

## Overhead Athlete Rehabilitation Guidelines

This document is designed to be used as a guideline in the rehabilitation of the athlete playing overhead sports, mainly baseball and softball, but also including swimming, tennis and volleyball players. It is not meant as a rigid course of rehabilitation and is meant to be fluid in nature with modifications made depending on the specific patient and the expertise of the clinician.

This guideline can be used as a **supplement** with any protocol for a patient post surgically (**based on healing guidelines and physician approval**) as well as with any patient being treated conservatively. Suggested interventions more specific to the unique needs of the overhead athlete are listed alongside the criteria to advance for each of the outlined phases.

<p><i>Phase 1 – Acute Phase</i></p> <p>Criteria to advance to next phase:</p> <ol style="list-style-type: none"> <li>1. Diminished pain and inflammation</li> <li>2. Improved flexibility/range of motion</li> <li>3. Reestablished dynamic muscle control, balance, and proprioception</li> <li>4. <b><u>Physician approval to progress per healing guidelines (if post-surgical)</u></b></li> </ol>	<p><i>Suggested Interventions:</i></p> <ul style="list-style-type: none"> <li>• Modalities as indicated</li> <li>• Activity modification as needed</li> <li>• Genie horizontal adduction stretch (scapula stabilized)</li> <li>• Sleeper stretch (don't crank)</li> <li>• Prayer stretch</li> <li>• Elbow extension stretching</li> <li>• Wall slide</li> <li>• Rhythmic stabilizations in 110° of flexion</li> <li>• IR/ER alternating isometrics in scapular plane</li> <li>• Supine end range ER pain free isometrics</li> <li>• Manually resisted scapular protraction</li> <li>• Quadruped or triped closed chain perturbations</li> </ul>
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## *Phase 2 – Intermediate Phase*

### Goals:

- Improve muscular strength and endurance
- Progress to full active and passive ROM
- Improve total body proprioception and control
- Prepare the entire body for return to throwing

### Criteria to advance to next phase:

#### 1. Full PROM

- Total PROM (IR and ER) is equal to opposite side
  - Minimum of 100° of supine ER PROM
- Normalized latissimus dorsi muscle length
- Normalized supine horizontal adduction with scapula stabilized

#### 2. Full AROM

- Prone 90°/90° ER exercise – approx. 85% of supine passive ER without compensatory movements
- Equal back to wall flexion test

#### 3. Full strength and proprioception

- 5/5 seated serratus anterior test
- 5/5 middle and lower trapezius tests
- ER/IR Ratio >75%
  - Hand held dynamometry at 90° abduction
  - In neutral rotation

#### 4. LE Y balance assessment

- Within 5% side to side

#### 5. OH Athlete Screen

- Minimum 30/40

#### 6. Subjective measurement tool

- Minimum FOTO score of 80
- Alternate – Quick DASH

### *Suggested interventions:*

- Thrower's ten
- Prone neuromuscular control exercises:
  - Horizontal Abduction
  - Scaption
  - ER in 15 degrees of scapular plane
- ER wall push in scapular plane
- Standing ER at 45° abduction
- Standing ER holds at 90°/90°
- Weight bearing: push ups, push up with a plus
- Plyometrics: trampoline plyos chest pass, side & overhead toss, 90°/90° toss, 90°/90° ball drop
- PNF patterns with bands, cable column, manual resistance
- Dynamic hug
- Manual resisted exercises with rhythmic stabilizations:
  - Sidelying ER
  - Sidelying scaption
  - Sidelying row
  - Supine ER at 45° of abduction
  - Supine diagonals
- End range rhythmic stabilizations in various phases of throwing motions
- Lower abdominal training
- Plank progressions
- Static overhead pressing
- Any agility, speed work, running programs
- Progressions to above exercises should include:
  - Add single leg stance to any standing exercises
  - Add sitting or prone on physioball
  - Add isometric split squat hold in throwing position

<p><i>Phase 3 (Advanced Strengthening Phase)</i></p> <p>Goals:</p> <ul style="list-style-type: none"> <li>• Return to strength training with appropriate modifications</li> <li>• Improve muscular power, speed and agility</li> <li>• Ensure proper throwing mechanics with pre-throwing drills to reduce risk for re-injury</li> <li>• Complete specific rotator cuff strengthening with no compensatory movements</li> </ul> <p>Criteria to advance to next phase:</p> <ol style="list-style-type: none"> <li>1. All above still met</li> <li>2. FOTO – minimum score of 90</li> <li>3. OH Athlete Screen <ul style="list-style-type: none"> <li>• Minimum 35/40</li> </ul> </li> </ol>	<p><i>Suggested Interventions:</i></p> <ul style="list-style-type: none"> <li>• Continue with overall strengthening program</li> <li>• Consider Return to Performance Program (if available)</li> <li>• Med ball tosses</li> <li>• High speed band exercises</li> <li>• Pre-throwing drills <ul style="list-style-type: none"> <li>○ Half kneeling throwbacks</li> <li>○ 90°/90° ball drop and catch in supine</li> </ul> </li> <li>• Introduction to weight training with modifications as indicated <ul style="list-style-type: none"> <li>○ Bench press to neutral, no barbell to begin</li> <li>○ No military pressing behind head</li> <li>○ No lat pull downs behind head</li> <li>○ Consider limiting or modifying back squat</li> <li>○ Consider limiting depth for triceps dips</li> </ul> </li> <li>• Begin Interval Throwing Program or appropriate Sport Specific Interval Program</li> </ul>
<p><i>Phase 4 (Return to Activity – Return to Performance Phase)</i></p> <p>Goals:</p> <ul style="list-style-type: none"> <li>• Progression of interval throwing program to prepare for return to competitive throwing with proper throwing mechanics</li> <li>• Development of individualized maintenance program in preparation for discontinuation of formal rehabilitation.</li> </ul> <p>Criteria to return to sport:</p> <ol style="list-style-type: none"> <li>1. Successful progression of interval throwing program to 180ft with no pain.</li> <li>2. Consider throwing mechanics assessment</li> <li>3. ER/IR Ratio &gt;80% <ul style="list-style-type: none"> <li>• Hand held dynamometry at 90° abduction</li> <li>• In neutral rotation</li> </ul> </li> <li>4. Quick DASH or Kerlin Jobe score</li> <li>5. Successful completion of Return to Performance Program (if available).</li> </ol>	<p><i>Suggested Interventions:</i></p> <ul style="list-style-type: none"> <li>• Return to Performance Program (if available)</li> <li>• Progression of total body strength training program</li> <li>• Progression of Interval Throwing Program</li> <li>• Sport specific/position specific drills or appropriate Sport Specific Interval Program</li> </ul>
<p><i>Phase 5</i></p> <p>Return to Full Activity</p>	<p><i>Suggested Interventions:</i></p> <ul style="list-style-type: none"> <li>• Development of individualized maintenance program based on timing of season and needs of the patient</li> <li>• Recommendations on return to sport</li> <li>• Communication with ATC, coaches, and/or parents as needed</li> </ul>

References:

1. Reinold MM, Gill TJ, Wilk KE, Andrews JR. Current concepts in the evaluation and treatment of the shoulder in overhead throwing athletes, part 2: injury prevention and treatment. *Sports Health*. 2010;2(2):101-115.
2. Wilk, KE, Macrina LC. Nonoperative and postoperative rehabilitation for injuries of the throwing shoulder. *Sports Med Arthrosc Rev*. 2014;22(2):137-150.
3. Wilk, KE, Obama P, Simpson III, CD, Cain EL, Dugas J, Andrews JR. Shoulder injuries in the overhead athlete. *J Orthop Sports Phys Ther*. 2009;39(2):38-54.

Rev 2/25/15, 4/2/15, 4/14/15, 5/13/15



## Interval Throwing Program

This Interval Throwing Program (ITP) is designed to return overhead athletes to baseball or softball as quickly and safely as possible, while also minimizing risk for future injury. This program is meant as a guide and should be supervised by your Physical Therapist or Athletic Trainer until the athlete is comfortable continuing on their own without having any pain or difficulty. Distances should be modified for softball athletes and also determined by age of the athlete.

### General Guidelines:

- Prior to beginning the ITP, the athlete must meet all guidelines set forth by the rehabilitation specialist and have clearance from the referring physician.
- A rough timeline for return to full throwing activity using this ITP is 2-3 months for position players and 3-4 months for pitchers depending on age, ability level and response to the ITP. Timeline can also be modified by the rehabilitation specialist as they see fit.
- Regarding weight training, it is beneficial to supplement the ITP with a specific exercise program to assist in developing endurance of the rotator cuff and scapular musculature to reduce the risk for injury. This should be completed on the same day of throwing, after the ITP.
- Ensure proper throwing mechanics when returning to throwing. This can also limit the risk for re-injury. For steps 1-4, the athlete should be using the shuffle method of throwing which assists in using the lower body during the throw. As the distance of the program reaches 90 feet in steps 5-13, the athlete should use the crow-hop method for throwing. This assists arm in reducing stress as the ITP progresses.
- Ensure a proper warm up prior to throwing for the day. This includes a total body warm up as well as any specific stability, mobility or stretching exercises that have been recommended to the athlete. Warm up throws can consist of 10-20 throws progressing back to the specified working distance for that step.
- During throwing, the goal of each step is to throw TO the selected distance using an easy throwing motion. There should be an arc on each throw. Avoid throwing "on a line" or "through" your partner.
- A post throwing stretching routine should also be utilized immediately after throwing and can be individualized by the rehabilitation specialist based on each athlete's specific needs.

## INTERVAL THROWING PROGRAM

<input type="checkbox"/> <input type="checkbox"/> <b>Step 1: 45'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 45'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 45'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 5: 90'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 90'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 90'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 9: 150'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 150'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 150'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 13: 180'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 180'</li> </ul>
<input type="checkbox"/> <input type="checkbox"/> <b>Step 2: 45'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 45'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 45'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 45'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 6: 90'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 90'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 90'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 90'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 10: 150'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 150'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 150'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 150'</li> <li>• Post throwing routine</li> </ul>	<b>Step 14:</b> Begin throwing flat ground with pitching mechanics or begin at usual position with positional drill work.
<input type="checkbox"/> <input type="checkbox"/> <b>Step 3: 60'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 60'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 60'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 7: 120'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 11: 180'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Post throwing routine</li> </ul>	<b>Repeat each step at least 2 times with no pain prior to progressing to the next step. If pain occurs during any step of the program, the player must return to the last completed symptom-free step and progress when symptoms subside.</b>
<input type="checkbox"/> <input type="checkbox"/> <b>Step 4: 60'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 60'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 60'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 60'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 8: 120'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• Post throwing routine</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <b>Step 12: 180'</b> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Rest 5-10 min</li> <li>• Warm up</li> <li>• 25 throws @ 180'</li> <li>• Post throwing routine</li> </ul>	Complete every other day unless otherwise specified.
<b>Step 15</b> Flat Ground Throwing <input type="checkbox"/> <input type="checkbox"/> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• Work back to 120' w/ 20-25 throws</li> <li>• 20-30 throws at 60' on flat ground w/ pitching mechanics</li> <li>• Post throwing routine</li> </ul>		<b>Step 16</b> Flat Ground Throwing <input type="checkbox"/> <input type="checkbox"/> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• Work back to 120' w/ 20-25 throws</li> <li>• 20-30 throws at 60' on flat ground w/ pitching mechanics</li> <li>• 10-15 throws at 60-90'</li> <li>• 20 throws at 60' on flat ground w/ pitching mechanics</li> <li>• Post throwing routine</li> </ul>	

## RETURN TO PITCHING PROGRAM

<p><b><u>STAGE ONE – FASTBALLS ONLY</u></b></p> <p><b><u>Step 1</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• 15 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• One day off</li> </ul>	<p><b><u>Step 4</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• 60 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• Two days off</li> </ul>	<p><b><u>Step 7</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 30 throws off mound 50%</li> <li>• 45 throws off mound 75%</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>
<p><b><u>Step 2</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• 30 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• One day off</li> </ul>	<p><b><u>Step 5</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• 70 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	<p><b><u>Step 8</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 65 throws off mound 75%</li> <li>• 10 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>
<p><b><u>Step 3</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 25 throws @ 120'</li> <li>• 45 throws off mound 50%</li> <li>• Post throwing routine</li> <li>• One day off</li> </ul>	<p><b><u>Step 6</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 45 throws off mound 50%</li> <li>• 30 throws off mound 75%</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	
<p><b><u>STAGE TWO – CHANGE UPS</u></b></p> <p><b><u>Step 9</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 40 throws off mound 75%</li> <li>• 30 throws off mound 90% (5:1 FB:CU ratio)</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	<p><b><u>Step 10</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 50 throws off mound 75%</li> <li>• 40 throws off mound 90% (5:1 FB:CU ratio)</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	
<p><b><u>STAGE THREE – BREAKING BALLS</u></b></p> <p><b><u>Step 11</u></b></p> <ul style="list-style-type: none"> <li>• Warm up &amp; 30 throws off mound warm up</li> <li>• 15 throws off mound 50% (breaking balls)</li> <li>• 30 throws off mound at 90% (5:1 FB:CU ratio)</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	<p><b><u>Step 12</u></b></p> <ul style="list-style-type: none"> <li>• Warm up</li> <li>• 30 throws off mound 75% (fastballs only)</li> <li>• 30 throws off mound 75% (breaking balls)</li> <li>• 30 throws off mound at 90% (5:1 FB:CU ratio)</li> <li>• Post throwing routine</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	
<p><b><u>STAGE FOUR – SIMULATED GAMES</u></b></p> <p><b><u>Step 13</u></b></p> <ul style="list-style-type: none"> <li>• Warm up &amp; 15 throws off mound warm up</li> <li>• 40 pitches (pitches called by a catcher)</li> <li>• Simulated rest after each inning, throwing from wind up and stretch</li> <li>• Two days off then ITP Step 7 on day 3</li> </ul>	<ul style="list-style-type: none"> <li>• Progress by 15-20 pitches per simulated game</li> <li>• Begin throwing in games when athlete has demonstrated good control and full confidence in the arm with no lingering pain or soreness.</li> </ul>	<p style="text-align: right;">Rev: 2/23/15, 4/2/15, 4/14/15</p>

# Overhead Athlete Screen

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Serratus Endurance Test

(OH press and hold @ 145° flexion, walk 40 yds, 3-10% BW)

Scapular Control

- Maintenance of >55° UR
- Elbow straight

Core control

- Maintenance >145° of flexion
- Maintenance of T spine in neutral
- Maintenance of chin tuck

## Overhead Squat (3-5 reps)

Core control

- Posterior pelvic tilt at bottom of squat
- Down to parallel
- Arms in line with trunk
- Elbows straight

Lat mobility

## Overhead Lunge Walk (20 yds)

Core control

- Pelvis kept in neutral

Balance

- Full depth lunge
- No LOB

Knee control

- No knee valgus
- Center of knee joint behind toes

## Bilateral Flexion (3-5 reps)

Core control

- Maintenance of chin tuck
- Maintenance of T and L spine near neutral
- UR >55° at end range
- No posterior tilting

Scapular mobility

## Bilateral Abduction (3-5 reps)

Core control

- Maintenance of chin tuck
- Maintenance of T and L spine near neutral
- UR >55° at end range
- No posterior tilting

Scapular mobility

## Pushup (3-5 reps)

Core control

- Maintenance of neutral spine
- Maintenance of neutral trunk
- No anterior slide of GH joint
- Scapular protraction at top of push up

Humerus positioning

## Lower Abd Muscle Performance (3-5 reps ea)

Dead Bug

- Back flat
- UE and LE horizontal

## Prone ER (3-5 reps)

ER strength & control

- Minimum 90% of supine 90/90 ER PROM
- No anterior slide of GH joint
- No posterior tilting
- No scapular depression

Lat dominance

## Trap raise side (3-5 reps)

Control/Awareness

- No hyper-horizontal abduction
- No anterior slide of GH joint
- No scapular posterior tilting
- No scapular depression

ER strength & control

Lat dominance

## Trap raise diagonal (3-5 reps)

Control/Awareness

- No hyper-horizontal abduction
- No anterior slide of GH joint
- No scapular posterior tilting
- No scapular depression

ER strength & control

Lat dominance

## Scoring System

- Poor - 0-15
- Fair - 15-25
- Good - 25-35
- Excellent - 35-40

Score: \_\_\_\_\_



## Appendix – OH Athlete Screen Instructions

### Serratus Endurance Test

**Poor**

**Good**

(OH press and hold @ 145° flexion walk 40 yds, 3-10% BW)

Scapular Control	Unable to maintain UR Elbow flexed	Maintenance of UR Elbow straight
Decreasing flexion	Maintenance of flexion	
Core control	Excessive thoracic extension Forward head	Maintenance of T spine in neutral Maintenance of chin tuck
<b>Overhead Squat</b>		
Core control	Excessive anterior tilt/lumbar lordosis Decreased squat depth	Posterior pelvic tilt at bottom of squat Down to parallel
Lat mobility	Arms forward of trunk Elbows flexed	Arms in line with trunk Elbows straight
<b>Overhead Lunge Walk</b>		
Core control	Excessive anterior tilt/lumbar lordosis	Pelvis kept in neutral
Balance	Decreased depth	Full depth
LOB	No LOB	
Knee control	Increased knee valgus Center of knee joint anterior to toes	Good knee alignment Center of knee joint behind toes
<b>Bilateral Flexion</b>		
Core control	Forward Head Excessive T and L spine extension	Maintenance of chin tuck Maintenance of T and L spine near neutral
Scapular mobility	UR <55° Posterior tilting	UR >55° Maintenance of scapular tilt
<b>Bilateral Abduction</b>		
Core control	Forward Head Excessive T and L spine extension	Maintenance of chin tuck Maintenance of T and L spine near neutral
Scapular mobility	UR <55° Posterior tilting	UR >55° Maintenance of scapular tilt
<b>Pushup</b>		
Core control	Excessive T and L spine extension Loss of hip extension	Maintenance of neutral spine Maintenance of neutral trunk
Humerus positioning	Anterior slide of GH joint No scapular protraction at top of push up	Scapular retraction at bottom of push up Scapular protraction at top of push up
<b>Lower Abd Muscle Performance</b>		
Dead Bug	Loss of lumbar neutral Inability to reach UE/LE to horizontal	Maintenance of back flat UE/LE fully horizontal
<b>Prone ER</b>		
ER strength & control	< 90% of prone 90/90 ER PROM Anterior slide of GH joint	Minimum 90% of prone 90/90 ER PROM Maintenance of humeral head centering
Lat dominance	Scapular posterior tilting Scapular depression	Maintenance of scapular tilt Maintenance of neutral scapula
<b>Trap raise side</b>		
Control/Awareness	Hyper-horizontal abduction	AROM matches full scapular retraction
ER strength & control	Anterior slide of GH joint	Maintenance of humeral head centering
Lat dominance	Scapular posterior tilting Scapular depression	Maintenance of scapular tilt Maintenance of neutral scapula
<b>Trap raise diagonal</b>		
Control/Awareness	Hyper-horizontal abduction	AROM matches full scapular retraction
ER strength & control	Anterior slide of GH joint	Maintenance of humeral head centering
Lat dominance	Scapular posterior tilting Scapular depression	Maintenance of scapular tilt Maintenance of neutral scapula