Functional Movement Screen (FMS)

Aurora BayCare Medical Center
3rd Annual Sports Medicine Symposium
Friday, September 10th, 2010
3:15 pm – 5:00 pm

General Course Outline

• FMS Lecture
• FMS Demonstration
• FMS Lab
• FMS Group Scoring

Staff Introductions

• Annie Schmidt, PT, CSCS
• Lori Ann Keisic, PT, TPI CGFI
Course Objectives

• To educate the participants on the principles of the FMS
• To educate the participants on the 7 tests of the FMS
• To successfully administer and score the FMS
• To interpret the FMS score
• To recognize right and left imbalances and compensations
• To understand where to find examples of the corrective exercises

Section I: FMS Lecture

• FMS=Functional Movement Screen

FMS History

• The FMS was developed by Gray Cook, PT and Lee Burton, PhD, LAT
• The FMS is a screening tool that uses little equipment and takes little time.
• There are 7 screens.
• The each screening test in the FMS is scored a 3, 2, 1, or 0.
• FMS not an evaluation, but simply a screening tool for further investigation.
How the FMS Works

• The FMS is a ranking and grading system that documents movement patterns that are key to normal function. By screening these patterns, the FMS identifies functional limitations and asymmetries.
• The FMS generates an objective score, which is used to target problems and track progress. This scoring system is directly linked to the most beneficial corrective exercises to restore mechanically sound movement patterns.
• As health care professionals, we can track progress and identify those exercises that will be most effective to restore proper movement and build strength in each individual.

Purpose of the FMS

• As we age, we lose the ability to perform basic functional movements that are inherent from birth.
• We were able to squat, lunge, step over objects, and roll from a very early age.
• Everyone obtains these motor skills as they age from birth.
• They develop on a very specific timeline.

• Over time, we develop significant limitations and right and left imbalances.
• These cannot be overlooked.
• The body must be free of restrictions and free of imbalances prior to training, conditioning, and competition.
Purpose of the FMS

- Significant limitations in left-right imbalances drastically distort motor learning.
- Limitations rob the body of efficiency and are often hidden by compensations.
- We substitute with other movement patterns.

Purpose of the FMS

- Many athletes are able to perform at a high level even though they are inefficient in their fundamental movements.
- These athletes create poor movement patterns, train around a pre-existing problem or simply do not train their weakness.
- The fundamental movement patterns must be correct before the athlete is able to improve sport specific skills.
- The foundation must be solid to build higher level movement skills.

Purpose of the FMS

- We must find the weakest link to avoid compensations.
- The FMS identifies the weakest link and uses corrective exercises to alleviate it.
- With improved movement efficiency, performance will be enhanced and injury potential will decrease.
The FMS philosophy is built on the Performance Pyramid.

- The bottom and largest section is the foundation. It is labeled Functional Movement.
- The middle section is Functional Performance.
- The top and smallest section is Functional Skill.

- The bottom section addresses full range of motion in the entire body.
- It represents the ability to move through fundamental patterns.
- The athlete demonstrates good body control.
- The athlete has movement awareness through numerous positions.
Middle of the Pyramid--Functional Performance

• The athlete has good general power production.
• The athlete uses well-coordinated linking movements or kinetic linking.
• The effort wastes no extra movement and optimal efficiency is present.
• The athlete can learn other kinetic linking movements and power production movements with appropriate time, practice and analysis.

Top of the Pyramid--Functional Skill

• This addresses the optimal amount of sports-specific or activity-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.

The Optimal Performance Pyramid

• This pyramid shows the athlete possesses the functional movements that can handle the amount of power they can generate.
• The power generated can control the skill that he/she possesses.
Mobility and Stability

• Mobility is the combination of muscle flexibility, joint ROM, and a body segment’s freedom of movement.
• Stability is the ability to maintain posture and/or control motion.
• Stability is either dynamic or static.
• The combination of poor mobility and stability is the source of many common athletic injuries.
• The FMS score must be good before the athlete can build strength, speed, and power.

FMS—Stability and Mobility

• The FMS will evaluate stability and mobility throughout the body.
• The athlete should be encouraged to return to the basic mobility and stability exercises in order to regain the foundational abilities that are lost through puberty and beyond.

Section II: Performing the FMS

• This part of the lecture will teach you how to conduct the FMS.
**FMS Administration**

- The FMS is quick and uses very little equipment.
- The athlete should wear athletic clothing and footwear.
- Short warm up (5 minutes of cardio)
- Keep cueing to a minimum

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**Equipment**

- The kit can be purchased at [http://www.performbetter.com](http://www.performbetter.com)
- The kit cost is $194.95.

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**FMS Kit**

- The necessary items to make your own kit include:
  1. A 2x6 Board
  2. A 5 foot dowel
  3. A hurdle
  4. A tape measure
- You may have multiple test stations so making your own kit can be cost effective.
FMS—Scoring

- 3=Perfect Form
- 2=Complete with Compensations
- 1=Incomplete
- 0=Pain

- Always give three attempts and take the best of the three.
- If there is a question on the right score, score low.

FMS—Scoring

- Clearing Tests: There are 3 clearing tests that are scored positive or negative.
- If the clearing test is positive (there was pain with the movement), then that entire screen receives a zero (0).
- Scoring a Zero: If the athlete has any pain during any of the 7 screens, score that screen a zero.

The FMS Tests

1. Deep Squat
2. Hurdle Step
3. In-Line Lunge
4. Shoulder Mobility
5. Active Straight Leg Raise
6. Trunk Stability Push-Up
7. Rotary Stability
1. **Deep Squat**

- The ready position for athletic events.
- Used for LE power movements
- Challenges total body mechanics
- The DS assesses bilateral, symmetrical, functional mobility of the hips, knees, and ankles.
- The overhead dowel assesses bilateral, symmetrical mobility of the shoulders and thoracic spine.

1. **Deep Squat (DS)-Instructions**

- Hold the dowel on top of your head with your elbows at 90 degrees of flexion. Press the dowel overhead and keep the elbows in full extension.
- Place your feet shoulder width apart. Keep your toes pointed forward at all times.
- Keep an upright posture and keep the dowel over your head.
- Descend into a deep squat in order for your thighs to break parallel with the floor.
- Return to the starting position.
- For a 2 and 1, put the patient's heels on the board.
1. DS Scoring—Three (3)
- Upper torso is parallel with the tibia or toward vertical
- Femur is below horizontal
- Knees are aligned over feet
- Dowel is aligned over feet

1. DS Scoring—Two (2)
- Heels are up on the board
- Upper torso is parallel with tibia or toward vertical
- Femur is below horizontal
- Knees are aligned over feet
- Dowel is aligned over feet

1. DS Scoring—One (1)
- Heels on board
- Tibia and upper torso are not parallel
- Femur is not below horizontal
- Knees are not aligned over the feet
- Lumbar flexion is noted
1. **DS Scoring—Zero (0)**

- Pain with the motion
- For any of the tests: If there is pain at all during the movement, score the entire test a zero (0).

1. **DS Clinical Implications**

- Limited motion in the UE is a result of poor GH joint mobility or thoracic spine mobility.
- Limited LE movement can be from poor CKC DF of the ankle or poor hip flexion.

2. **Hurdle Step (HS)**

[Image of a person performing a hurdle step]
2. Hurdle Step (HS)

- The purpose of the HS is to challenge the body’s proper stride mechanics during a stepping motion.
- This requires coordination and stability between the hips and torso during stepping and SLS stability.
- The HS assesses bilateral functional mobility and stability of the hips, knees and ankles.

2. HS Instructions

- Position the string so it is at the level of the tibial tuberosity. Record this length for the ILL test.
- Place the dowel across the shoulders.
- Stand with your feet together and your toes touching the hurdle.
- Keep an upright posture and step over the hurdle without touching the string.
- Touch the floor with your heel and return to the starting position.
- Left and Right foot each have 3 trials.
- Score the leg that is moving over the hurdle.

2. HS—Three (3)

- Hips, knees and ankles remain aligned in the sagittal plane
- Minimal to no movement is noted in the lumbar spine
- Dowel and hurdle remain parallel
2. HS—Two (2)

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

2. HS—One (1)

- There is contact between the foot and hurdle
- Loss of balance is noted

2. HS—Clinical Implications

- This test requires stance-leg stability of the ankle, knee and hip
- Requires Max CKC extension of the hip
- Requires step-leg OKC ankle DF and flexion of the hip and knee.
- Balance is needed—dynamic stability—single leg stance
- Maximal hip flexion of one leg and apparent hip extension of the opposite leg demonstrates bilateral, asymmetrical hip mobility.
3. In-Line Lunge (ILL)

- This test places the body in a position that focuses on stresses simulated during rotational, decelerating and lateral type movements.
- The LE is in a scissored position, challenging the body’s trunk and extremities to resist rotation and maintain proper alignment.
- The test assesses hip and ankle mobility and stability, quadriceps flexibility and knee stability.

3. ILL—Instructions

- Place the back (right) foot toe on the zero.
- Place the heel of the other (left) front foot on the distance of the tibia. Use the measurement taken in the HS for the tibia length.
- If the left foot is forward, the right arm is up and left arm is down.
- Put the right hand on the dowel in the Cx lordosis and the left hand on the dowel in the Lx lordosis.
3. ILL—Instructions

- Maintain contact of the dowel on the posterior head, thoracic spine, and sacrum throughout the test.
- Descend into a lunge position, touch the right knee behind the left heel.
- Keep the dowel straight up and down.
- Return back upright.
- Score the front leg

3. ILL—Three (3)

- Dowel contacts remain with Lx extension
- No torso movement is noted
- Dowel and feet remain in sagittal plane
- The knee touches the board behind the heel of front foot

3. IL-Two (2)

- Dowel contacts do not remain with Lx extension
- Movement is noted in torso
- Dowel and feet do not remain in the sagittal plane
- Knee does not touch behind heel of front foot
3. IL—One (1)

- Loss of balance is noted

3. ILL—Clinical Implications

- Hip mobility may be inadequate in either the stance leg or the step leg.
- The stance-leg knee or ankle may not have the stability needed.
- An imbalance between adductor weakness and abductor tightness in one or both hips may cause poor test performance.
- Thoracic spine extension may be limited also.

4. Shoulder Mobility (SM)
4. Shoulder Mobility (SM)

- The SM assesses bilateral shoulder ROM, combining IR with ADD and Extension, and ER with ADB and Flexion.
- It requires normal scapular mobility and thoracic spine extension.

4. SM—Instructions

- Measure the distance between the distal wrist crease to the tip of the 3rd finger.
- Have the patient stand with feet shoulder width apart.
- Place the thumbs in the fists.
- Move one UE into IR and the other into ER.
- Make sure there is a smooth motion (no creeping the arms into place).
- The tester measures the distance between the two hands (the two closest bony prominences).

4. SM—Verbal Instructions to the patient

- Make a fist with the thumbs tucked in the fist.
- In a single motion, place your R 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.
- Test the opposite arm.
- The arm up is the testing arm on the recording sheet.
4. **SM—Three (3)**

- Fists are within one hand length

4. **SM—Two (2)**

- Fists are within one and a half hand lengths

4. **SM—One (1)**

- Fists are not within one and a half hand lengths.
4. SM—Clearing Test

• The clearing test for SM is the Active Shoulder Stability Test (Impingement Test)
• Place the right hand on the left shoulder.
• Keep the hand placed on the shoulder and lift the elbow up to the forehead.
• Ask if this is painful.
• If it is painful, score it positive (+) and then that arm SM test will be a zero (0).

4. SM—Clinical Implications

• Athletes who need more ER for sport specific throwing sacrifice IR.
• Pectoralis and Latissimus being tight can cause forward and rounded shoulders.
• Scapulothoracic dysfunction can decrease glenohumeral joint mobility.

5. Active Straight Leg Raise (ASLR)
5. **Active Straight Leg Raise (ASLR)**

- The ASLR tests the ability to disassociate the LE while maintaining stability in the torso.
- The ASLR assesses active hamstring and Gastroc-Soleus flexibility while maintaining a stable pelvis and active extension of the opposite leg.

5. **ASLR--Instructions**

- Lie supine with the arms in an anatomical position (palms up) with the head flat on the floor. The board is placed under the knees.
- ID the mid-point between the ASIS and the mid-patella. Place the dowel at this point perpendicular to the ground.
- Instruct the athlete to lift the test leg with a DF ankle and an extended knee.
- The opposite knee must remain in contact with the board, the DF ankle must stay up toward the ceiling (no ER of the hip), and the head must stay flat on the ground.
- Once the end-range position is achieved, the lateral malleolus is located.
- If the malleolus passes the dowel, the score is a 3.
- If the malleolus cannot pass the dowel, then realign the dowel. Place the dowel between mid-thigh and mid-patella. If the malleolus passes the dowel now, the score is a 2.
- If the malleolus cannot pass the dowel placed at the mid-patella, a score of a 1 is given.
5. ASLR—Three (3)
- Ankle/Dowel resides between mid-thigh and ASIS

5. ASLR—Two (2)
- Ankle/Dowel resides between mid-thigh and mid-patella

5. ASLR—One (1)
- Ankle/Dowel resides below mid-patella
5. ASLR—Clinical Implications

- The athlete may have poor functional hamstring flexibility.
- The athlete may have inadequate hip mobility of the opposite leg, stemming from iliopsoas tightness associated with an anteriorly tilted pelvis.

6. Trunk Stability Push Up (TSPU)

- Assesses the ability to stabilize the spine in an A/P plane during a CKC upper body movement.
- It assesses trunk stability in the sagittal plane while a symmetrical UE motion is performed.
6. TSPU—Instructions

• Prone with feet together, toes on the ground
• Arms start overhead
• Males—Bring thumbs down to the forehead
• Female—Thumbs down to the chin
• Knees are fully extended, ankles DF.
• Ask the athlete to perform one push-up.
• The body should be lifted as a unit.
• There should be no lag in the lumbar spine.

6. TSPU—Instructions

• If the athlete cannot perform this correctly
• Males: Move the hands down to the Chin
• Females: Move the hands down to the Clavicle
• Make sure original hand position is maintained and then hands do not slide down when the athlete prepares to lift.
• Make sure the chest and stomach come off the floor at the same instance.
• Give the verbal cue to maintain a rigid torso, raise yourself as one unit with no lag in the low back up into a push-up position.

6. TSPU—Three (3)

• Males: Perform one rep with thumbs aligned with the top of the forehead.
• Females: Perform one rep with thumbs aligned with chin
6. TSPU—Two (2)

- Males: Perform one rep with thumbs aligned with chin
- Females: Perform one rep with thumbs aligned with clavicle

6. TSPU—One (1)

- Males: Unable to perform one rep with hands aligned with chin
- Female: Unable to perform one rep with hands aligned with clavicle

6. TSPU—Clearing Test

- The clearing test for the TSPU is a prone press-up.
- Prone position, have the athlete place both hands under the shoulders (palm down)
- Press the chest off the floor by extending the elbows and arching the back as much as possible with keeping the hips on the floor.
- Ask if this has any pain.
- If yes, score it positive (+) and score the TSPU a zero (0).
6. TSPU—Clinical Implications

- Poor stability of the trunk stabilizers
- Functional activities in a sport require the trunk stabilizers to transfer force symmetrically from the UE to the LE and vice versa.

7. Rotary Stability (RS)

- This test is a complex movement requiring proper neuromuscular coordination and energy transfer from one segment of the body to another through the torso.
- This test assesses multi-plane trunk stability during a combined UE and LE motion.
7. **RS—Instructions**

- Start in a quadruped position with the shoulders and hips at 90 degrees relative to the torso.
- The knees are at 90 degrees of flexion and the ankles are DF.
- Put the board between the knees and hands so they contact the board.
- Shoulder flexion and hip extension on one side. Raise up 6 inches off the board.
- The elbow, hand, and knee should all remain in line with the board.

7. **RS—Instructions**

- The torso should also remain in the same plane as the board.
- The same shoulder is extended and the knee is flexed so the elbow and knee touch over the board.
- The shoulder is flexed and the hip is extended and then placed back to the starting position.
- If this cannot be completed, move to the diagonal position and retest.
- Score the UE side

7. **RS—Three (3)**

- Performs one correct unilateral rep while keeping spine parallel to board.
- Knee and elbow touch in line over the board
7. RS—Two (2)

• Perform 1 correct diagonal rep while keeping spine parallel to board
• Knee and elbow touch in line over the board

7. RS—One (1)

• Inability to perform diagonal reps

7. RS—Clearing Test

• The clearing test for RS is the passive spinal flexion test
• Start in the hands and knee position and have the athlete keep the hands on the floor and rock the buttocks back to the heels.
• Lower the chest to the knees and reach the arms out in front on the floor.
• Ask if there is pain with this clearing test.
• If there is pain, score the test positive (+), and score the RS zero (0).
7. RS—Clinical Implications

- If the trunk does not have adequate stability, kinetic energy will be dispersed.
- This will lead to poor performance as well as increased potential for injury.
- The reason for poor performance on RS is poor asymmetric stability of the trunk stabilizers.

Scoring

- To score the raw score for the FMS, allow 3 attempts on each test. Take the best score of the 3 attempts. If the athlete scores a 3 right away, you can skip the last 2 attempts.
- For the right and left side tests, take the raw score lowest number of the two, and that is the final score.
- The best score is a 21.

Scoring Sheet

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Section III: FMS Lab

- Questions
- Break into lab groups
  - 7 Stations
    - Each station representing one of the seven screens
  - Number off 1-7
  - Each station will rotate at 10 minutes

FMS Lab Session

- The objectives of the lab session are:
  - To correctly test all 7 screens.
  - To correctly grade each of the 7 screens.
  - To score the final score out of 21.
  - To interpret the results and decide the weakest link (where to start your treatment sessions).

Scoring Sheet

FMS Scoring in Large Group Setting

- Please return to the front lecture setting.
- We will now each score a full FMS with one individual.
- Please use a new scoring sheet to make the record.
- Please do not talk out loud during this screen.
- We will discuss the score at the end.

Interpretation of the Results

- First start with any score of zero. This area must be evaluated by a PT or LAT. Once the area is cleared, re-test that part of the FMS.
- The next area to look at is any asymmetries from left to right in which one side scores a 1. A score of 1 on the right and 3 on the left is very significant. This asymmetry must be addressed first.

Interpretation of the Results

- If the athlete does not have any 1-2 or 1-3 R/L differences, then go to a bilateral score of 1.
- Once all the 1s are fixed and have re-tested at a 2 or 3, then look for imbalances with a two from R/L (2-3s).
- After these are addressed, look for areas that have bilateral 2s.
- The goal is to find the weakest link
- Make sure to re-test throughout the process.
**Conclusion/Wrap Up**

- Please take this time to ask any questions.
- Thank you for your time.

**Corrective Exercise Materials**

- This material will not be covered in this lecture but is included to help steer your treatment plan.

**Corrective Exercise Lecture**

- Now that the results are interpreted, we need to prescribe corrective exercises for the weakest link.
- These should be used as a HEP and also as the direction to take in the clinic.
- There is a huge progression of exercises that follows these basic principles, but this is a great place to start.
Deep Squat--Corrective Exercises

- Prone Quadriceps Stretch
  - Lie prone on the plinth
  - Keep one foot on the floor with hip flexed to maintain a neutral spine.
  - Flex the top knee, pushing the heel to the buttocks.

DS-CE

- Wall Sit with Dorsiflexion
  - Make sure the back is on the wall.
  - Start with support under the thighs and knees to begin.

DS-CE

- Kneeling Dorsiflexion
  - Half kneeling position wider than mid-line.
  - Slight IR of the front foot.
  - Place both hands on the dowel with the Lx flattened and the abs drawn in to the spine.
  - Keep the dowel on the lateral aspect of the toe and on the medial aspect of the knee.
  - Shift forward, keep the knee over the second toe. Keep the heel down.
  - To intensify this stretch, lessen the distance between the two feet.
DS-CE

- Standing Rectus Stretch
- Place the on foot up on a bench, but maintain the thighs parallel.
- Posterior pelvic tilt.
- Flex the stance leg knee and lower to attain a stretch.
- Keep both thighs in line and adducted.

Hurdle Step Corrective Exercises

- Prone Hip Flexor Stretch
- Prone with one leg off the table with the foot on the floor to stabilize the pelvis.
- Lift the thigh off the table.

HS-CE

- Stride with Hip External Rotation
- Stand with the hip flexed and ER, knee flexed and the lower leg on the table.
- The other LE is fully extended.
- To stretch, flex the stance leg until a stretch is felt.
- Keep the spine in neutral throughout.
- The flexed hip and knee should be perpendicular to the pelvis.
HS-CE

- Stride with Spinal Rotation
- Stand with the hip and knee flexed with the foot on the table.
- Assume maximal stride position.
- Keep the opposite leg extended at the hip and knee.
- The trunk should be in neutral and erect posture.
- Lean toward the table with an erect spine and slightly bend the knee.
- Rotate the spine toward the flexed hip.
- Maintain good posture throughout this stretch.

In-Line Lunge Corrective Exercise

- Modified Thomas Test Stretch
  - To stretch the hip flexor: get in a Thomas test position. Push the thigh down. Use contract/relax to increase the hip extension.
  - To stretch the quadriceps: Bring the knee into flexion and use C/R to increase the knee flexion.

ILL-CE

- Gastroc/Soleus Stretch
  - Knee extended for the gastrocnemius
  - Knee flexed for the soleus
  - Maintain the back LE in IR
ILL-CE

• Latissmus Dorsi/External Rotation Stretch
• Place the athlete supine with the hips flexed, knees flexed and feet resting on the wall.
• Place the hips as close to the wall as possible. The shoulders should be at 90 degrees of abduction with the elbows extended.
• The partner grasps the wrist and elbow of the arm being stretched and applies traction. Then ER the shoulder while maintaining traction.

ILLE

• Leg Lock Bridge
• Lie supine with one leg flexed at the hip, and hold one thigh to the chest for a passive lock.
• The thigh should maintain contact with the chest throughout the movement.
• The opposite foot is placed on the ground in-line with the center of the body with the knee flexed.
• Use the gluteals to extend the hip and bring the hips off the ground into a bridge position.
• The height of the bridge is limited to where the flexed hip and thigh remain against the chest and the extended hip and thigh remain in an in-line position.
• You can place a ball between the chest and thigh to maintain passive locking.

Shoulder Mobility—Corrective Exercises

• Trunk Rotation with Shoulder Internal and External Rotation
• Start in a supine position with the hips flexed and knees flexed at 90 degrees. The shoulders are at 90 degrees of abduction with the elbows in full extension. Place a towel between the knees.
• The partner grasps the wrist and elbow of the arm being stretched and applies traction. The athlete then rotates the 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 IR and ER the shoulder keeping slight traction.
• The hips should be flexed greater than 90 degrees during the rotation.
**SM-CE**

- Wall Sit with Shoulder Press
  - Sit on the floor, back on wall, and the soles of the feet together, pulled towards the body.
  - Hold the arms out to the side against the wall, with the elbows flexed to 90 degrees.
  - Place the dorsum of the hands on the wall.
  - Press the hands upward towards the ceiling.
  - Press the knees towards the floor at the same time as raising the arms up over head.
  - Press up as far as you can maintain the hands against the wall.

**Active Straight Leg Raise—Corrective Exercises**

- Partner Stretch-Straight Leg Raise
  - Perform a supine hamstring stretch with the athlete.
  - Use contract/relax technique to increase the hip flexion.
  - Make sure the leg on the table stays in hip extension and that no ER is noted in this leg.
  - The knee must also maintain contact with the floor.

**ASLR-CE**

- Single Leg Lowering 1
  - Lie supine with the legs in a doorway.
  - Put one leg on the wall with the hip flexed and knee extended.
  - The other LE should be in hip flexion and knee extension, but be where the doorway is open.
  - The hands should be palms up and by the sides.
  - The moving leg should PF the ankle and reach out to the ceiling. Lower the leg to the ground keeping a flat Lx. If the Lx extends, place a bolster under the moving foot so the leg does not have to lower as far to the ground.
### ASLR--CE

- Single Leg Lowering 2
- Lie supine, hands palms up by the side and both hips flexed up with knees in full extension.
- PF the foot, reach the leg up to the ceiling.
- Keep the Lx on the floor and lower the leg down to the floor.

### Trunk Stability Push-Up—Corrective Exercises

- Incline Push-Up Progression
- Place hands on the wall to table to box.
  - The higher the hands are up, the easier.
  - The lower the incline, the more difficult.
- Progress the push up by lowering the incline until the athlete can perform the push-up off the floor.
- Also try to vary the foot position.

### TSPU--CE

- Push-Up Walkout
- Start in a standing position with hands by your side.
- Bend over and touch the floor with your hands.
  - The knees can flex slightly.
- Walk the hands out in front of the body maintaining a flat Lx. Walk the hands out as far as possible without losing neutral lumbar spine.
- Walk the hands back to the body and stand.
- Do not allow the spine to get into hyperextension.
- Only walk out as far as the form will stay good.
Rotary Stability—Corrective Exercises

• Bilateral Hip Flexed Rotation
  • Lie supine with hips flexed and a flat Lx. Extend knees and PF with the feet together.
  • Hands are on the floor with the palms up
  • Keep one leg in the starting position and abduct one leg to move the hips
  • Once the hips can move independently, move them together.
  • The pelvis should remain flat.
  • The non-moving leg should remain stable and PF up to the ceiling.

RS--CE

• Hip Flexed Torso Rotation
  • Lie supine with hips flexed to have a flat Lx.
  • Extend the knees and PF with feet together.
  • Hands should be on the floor with palms up.
  • Keep the feet together and rotate the hips and pelvis left and right while keeping the shoulders flat.
  • Make the arc of movement as large as possible with no upper body movement.
  • Keep the hips flexed to 90 degrees and only lower the legs as far as can be controlled.

RS--CE

• Rolling
  • Lie supine with knees extended and feet DF.
    The arms are extended and overhead.
  • Draw the abs into the spine.
  • Flex one hip and flex 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 shoulder.
Progression of the Corrective Exercises

- The progression of the corrective exercises is very basic.
- Every athlete should work on flexibility first.
- The Stick should be used to decrease any soft tissue tightness.

CE-Progression

- Begin with assisted moves.
- Examples: Assist up into a squat, assist the lunge, break the rolling patterns down.
- Then add resistance to the moves.
- Examples: Weighted squats and lunges
- Use tubes to pull the body parts into the direction you want to avoid.
- Work rotational resistance in different stances.
- Examples: Chops and Lifts in different foot stances.