



# PERFORMANCE BASEBALL/SOFTBALL CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING BASEBALL AND SOFTBALL PLAYERS

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## Postural Restoration Institute™ Presents the New Off-Season: Balanced Regeneration Series #3 Left Ischiocondylar Adductor Facilitation

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Lisa Bartels

via the trunk and upper extremities. The most common functional strength impairment is inability to achieve left AF IR when the left leg and hip is loaded during upright activity.

Acetabular (socket) Femoral (ball) Internal Rotation (AF IR) is a term the Postural Restoration Institute™ (PRI) has coined as an individual's ability to shift into their hip. The hip is a ball and socket joint that must remain congruently aligned for optimal pain free mechanics to occur around the ankles, knees, hips, and spine. A hip that is congruently aligned means the ball is maximally covered or surrounded by the socket. During gait both the femur and

pelvis should be rotating on each other simultaneously during swing and stance phases. Athletes positioned in left pelvic torsion are remaining in a shifted state on the right hip. They never shift into the left hip despite transferring weight to the left lower extremity. How do athletes accomplish this? Most are compensating with excessive external rotation of the femur. As left hip shifting (AFIR) ability is lost, the compensating muscles can literally pull the ball away from the socket until they are no longer congruently aligned. If faulty mechanics continue to predominate, hip capsule integrity can become significantly compromised; specifically the left ilio-femoral ligament (anterior/front hip capsule) will become stretched out. Athletes will report feeling their hips sublux ("click/clunk") in and out of place with certain movements and activities. This can occur bilaterally for different biomechanical reasons but ilio-femoral laxity is more common on the left. Contrary to the anterior capsule, the posterior hip capsule can become extremely tight and restricted. This can also occur bilaterally for different biomechanical reasons, but posterior hip capsule restriction is more common on the left. In a healthy left hip that rotates correctly into AF IR, the posterior hip capsule lengthens to accept the femoral head. As the femur internally rotates, the head glides posterior/inferior into the hip socket. In many athletes this process has essentially stopped, the result being significant adaptive shortening of the posterior hip capsule fibers.

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**W**elcome to the new off-season: Balanced Regeneration—a series of articles dedicated to creating balanced athletes participating in a side dominate sport. A side dominate sport is defined as a sport in which skills are performed utilizing a "preferred" side of the body on a repeated basis. Each issue of this publication will present a new installment that develops a progressive step-by-step plan, based on Postural Restoration concepts and methodology. This plan is designed to create a balanced athlete who can manage asymmetrical sports demands without pain and injury. The first installment of the Balanced Regeneration series explained AF IR performance testing that can be utilized to measure core stability and identify imbalanced athletes. The second installment initiated step one in the Balanced Regeneration program; correct hamstring facilitation. Step two in the Balanced Regeneration program is recruitment/facilitation of the left ischiocondylar adductor.

### The Problem-Anatomy of Imbalance

If the members of an athletic team were instructed to stand shoulder to shoulder in a straight line with their arms at their sides, it would appear that the pelvis and trunk of all players was neutral, facing straight ahead. Despite appearances, the pelvis may not be in a neutral resting position in several of those athletes. Most competitive athletes that are evaluated with Postural Restoration methodology initially present with significant left side versus right side differences; differences in bony position, differences in muscle strength/function, and differences in the integrity of various joint sockets. The most common postural presentation is left pelvic torsion with compensation

### The Solution-

Conditioning programs need to have a built in counter mechanism that significantly reduces an athlete's tendency towards left pelvic torsion. The important concept to understand is the likelihood of altered muscle function with changed bony position. The potential

of a muscle to generate force across a joint in a given plane of motion depends upon its position and length. Paired muscles of the body may have significant differences in levels of strength, tone, and endurance relative to one another if bony position has altered the position and length of one of them. In the case of left pelvic torsion, the left hemipelvis has become stuck anteriorly in the sagittal plane, externally in the transverse plane, and abducted in the frontal plane (Figure 1). Lumbo-pelvic musculature can lose their optimal mechanical leverage to correctly function. The solution is to turn on muscles that generate posterior rotation force, internal rotation force and adduction force on the left hemipelvis. The initial training focus should emphasize posterior pelvic rotation, i.e. sagittal repositioning via hamstring facilitation. Left hamstrings reposition the pelvis so the hip socket (acetabulum) is oriented at the correct angle and direction. The next step is to begin recruiting/retraining the left ischiocondylar adductor.

Most kinesiology texts accept five primary adductor muscles; pectineus, adductor longus, gracilis, adductor brevis, and adductor magnus. According to kinesiology references endorsed by the Postural Restoration Institute™ (www.posturalrestoration.com), all of these muscles with the exception of adductor brevis also function to externally rotate the hip. Only one of these muscles, adductor magnus, can also function to internally rotate the hip. This is the muscle that must remain correctly active on the left side.

Adductor magnus from its proximal attachment at the ischium of the pelvis forms an anterior head and a posterior head. The posterior head has internal rotation function. The posterior head consists of a thick mass of fibers that run vertically and attach as a tendon on the medial femoral condyle, hence the name ischiocondylar adductor (Figure 2). Interestingly the ischiocondylar adductor has a nerve plexus innervation that is completely separate from the anterior adductor magnus.

Traditionally adductors have not received much emphasis in training/rehabilitation circles. They are generally understood to function by pulling the thigh/leg towards the midline of the body during both stance and swing phases of gait. In reality, from a PRI viewpoint, their biomechanical function is much more involved and profound. Five top functions of the ischiocondylar adductor are as follows; 1) Pulls and seats the femoral head into the hip socket 2) Promotes correct function of the contra lateral (opposite side) right glute max 3) Adducts the ipsilateral (same side) hemipelvis and internally rotates the hip by force coupling with the ipsilateral gluteus medius 4) Promotes optimal patella femoral tracking by keeping the femur correctly oriented under the knee cap 5) Maintains appropriate flexibility of the posterior hip capsule and ipsilateral pelvic floor.

The Postural Restoration Institute™ has developed numerous activities that incorporate the ischiocondylar adductor. Most of these also incorporate the left gluteus medius and/or the right glute max, but you can't start with many of these, they are too difficult. There is one exercise in particular that isolates the left ischiocondylar adductor; Right Sidelying Adductor Pullbacks. This is the exercise you need to start your athletes with. You can attempt this activity immediately after hamstring repositioning.

The Right Sidelying Adductor Pullback is essentially a precursor for all of the upright dynamic activities that are in PRI's integration and squat programs. The adductor pullback is a gravity assisted position that allows people to feel pure left AF IR (Figure 3). I fre-



Figure 1

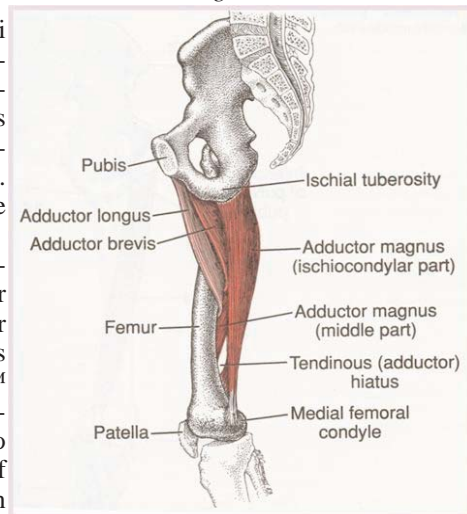


Figure 2

quently tell my clients while they are performing this activity that they are basically performing stance phase of gait, heel strike to midstance, on their left side. This concept really hits home after they feel how easy this activity is on the other side. If this muscle is being appropriately recruited, the athlete should feel the inner thigh strongly contract near the groin. Many athletes will initially feel the muscle cramp as they attempt to shift further back. The intensity of the cramping can be controlled if your athletes keep the right foot gently pushed into the wall. Keeping the right foot pushed into the wall also helps keep the left hip flexor disengaged.

Most of the time athletes correctly feel the inner thigh with first attempt, but there are two scenarios however where you will need to modify your approach. The first scenario is hip impingement which will feel like a pinching discomfort at the groin. If the athlete is experiencing more of a pinch sensation that does not seem to be resolving you need to help your athletes perform a Sidelying Obturator Stretch (Figure 4). The Sidelying Obturator Stretch is essentially a stretch for the left pelvic floor. Sometimes the pelvic floor can become so tight; athletes can not access the fibers of the ischiocondylar adductor until it has been released. It has been my clinical observation that most athletes struggling with sports hernia injuries need this stretch desperately. I recommend performing 3-4 sets then immediately retry the adductor pullback. Usually this resolves the problem, but you may want to per-

form this stretch prior to the adductor pullbacks for a week. The second scenario is inability to successfully engage the ischiocondylar adductor, rather they may feel primarily the hip flexors, or hamstrings, or nothing at all. Simply continue to emphasize hamstring retraining, and reattempt in another week.

Five to ten sets of right side lying left adductor pullbacks should be performed, after hamstring repositioning, every training session for 1-2 weeks. You can have your athletes perform a few sets on the other side, but the emphasis must remain on the left. After 1-2 weeks you can try advancing to other side lying activities that will be introduced later in the series. There are some standing activities you can begin immediately with the adductor pullbacks and the hamstring activities; these will incorporate the left outer hip and will be explained in the next article. Biomechanical reasoning for left gluteus medius facilitation and glute med training application will be the topics of the 4th article installment. O

**Figure 1 credit:** Postural Restoration Institute™. *Myokinematic Restoration Course Manual 2010.*

**Figure 2 credit:** *Myofascial pain and dysfunction, the trigger point manual, the lower extremities, Volume 2, Travell and Simons, 1992, by permission of the publisher Williams & Wilkins.*

Please note that techniques provided in Figures 3 and 4 are only examples of the many non-manual Postural Restoration Institute™ techniques that could be considered appropriate for addressing the underlying biomechanical deficit described. For more information and references, please visit [www.posturalrestoration.com](http://www.posturalrestoration.com).

**More Information Please!**

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*Figure 3*

### **Right Sidelying Adductor Pull Back**

1. Lie on your right side with your toes on a wall, ankles and knees together and your back rounded. Place a pillow under your head and keep back and neck relaxed.
2. Place a bolster of appropriate size between your feet and a towel between your knees. Your left knee should be lower than your left hip and ankle.
3. Place tubing around your left leg just below your knee for resistance. Have another person hold the other end to provide resistance.
4. Push your bottom foot into wall.
5. Begin by inhaling slowly through your nose as you "pull back" your left leg.
6. Exhale through your mouth as you squeeze your left knee down into the towel for 3 seconds.
7. Inhale again as you "pull back" your left leg further. You should begin to feel your left inner thigh engage.
8. Exhale and squeeze your left knee down.
9. Continue the sequence until you have completed 4-5 breaths in and out. Attempt to pull back your left leg further each time you inhale.
10. Relax your knees back to the starting position and repeat the sequence 4 more times.



*Figure 4*

### **Sidelying Obturator Stretch**

1. Lie on your right side with your knees bent and your head supported by pillows.
2. Place a bolster of appropriate size between the upper most part of your thighs and a larger bolster between your ankles (your left ankle should be higher than your left knee).
3. Inhale through your nose and exhale through your mouth as another person gently pushes your left knee down into your right. Hold this position for 3 seconds.
4. Inhale again, exhale and have the other person push down further. You should feel a stretch in the uppermost part of your left thigh.
5. Continue this sequence until you have taken 4-5 deep breaths in through your nose and out through your mouth.
6. Relax and repeat 4 more times.