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ESTABLISHING RIGHT TRUNK ROTATION IN THE THROWING ATHLETE
(An understanding of transitional movement from right to left)
Clinical In-Service to Cantrell Center Clinicians

When throwing, a baseball pitcher or anyone else will move through several, well documented phases of the event. Injuries can occur when the athlete is unable to successfully accomplish the task of moving through these phases without compensating with one or multiple portions of the body in order to complete the throw. It is my estimation that the primary issue requiring compensatory action is suboptimal posture. It would appear that this pathomechanical compensatory action leads to an end-result of injuries commonly seen in pitchers. Of these injuries the most common are rotator cuff and medial elbow injuries. Also seen frequently is biceps tendonitis, labral tears and of course lower back pain.

Most baseball pitchers with classic injuries like the ones mentioned above have had multiple sessions of instruction from pitching coaches and have received feedback about a primary problem of right arm dropping during and at the end of the cocking phase and through the acceleration phase of the throw. Pitchers are also advised many times that they are throwing the ball “sidearm”.

These players learn to throw well or hit well in spite of suboptimal posture. Their expertise in the sport is accomplished via compensation for the suboptimal posture and this compensation usually results in pain and/or pathology. Compensation, then, is a must if the posture during the throw is suboptimal. Therefore compensatory action occurs as a result of specific positional influences.

During gait, the torso rotates opposite the pelvis in order to maintain center of gravity in the transverse plane. In the strongly-patterned L AIC patient the ability to shift the center of gravity over the L LE is challenged. As a result, the individual will also likely have difficulty with the appropriate counter-rotation of the torso to the right (see gait descriptions, limited R UE extension during gait etc). In the throwing athlete, pelvis rotation and ribcage counter-rotation movement is accentuated during wind-up, acceleration and release of the ball. Put simply, the act of throwing is a high-level form of gait transition from right stance to left.

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As the thrower completes "wind-up" and begins acceleration, the pelvis begins to move from right stance toward leftward orientation in the direction of left stance with the anticipated counter-rotation of the ribcage to the right. If properly executed, this action is accompanied by engagement of many important muscles:

1. R G max to propel the patient from right AF IR toward L AF IR
2. L abdominal wall to oppose the

a. inhalation of the athlete as he prepares for acceleration and
b. the inevitable valslava that occurs during acceleration

Conjecture: There is likely a window of opportunity during which "a" and "b" can happen without consequence but the further outside of this "window" that "a" and "b" occur then, in my opinion, the greater the likelihood of poor mechanics with the inevitable result: injury

This, in my opinion is the area that requires the greatest scrutiny…if at all observable

3. L Lower trapezius to aid in R trunk rotation/stabilization of the scapula on thorax and thorax on the scapula
4. Right lower trapezius and triceps to control the position of the R scapula
5. L adductors as the thrower plants the L foot during initiation of follow through
6. L IC adductor and glute medius as the thrower follows-through the pitch and rotates completely into L AF IR with FA IR activity occurring as well

Throwers in obligatory right stance:

1. Lack the ability to rotate the trunk toward the right
2. Lack the ability to effectively engage R G Max for transverse plane rotation of pelvis toward and into L AF IR
3. Lose abdominal opposition for L ZOA during wind-up through acceleration/release
4. Engage in the inevitable valsalva with the torso in R Side bend
5. Lose saggital plane R scapular stabilization found with R lower traps
6. Lose the ability to keep R UE in proper "elevated" position during wind-up and acceleration
7. Lose ability to shift completely into L AF IR because of limited L IC adductor and Anterior G. Medius activation

This list is not exhaustive but here to simply highlight.

It appears to this observer that a primary issue is the inability to maintain "closure" of the L abdominal wall during wind-up, since the typical L AIC patient who throws a baseball tends to drop the elbow. But when he is taught to engage the L ab wall he subsequently elevates the elbow. This can be accomplished simply by taking a patient through a sound myokinematic program.

I have added a focused and sport specific non-manual technique to the retinue and early indications are that it appears to rapidly aid with the other issues numbered above in both categories.

Determining which patients are appropriate for any non-manual technique is always (in my opinion) the greatest challenge. The following criteria may help in selection of candidates:

1. R Adduction lift scores should be at least 2 or better since the patient should be able to adduct across midline
2. R Abduction lift scores should also be 2 or better since the patient must be able to elongate the right side (engage left abdominal wall) during the technique
3. Patient should be able to adequately hip shift into L AF IR while in L Side lying (keep in mind that many PEC patients and those with obturator hyperactivation may not be able to shift into L AF IR
4. Posterior capsule should be flexible
5. Any pain for which the patient is being treated should be resolved or carefully monitored (since the technique is challenging and dysynchronous recruitment of antagonist musculature may increase pain)

As the patient positions into L Side lying the R UE is placed into a combination of maximal flexion/horizontal abduction (similar to PNF arm clock positioning at "10 O'clock"). Many patients who cannot achieve "10 O'clock" cannot do so due to limitation in R trunk rotation and will engage in excessive HG hyperextension to feign accomplishment of the task. Many pitchers will hyperextend in a similar fashion due to this same lack of right trunk rotation and subsequently injure the throwing shoulder. While the torso is placed into R TR the pelvis is shifted into L AF IR. As with many sidelying integrated activities, engagement of the R G. Max, L Anterior Glute Medius and L IC Adductor is then achieved similar to a sidelying knee toward knee activity. The goal is for the patient to gain as much R TR as possible while inhaling and exhaling with a solid L Zone Of Apposition. This is not necessarily a R pectoral stretch.

If this is accomplished successfully the thrower should notice during throwing that the R throwing arm is now elevated during throw and the therapist should notice more "closure" of the Left sidewall during wind-up/cocking through the acceleration phase of the throw. The end result of the repeated movement should then be a faster pitch, less pain and decreased trauma to body parts.

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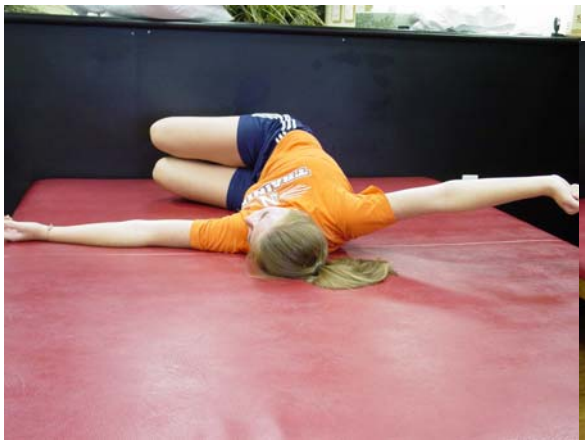
Left Sidelying L AF IR with R Trunk Rotation and L ZOA




1. Lie on L side with knees flexed and feet against the wall (pillow for head is optional)
2. Rotate your left shoulder forward and right shoulder backward thus rotating your torso to the right
3. Push your left hip into the floor by engaging your left abdominal muscle wall
4. Push your left foot into the wall and advance your right knee ahead of your left then rotate your left knee upward toward your right (you should feel your left inner thigh and left outside hip muscles engage along with your right outside hip [buttocks])
5. Extend your right arm behind you toward the 10 O'clock position. You should feel a mid-torso stretch
6. Holding the above position, inhale while keeping the left ab wall engaged and then exhale pausing for 5 seconds before inhaling again. When you inhale, do your best to direct air into the right ribcage (look for the right ribcage to expand). Repeat for 5 breaths and then relax.
7. Repeat all the steps above 4 more times for a total of 5 repetitions and you will be finished with the exercise

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