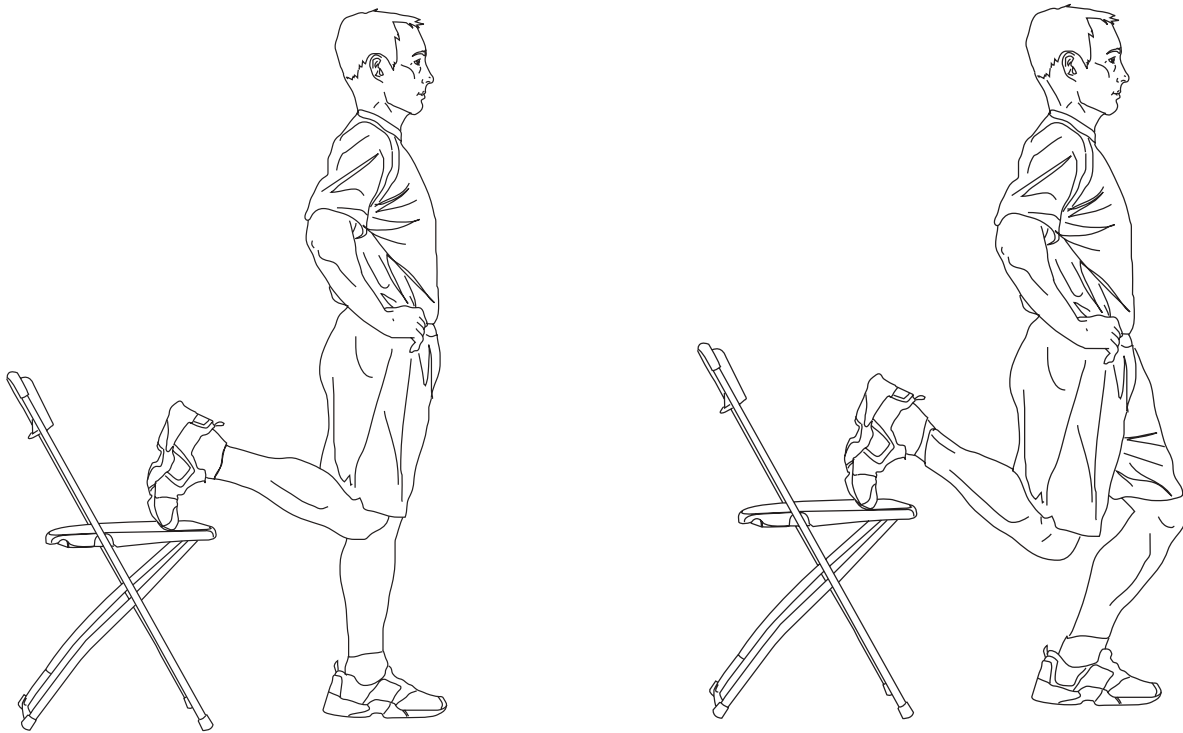


Standing Rectus Stretch

Starting Position- The athlete stands on one leg with the foot of the opposite leg resting on a bench or chair at approximately mid-thigh height so that the two thighs are side by side.

Execution at a Glance- Flatten the lower back by tilting the pelvis posterior. Flex the stance leg knee and lower to attain a stretch.

Safety Tips and Verbal Cues- Maintain an upright spine throughout the movement. Raise the height of the foot in order to increase the intensity of the stretch. Keep both thighs in line and adducted. Take special note of right and left asymmetries, focusing on the weakness.



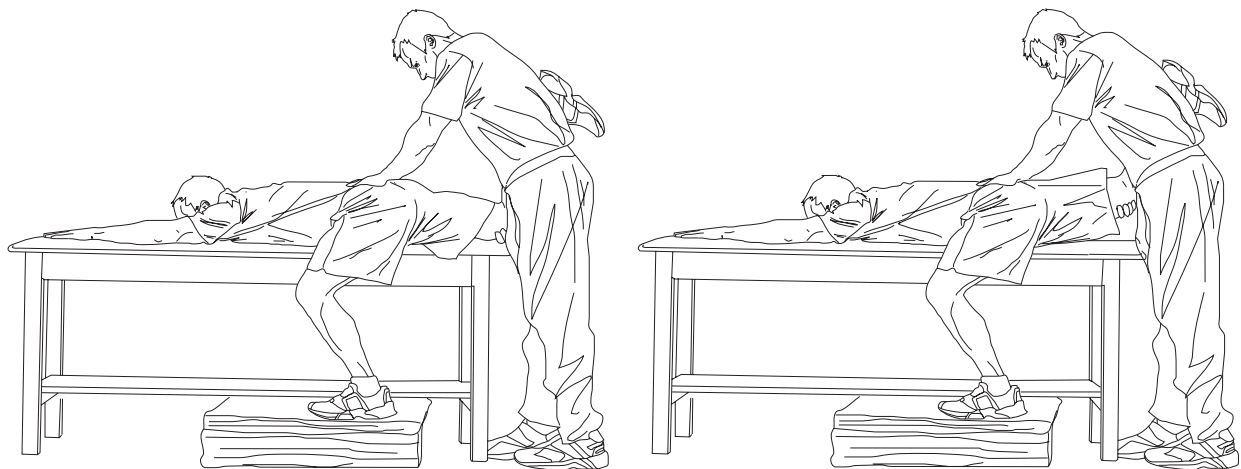
Hurdle Step Corrective Exercise Progressions

Partner Stretch Prone Hip Flexor Stretch

Starting Position- Lie prone with involved side on table and knee flexed to 90 degrees. The opposite foot is placed on the floor with the hip flexed to resemble maximal stride position. The partner places his/her hand under the involved side knee (between the table and knee). The other hand is placed on the sacrum of the athlete to stabilize the hips and lumbar spine.

Execution at a Glance- The athlete actively flexes the hip against a slight resistance of the partner's hand. This is repeated for 3-5 repetitions. The partner then extends the involved hip, passively holding it for a 5-10 second count. The athlete then actively holds the hip in extension and adduction for a 3-5 second count.

Safety Tips and Verbal Cues- Maintain alignment with the lower extremity and torso. Do not abduct hip during stretch and maintain neutral spine during stretch. Take special note of right and left asymmetries, focusing on the weakness.

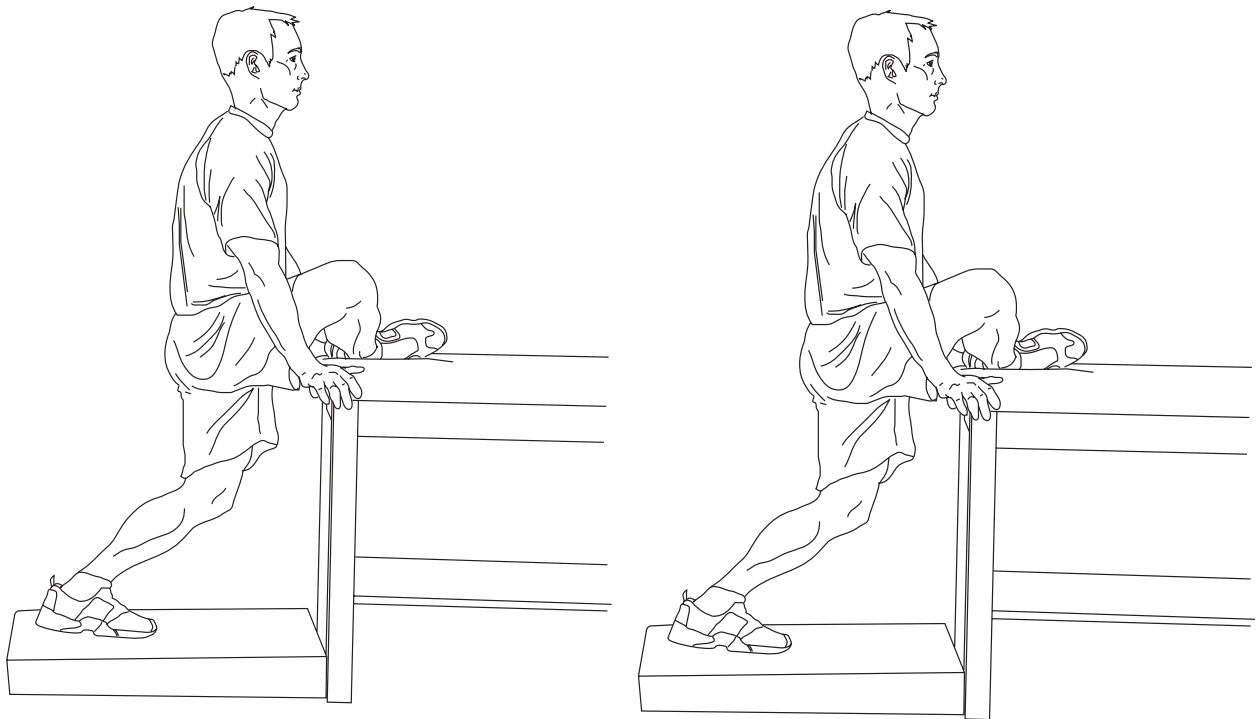


Self Stretches
Stride with Hip External Rotation

Starting Position- Standing with involved hip flexed and externally rotated, knee is flexed and lower leg is placed on a table (height is approx. mid-thigh or higher). The opposite extremity remains extended with the foot flat on the floor. The torso and spine should be in a neutral and erect posture.

Execution at a Glance- The athlete then flexes the stance knee, enough to feel a stretch in hip. This position is held 5-10 seconds. The spine should stay erect throughout the stretch. This is repeated 3-5 times.

Safety Tips and Verbal Cueing- A pillow can be placed under the thigh and knee of the flexed hip to decrease pressure on knee and hip. Maintain proper alignment with flexed hip, spine and torso. The flexed hip and knee should be perpendicular to the pelvis. An increased stretch is noted with greatedened adduction. Take special note of right and left asymmetries, focusing on the weakness.

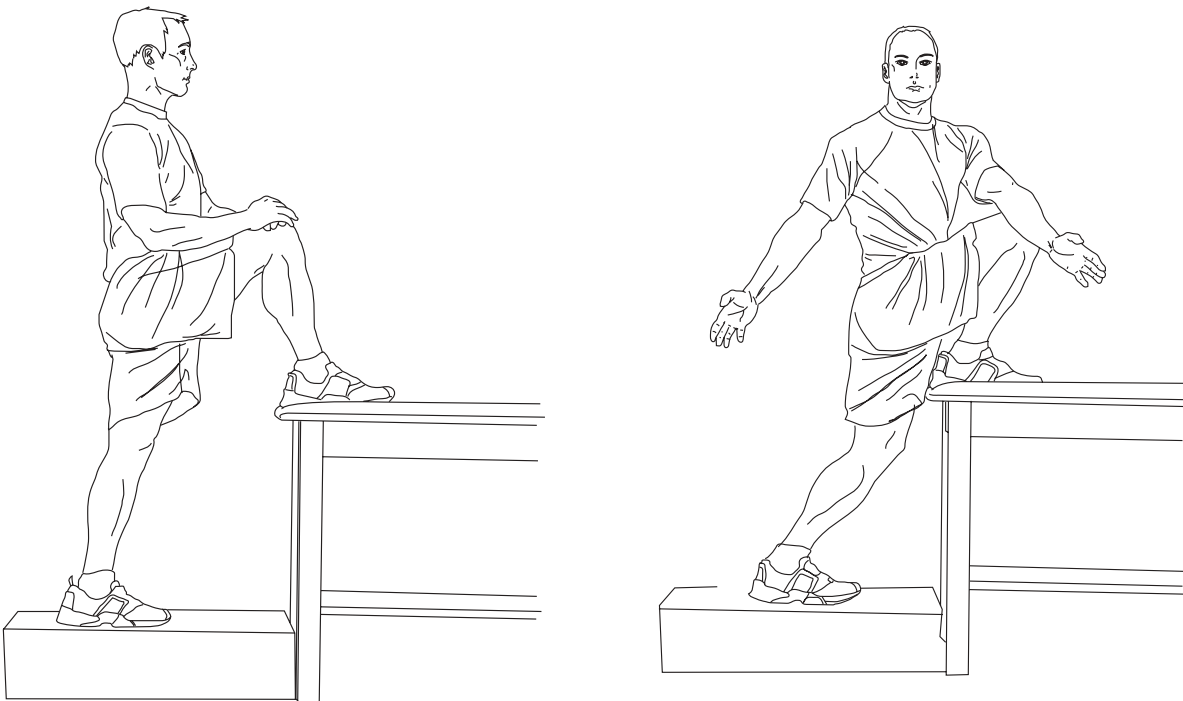


Stride with Spinal Rotation

Starting Position- Standing with the involved hip and knee flexed with the foot placed on the table. Maximal stride position should be assumed. The opposite leg should be extended at the hip and knee. The torso and spine should be in a neutral and erect posture.

Execution at a Glance- Lean toward table maintaining an erect spine slightly bend knee, and rotate spine toward flexed hip. Hold stretch for 5-10 seconds and repeat 3-5 times.

Safety Tips and Verbal Cueing- Maintain proper posture with hip, knee, spine and torso. Take special note of right and left asymmetries, focusing on the weakness. **Self Stretch**



In-Line Lunge Corrective Exercise Progressions

Partner Stretch Modified Thomas Test Stretch

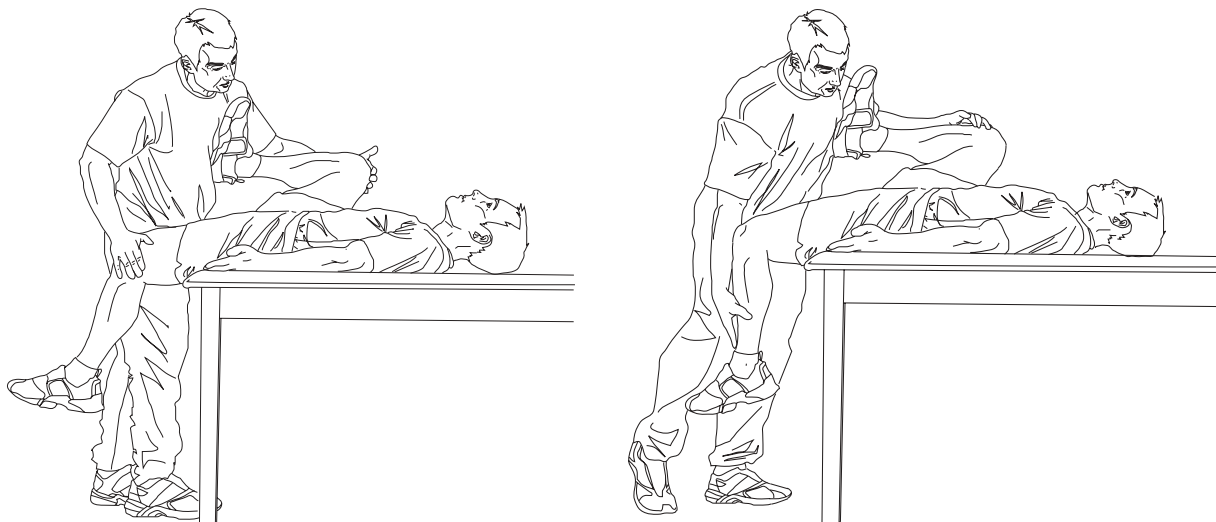
Starting Position- Athlete lies supine on the edge of a table with flexed hips and knees to chest. Involved leg is lowered off edge of table while maintaining flat lumbar spine with opposite hip remaining flexed passively (athlete or partner holding thigh).

Execution at a Glance- Hip Flexor- Partner presses with his/her hand on anterior thigh downward toward the table. The opposite hand is placed on the athlete's foot in order to assist the athlete in maintaining a flat lumbar spine. The partner presses the hip into extension for 5-7 seconds. Then the athlete flexes the hip against the slight resistance of the partner's hand for 3-5 seconds.

Quadriceps- Partner pushes, with his/her hand on the anterior lower leg, the knee into flexion while the athlete continues to maintain a flat lumbar spine. The partner holds the stretch for 5-7 seconds and then the athlete extends the knee against slight resistance for 3-5 seconds.

These two stretches can be done simultaneously. This is accomplished with the partner using his/her lower leg against the lower leg of the athlete for the quadriceps stretch and using his/her hand against the anterior thigh for the hip flexor stretch. The stretches should be repeated 3-5 times.

Safety Tips and Verbal Cueing- Make sure the athlete maintains a flat lumbar spine throughout the exercise. Make sure partner uses proper body positioning in order to make execution of stretch easier. Take special note of right and left asymmetries, focusing on the weakness.

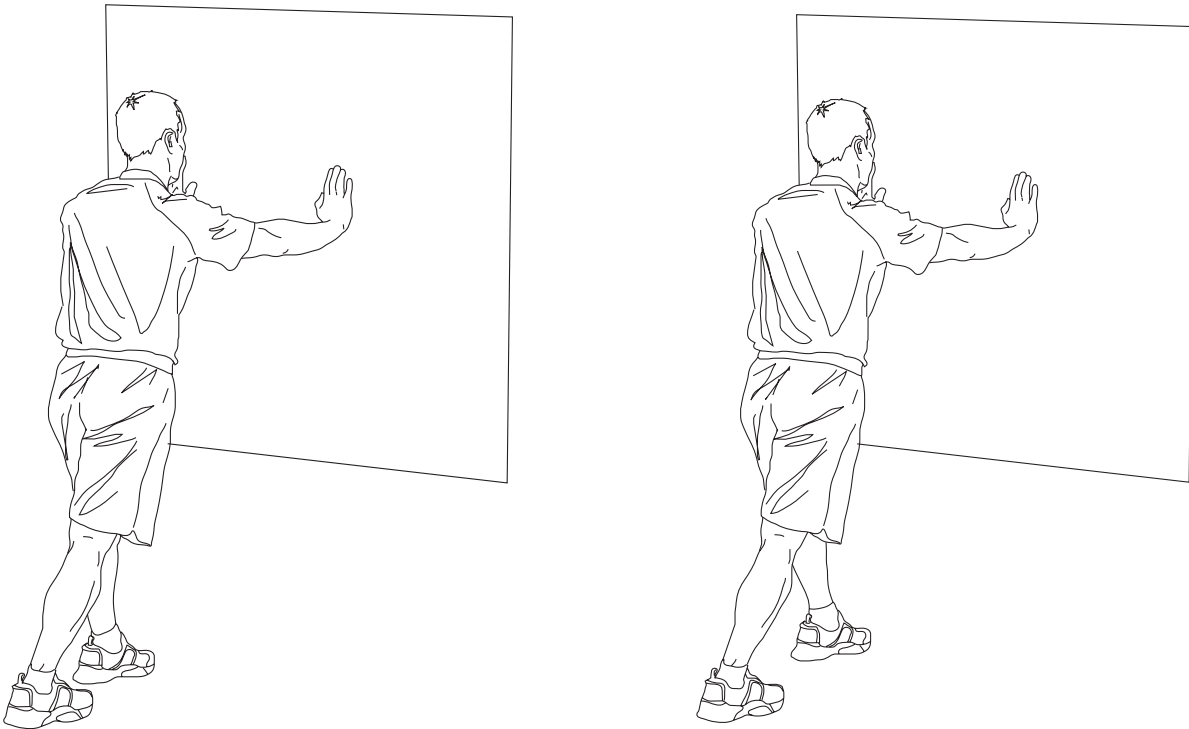


Gastroc/Soleus Stretch

Starting Position- Athlete should stand with the support of a wall with the involved leg behind. The front foot should cross over the midline of the body so that the back leg is slightly toward the opposite side.

Execution at a Glance- Rotate the foot of the back leg inward (medially). The back heel should remain in contact with the floor. Lean forward and bend the involved (back leg) to target the soleus. Keep the back leg straight to target the gastroc. The stretch is held for 5-7 seconds and is repeated bilaterally for 3-5 repetitions.

Safety Tips and Verbal Cueing- The athlete must maintain heel contact during the stretch, and the foot should maintain a slight medial rotation. To increase the intensity of the stretch, a slight elevation may be added to the forefoot. Take special note of right and left asymmetries, focusing on the weakness.

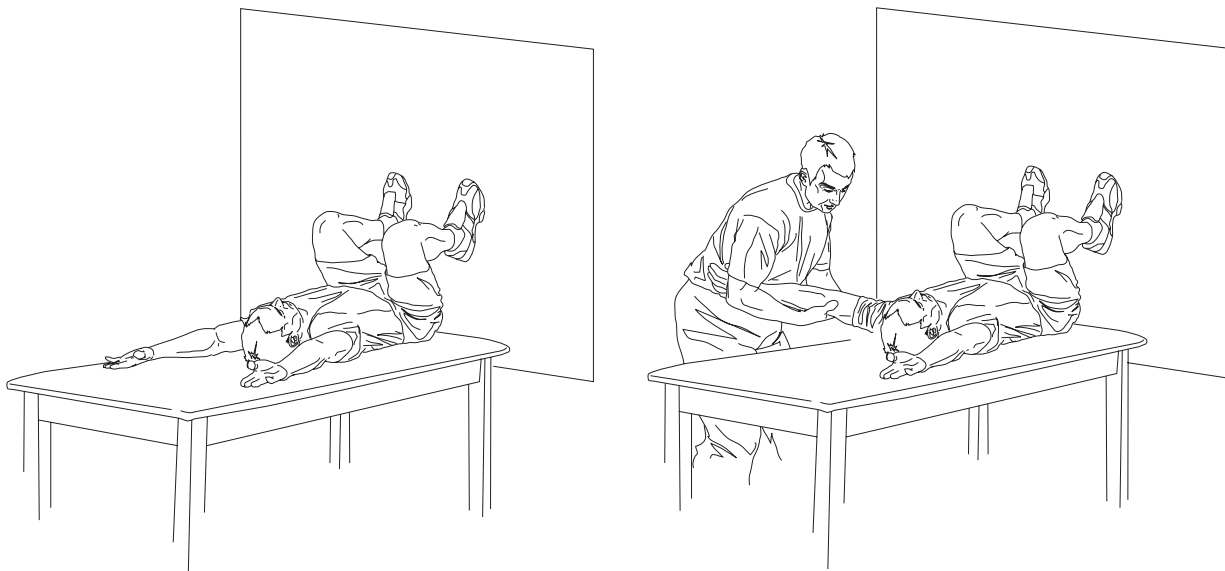


Partner Stretch Latissmus Dorsi/External Rotation Stretch

Starting Position- Athlete lies supine with hips flexed, knees flexed and feet resting on a wall or bench. The hips should be positioned as close to wall as possible. The shoulders at 90 degrees of abduction with elbows extended.

Execution at a Glance- Partner grasps wrist and elbow of arm being stretched and applies slight traction. The partner then externally rotates the shoulder while keeping the slight traction. The stretch is held for 5-7 seconds and is repeated bilaterally for 3-5 repetitions.

Safety Tips and Verbal Cueing- The athlete must maintain a flat upper back during stretch and traction should be continued throughout the activity. The hips should be flexed greater than 90 degrees. Take special note of right and left asymmetries, focusing on the weakness.

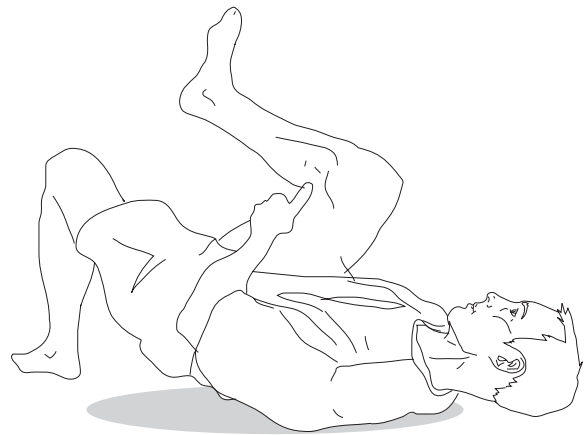


Leg Lock Bridge

Starting Position- Begin by lying supine with one leg flexed at the hip, and hold one thigh to chest for passive lock, the thigh should maintain contact with the chest throughout movement. The opposite foot is placed on the ground in-line with the center of the body with the knee flexed. This foot position should be maintained throughout movement.

Execution at a glance- The athlete should push down with the foot on the floor and extend the hip in order to bring the hips off the ground into a bridge position. The height of the bridge should be limited to where the flexed hip and thigh remain against the chest and the extended hip and thigh remain in an in-line position. This should be performed 3-5 sets at 10-15 repetitions, any asymmetries should be addressed accordingly with sets and reps.

Safety Tips and Verbal Cueing- A ball or pillow can be placed between the thigh and chest of the flexed hip in order to provide feedback during the execution of the exercise to maintain hip flexion and passive locking. The foot, knee and thigh of the extended hip must also remain in an in-line position. If the athlete is having hamstring cramping then the foot can be raised onto a step, coreboard or platform to increase hip flexion starting position. Take special note of right and left side asymmetries and address them appropriately with sets and reps.



Shoulder Mobility Corrective Exercise Progressions

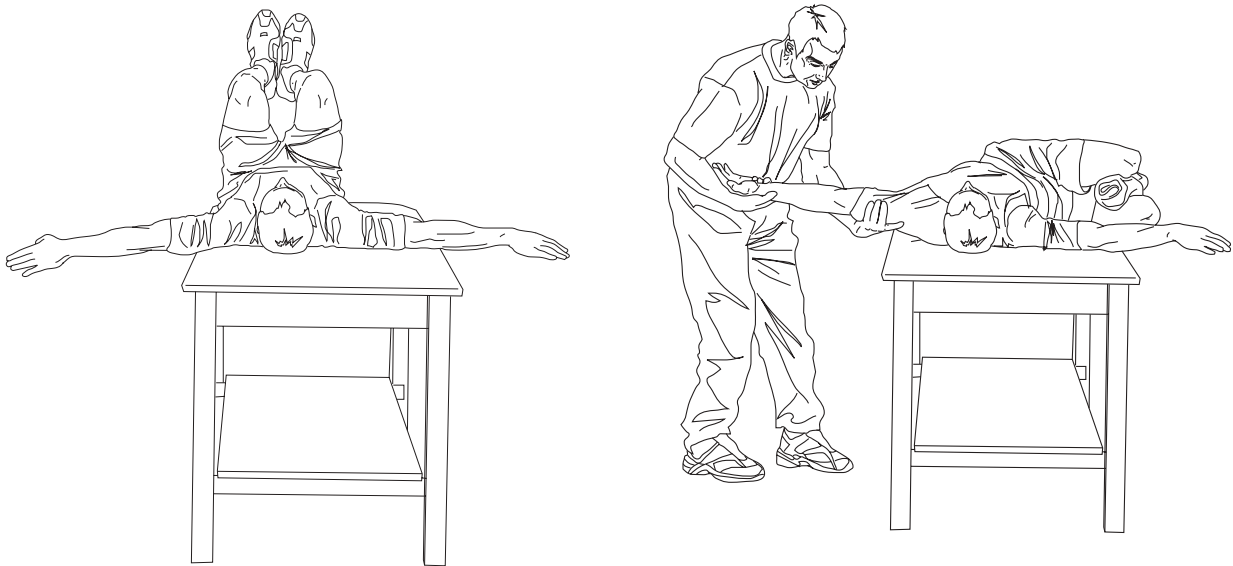
Partner Stretch

Trunk Rotation with Shoulder Internal/External

Starting Position- Athlete lies supine with hips flexed and knees flexed and shoulders at 90 degrees of abduction with elbows extended.

Execution at a Glance- Partner grasps wrist and elbow of arm being stretched and applies slight traction. The athlete then rotates lower body to the opposite side while maintaining a flat upper back. The hand to which the legs are rotated should be palm down. The partner then internally and externally rotates the shoulder while keeping the slight traction. The stretch is held in each direction for 5-7 seconds and is repeated bilaterally for 3-5 repetitions.

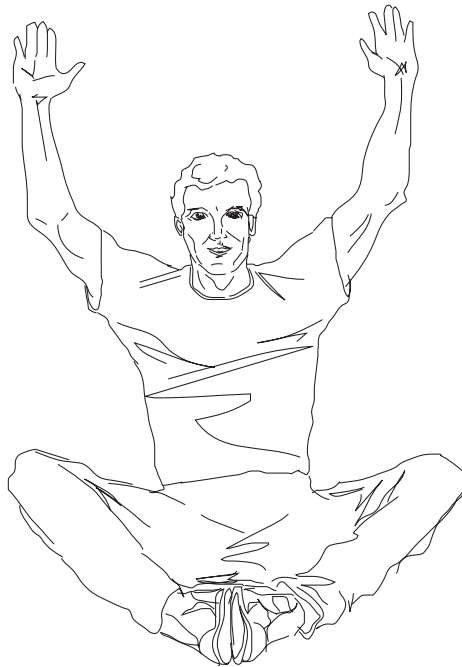
Safety Tips and Verbal Cueing- The athlete must maintain a flat upper back during the stretch and traction should be continued throughout the activity. The hips should be flexed greater than 90 degrees throughout the rotation of the legs. Take special note of right and left asymmetries, focusing on the weakness.



Wall Sit with Shoulder Press

Purpose- Hip mobility, strength and mobility of upper extremity, core stability.

Exercise description- Sit on floor, with back against the wall and soles of feet together, pulled towards body. Hold arms out to side against the wall, with elbows flexed to 90 degrees. Place back of hands flat against wall or as close to wall as possible. Press hands upward towards ceiling. Press knees towards floor at the same time as raising arms up over head. Perform the pressing as far as possible while keeping the hands against the wall, or as close to the wall as possible.



Active Straight Leg Raise Corrective Exercise Progressions

Partner Stretch Straight Leg Raise

Starting Position- Athlete lies supine with knees and hips extended, ankles dorsiflexed and toes pointing up.

Execution at a glance- Partner assists the athlete in flexing one hip while maintaining knee extension and ankle dorsiflexion. The hip is flexed until a stretch is felt. The stretch is held for 5-7 seconds. The athlete then presses into the partner by extending the hip for 3-5 seconds. The athlete should relax and then the partner increases the stretch slightly. Repeat 3-5 times.

Safety Tips and Verbal Cueing- Make sure the athlete maintains proper position. The leg that remains in extension must remain in a neutral position, without external rotation at the hip. The knee must also maintain contact with the table/floor. Take special note of right and left asymmetries, focusing on the weakness.

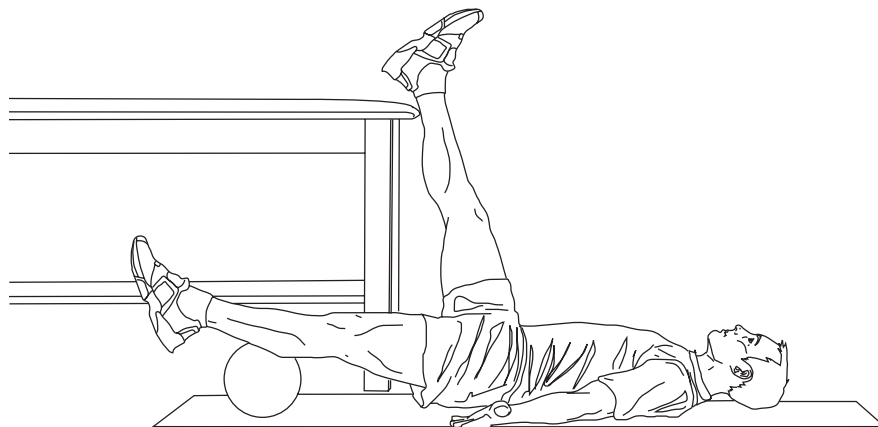
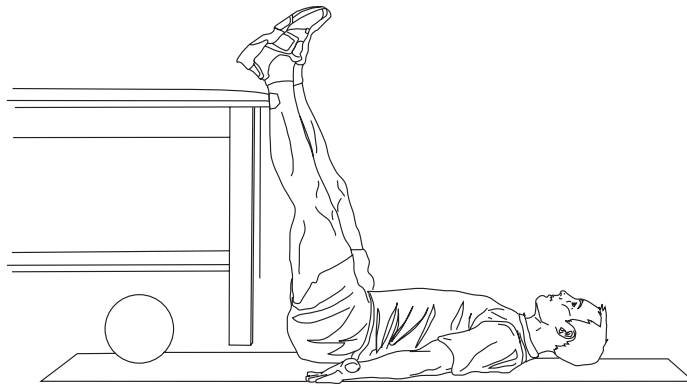


Single Leg Lowering 1

Starting Position- Begin lying supine with legs in a doorway, flex both hips and extend knees. Place one foot on wall with hip flexed and knee extended for slight stretch. The opposite hip is flexed with the knee extended for a slight stretch. Your hands should be placed with palms up by your side and your head flat.

Execution at a glance- Begin by pointing toes of the moving leg and reaching out toward the ceiling. Lower the leg to floor/ground maintaining flat lumbar spine, place a bolster under the foot if the athlete has difficulty lowering the leg to the floor. (Progress by removing bolster) Perform movement 5-10 times bilateral for 3-5 sets.

Safety Tips and Verbal Cueing- Maintain flat lumbar spine and keep toes pointed and reaching with leg. Keep palms facing upward and head flat. Utilize bolster in order to perform exercise correctly. Take special note of right and left asymmetries, focusing on the weakness. Take special note of right and left asymmetries, focusing on the weakness.



Single Leg Lowering 2

Starting Position- Begin lying supine, flex both hips and extend knees until a slight stretch is felt. Your hands should be placed with palms up by your side and your head flat.

Execution at a glance- Begin with the toes pointed, reaching out toward the ceiling. Lower one leg to the floor/ground maintaining flat lumbar spine, place a bolster under the foot if the athlete has difficulty lowering leg to floor (progress by removing bolster). Perform movement 5-10 times bilateral for 3-5 sets.

Safety Tips and Verbal Cueing- Maintain a flat lumbar spine and keep the toes pointed. Keep palms facing upward and head flat. Utilize bolster in order to perform exercise correctly. Take special note of right and left asymmetries, focusing on the weakness.



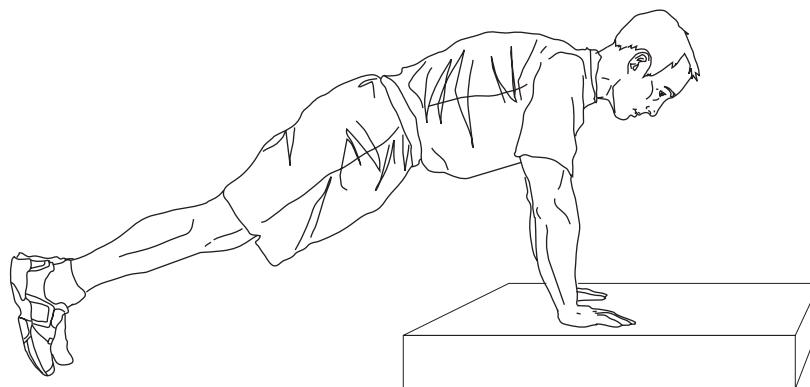
Trunk Stability Push-Up Corrective Exercise Progressions

Incline Push-up Progression

Starting Position- Begin by placing hands on incline(box, wall, table, etc.) height is dependent upon ability to perform push-up properly. The lower the incline the more difficult to perform exercise. You should progress by lowering the incline until you are performing the push-up on the floor.

Execution at a glance- Perform a push-up from this position, flexing elbows and extending shoulders. Press upward to start position and repeat. Perform 10-15 repetitions for 3-5 sets.

Safety Tips and Verbal Cueing- Maintain a flat or neutral lumbar spine position. Varying foot position may increase or decrease difficulty. Take special note of right and left asymmetries, focusing on the weakness.

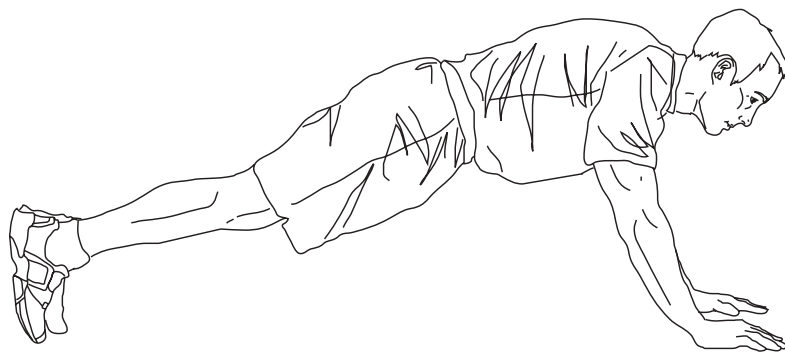
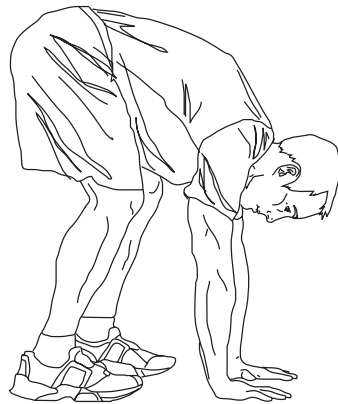


Push-up Walkout

Starting Position- Begin standing with feet together and hands by your side.

Execution at a glance- Bend over and touch floor with hands. The knees can flex slightly. Walk hands out in front of body maintaining a flat lumbar spine. Walk hands out as far as possible without losing neutral lumbar spine. Walk hands back towards body and stand. Perform 5-15 repetitions for 3-5 sets.

Safety Tips and Verbal Cueing- Maintain flat lumbar spine without hyperextension. Do not walk out too far; continue to keep proper form. Begin with short distance and work to farther distance. Take special note of right and left asymmetries, focusing on the weakness.



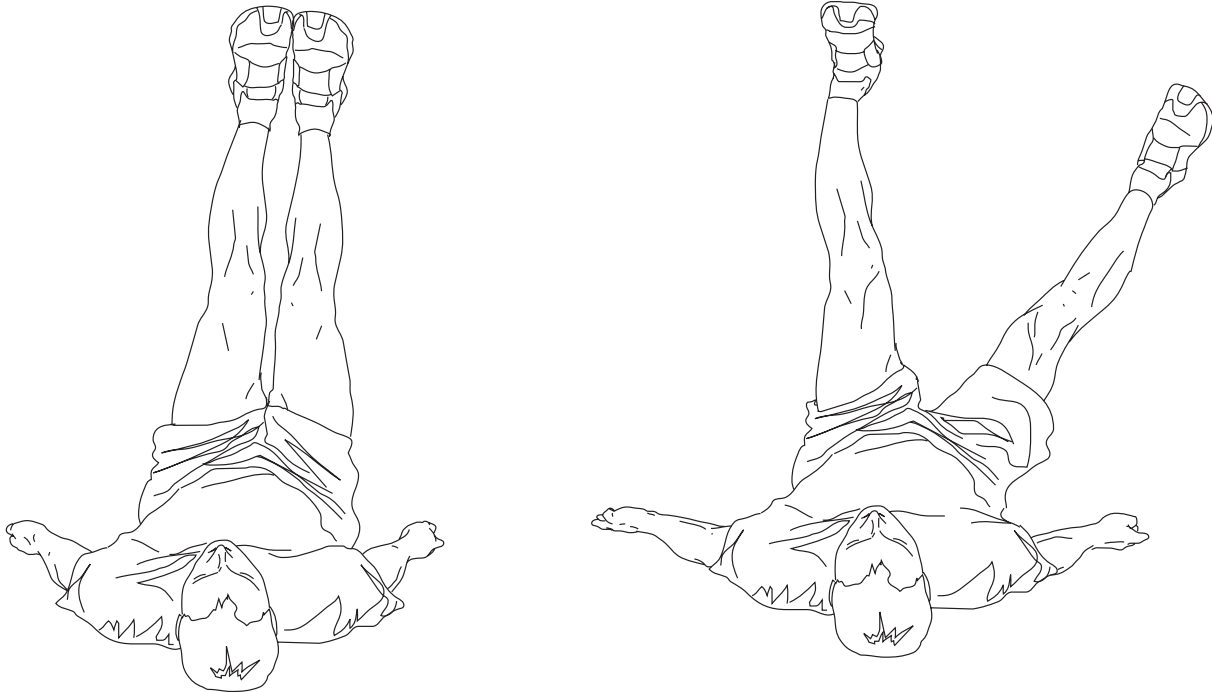
Rotary Stability Corrective Exercise Progressions

Bilateral Hip flexed rotation

Starting Position- Begin lying supine with hips flexed, in order to attain a flat lumbar spine. Extend knees and point toes with feet together. The hands should be placed on the floor with palms up and shoulders should be abducted to 90 degrees and elbows extended.

Execution at a glance- Keep one leg in starting position and abduct one leg in order to move hips. Once hips can move independently, move them together. The pelvis should continue to remain flat. Perform 5-15 repetitions for 3-5 sets.

Safety Tips and Verbal Cueing- The non-moving foot should remain stable and pointing straight during activity. The lumbar spine should remain flat with the posterior superior iliac spine maintaining contact with the floor. Make sure to begin with small circles and progress without compromising position and stability. The movement should be slow and controlled. Take special note of right and left asymmetries, focusing on the weakness.

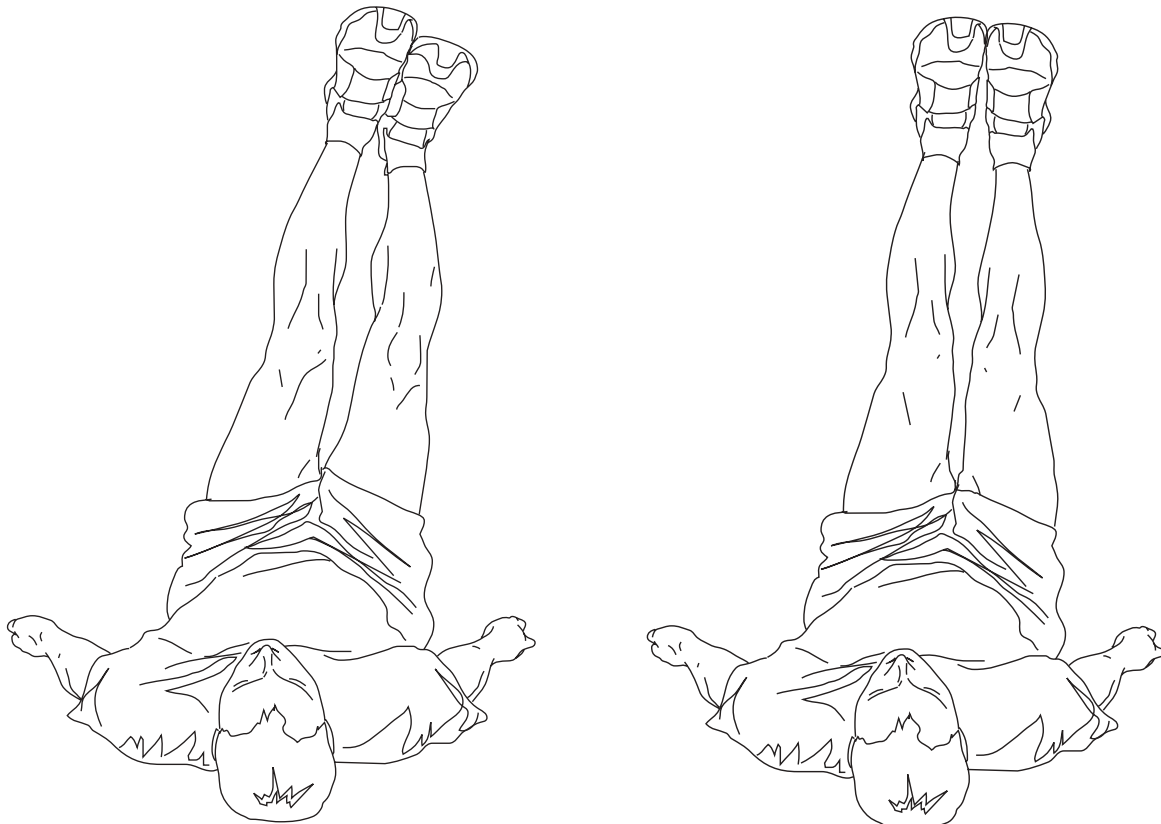


Hip flexed torso rotation

Starting Position- Begin lying supine with hips flexed, in order to attain a flat lumbar spine. Extend knees and point toes with feet together. The hands should be placed on the floor palms up and shoulders should be abducted to 90 degrees and elbows extended.

Execution at a glance- Keeping feet together, in clockwise and counterclockwise motion, begin rotating hips and pelvis left and right while keeping shoulders flat. Make an arc of movement as large as possible with no upper body movement. Perform 5-15 repetitions for 3-5 sets.

Safety Tips and Verbal Cueing- The hips should be flexed at 90° throughout, and lower only as far as you can control. Take special note of right and left asymmetries, focusing on the weakness.

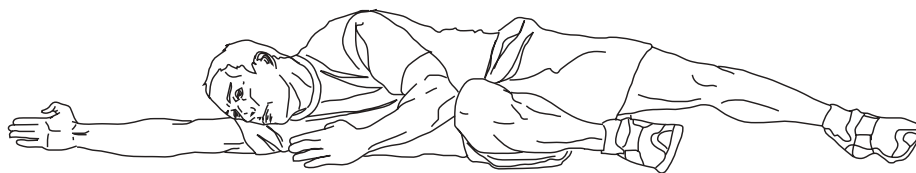


Rolling

Starting Position- Begin lying supine with knees extended and feet dorsi-flexed, toes pointing upward. The arms should be extended and reaching overhead.

Execution at a glance- Perform abdominal draw. Flex one hip and extend the shoulder opposite of it in an attempt to touch the knee and elbow. The opposite hip and knee should remain in extension. Begin to roll to the side of the flexed hip and knee maintaining close proximity with the knee and elbow. Roll to the side while supporting the head on the opposite, flexed shoulder. Perform 5-15 repetitions for 3-5 sets.

Safety Tips and Verbal Cueing- The non-moving leg should remain extended during activity. Close proximity of the moving limbs should be reinforced. Take special note of right and left asymmetries, focusing on the weakness.



CONCLUSION

This training system takes a slightly different approach in the fact that it focuses on assessing and improving the body's imbalance or weakness by first assessing movement patterns. The Functional Movement Screen was designed to assist you in determining the source of an individual's movement problems. The body's movement inefficiencies underlie strength, endurance, coordination, speed, agility and power problems. The exercise progressions were developed to improve the specific fundamental movement pattern. If this can be accomplished and the body can begin to move more efficiently, then the performance of the individual will improve.

This system has the potential to be proactive in injury prevention and performance improvement. Our goal is to gather information and continue research on this system. In order to accomplish this goal and to continue to improve this system, we seek feedback from professionals such as yourself. Through continued research and data collection, we can work to refine this system, and develop new, more creative ways of improving performance and preventing the body's breakdown.

APPENDIX A:

References/Publications

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- Cook, G. *Baseline Sports-Fitness Testing*. In: B. Foran, eds. *High Performance Sports Conditioning*. Champaign, IL: Human Kinetics Inc; 2001: 19-47.
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- Cook G, Fields K. *Functional Training for the Torso*. *Strength & Conditioning*. 19:2;14-19,1997.
- Fields K, Cook G. *Considering All Angles*. *Train Cond.* 1997.
- Voight, M.L. & Cook, G. *Clinical Application of Closed Kinetic Chain Exercise*. *Journal of Sport Rehabilitation*. 1996:5,25-44.

APPENDIX B:

Scoring Sheets

NAME: _____ AGE: _____ HEIGHT: _____

WEIGHT: _____ MALE / FEMALE PHONE: _____

ADDRESS: _____

SPORT/ACTIVITY REFERENCE: _____

HAND DOMINANCE: RIGHT LEFT LEG DOMINANCE: RIGHT LEFT

TEST	RAW SC	FINAL	COMMENTS
DEEP SQUAT			
HURDLE ST. L			
HURDLE ST. R			
IN-LINE LUN. L			
IN-LINE LUN. R			
SHO. MOB. L			
SHO. MOB. R			
ACTIVE IMP. L			
ACTIVE IMP. R			
ASLR L			
ASLR R			
TSPU			
EXT			
ROT. STAB. L			
ROT. STAB. R			
FLX			
TOTAL			

APPENDIX C:

Functional Movement Screen Corrective Exercise Program

Corrective Exercise or Stretch	Sets and/or Reps	Days per Week	Week 1 (check)	Week 2 (check)	Week 3 (check)	Week 4 (check)

Perform the listed exercises or stretches recommendations over the 4-week training period.

APPENDIX D:

Reevaluate the screens every 4 weeks.

Equipment order information

For other Products and ordering please visit our website: www.functionalmovement.com

Gray's Functional Movement Screening and Exercise Progressions for the Personal Trainer: 3 DVD w/ CDRom or 5 Video set w/ CDRom:

These DVDs and CD-ROM feature Gray's lecture on the basic principles of RNT, proprioception and movement screening. Gray has an informal interview with Gin Miller on the most frequently asked questions about his work taken from a poll of personal trainers and exercise professionals.

- Gray demonstrates how to first assess movement patterns and then use corrective exercise progressions to gain quick and effective results right on camera.
- Develop a command of the human body and offer your clients quick solutions to nagging problems that no one else is recognizing.

Gray's Reactive Neuromuscular Training Video Set

These DVDs feature Gray's lecture on the basic principles of RNT, proprioception and movement screening with Gin Miller (Reebok Master Trainer). Gray then has an informal interview with Gin on the most frequently asked questions about his work taken from a poll of personal trainers and exercise professionals.

Functional Movement Progressions Video Set

- Throughout this 3-tape set, Gin Miller (Reebok Master Trainer and inventor of STEP) questions Cook as he demonstrates how to first assess movement patterns and then use corrective exercise progressions to gain quick and effective results right on camera.
- These videos are unrehearsed and shot in one take as Cook progresses two individuals through corrective exercises.
- Learn how to get impressive results in little time.
- Develop a command of the human body and offer your clients quick solutions to nagging problems that no one else is recognizing.
- Use the Functional Movement Progressions 3-tape set as an upgrade for the personal trainer who appreciates what Cook has accomplished in "Athletic Body in Balance".

The Functional Movement Screen and Corrective Exercises Video Set

The video series features Gray Cook's Functional Movement Screen (Testing System). The information presents a paradigm shift in the way movement is tested and trained. The first video demonstrates and discusses the functional movement screen and exercise progression for each movement pattern. The second tape reviews advanced core training and specific medicine ball training. This educational Set contains two videos, CD-ROM with an instructional Training Manual.

The Functional Movement Screen and Corrective Exercises Poster Set

This informational 5 Poster Set and CD-ROM provides an easy reference to the Gray Cook Functional Movement Screen and Treatment Philosophy. This poster set is the perfect companion to the Core Training System.

- Wall Chart provides instructions for Functional Movement Screening
- Visual Reference for Trigger Point Management and Stretching for each movement screen pattern
- Easy to follow reference for Corrective Exercise Progressions
- Drills for both individual and partner techniques
- Each picture provides quick reference for athlete/client and patient
- Provides corrective exercise progressions from lower level partner stretches to higher level performance enhancement techniques
- CD-ROM contains presentations for each poster, which provides scientific background information for each movement technique
- Complements and provides the most up to date information based on Gray Cook's Functional Movement Screen and Corrective Exercise Techniques