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Best Practice Recommendations

A series of evidenced-based guidelines to improve your patient care, provided by the developers of ATGenius.com.

Scapular Dyskinesis

Each Best Practice Recommendation includes key elements to evaluating or treating the condition, a Strength of Recommendation (SOR) grade based on research quality, and supporting evidence.

Quick Summary:

Scapular dyskinesis *is defined as the presence of either winging or dysrhythmia of the scapula and commonly accompanies painful shoulder pathologies, but can also be present in asymptomatic athletes. Scapular dyskinesis can result in upper extremity pain and decreased pitching performance in overhead throwers.*[1-3]

Best Practice Recommendation #1: PREVENTION

Scapular dyskinesis occurs in asymptomatic and symptomatic shoulders among overhead athletes and is more common in males. SORT: B

- Scapular dyskinesis occurs in 61% of overhead athletes, 33% of non-overhead athletes and in 67-100% of athletes with shoulder injuries.[4,5]
- 9% of swimmers have scapular dyskinesis (more common on non-preferred breathing side) especially among distance swimmers; males have twice the risk compared to females.[6]
- Scapular dyskinesis can increase the risk of shoulder pain but not all athletes with dyskinesis develop upper extremity pain. Asymptomatic athletes with scapular dyskinesis have a 43% greater risk of developing shoulder pain than those without scapular dyskinesis.[7]

Scapular position and motion deviations can result in harmful pathomechanics when present in combination with repetitive movement exposure. SORT: B

- Deficits in strength or motor control of scapular stabilizing muscles, postural abnormalities, and impaired flexibility can lead to scapular dyskinesis.[8-11]
- Underlying neurological injury to the long thoracic, spinal accessory, or dorsal scapular nerves should be investigated as potential causes of scapular dyskinesis.[12]
- Forward head posture and increased thoracic kyphosis may contribute to scapular protraction and lead to shortening of postural muscles or muscular strength imbalances.[10,13,14]

Best Practice Recommendation #2: ASSESSMENT

Clinicians should use a visually-based system for rating scapular dysfunction in overhead athletes. SORT: C

- The scapular dyskinesis test involves a subject performing 5 repetitions of weighted (3-5lbs) shoulder flexion and abduction movements while the clinician visually observes for scapular winging or dyskinesis.[15,16] **WATCH VIDEO**
    - The scapular dyskinesis test is a valid clinical test with moderate reliability (75-82% interrater reliability).[17]
- In a large study of overhead athletes, those who demonstrated abnormal motion using this system also demonstrated decreased scapular upward rotation, less clavicular elevation, and less clavicular retraction when measured with three-dimensional motion tracking.[18]
    - Abnormalities were far more prevalent during shoulder flexion compared with frontal plane abduction.[17]
- Experienced and well-trained surgeons generally agree that UCL reconstruction is indicated for professional athletes and those with compete tears, but fail to reach consensus on how to treat nonprofessionals or those with partial tears.[5]
- Non-operative treatment can be attempted, however with this approach only 42% return to sport.[6]
- Operative treatment is indicated for patients who have failed an exhaustive attempt at nonoperative treatment, have an MRI-documented complete rupture, or have significant dysfunction and persistent medial elbow pain.[7]

Once scapular dyskinesis is determined to be present, clinicians must examine the surrounding tissue to identify factors that may be responsible for altering the scapular motion. SORT: B

- Key scapular stabilizing muscles to manually test are the axioscapular muscles including serratus anterior (protraction), trapezius (abduction), levator scapulae (elevation), and rhomboids (retraction).[15,18,19]
- Assessment of shoulder flexibility and joint mobility is critical to completely evaluate potential causes of scapular dyskinesis.[11,20]
- Pectoralis minor shortening has been identified as a contributor to abnormal scapular kinematics and implicated as a possible factor to shoulder impingement syndrome.[11,20]

Best Practice Recommendation #3: TREATMENT/REHABILITATION OPTIONS

Scapular-focused exercises, pectoralis minor and posterior shoulder stretching improves scapular kinematics. SORT: B

- A scapula-focused exercise program including scapula clocks, active inferior glides and isometric low-rows, combined with massage therapy relieves pain among patients with scapular dyskinesis; exercises are superior to massage.21
- Clinicians should utilize a scapular rehabilitation algorithm in developing a program for patients with scapular dyskinesis. Patients with a lack of soft-tissue flexibility can benefit from stretching (pectoralis minor and posterior glenohumeral structures) and mobilization; those with a lack of muscle performance can benefit from muscle control and muscle strength activities.22

- Progressive scapular control exercises with or without video feedback decreases upper trapezius activation, increases lower trapezius activation, and decreases scapular internal rotation in overhead athletes with subacromial impingement. Control training with video feedback further decreases the upper trapezius/serratus anterior ratio.[23]
- Stretching the pectoralis minor increases scapular external rotation and posterior tilt during arm elevation.[24]

Information researched and provided by Marissa Breymeier, MS, ATC. Treatment decisions should be made based on the best available evidence, patient preference, and clinician expertise, in consultation with, and at the direction of a physician.

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- **ACL Injuries**
- **Abdominal Injuries**
- **Shoulder Dislocations**
- **Patella Dislocations**
- **Hip Apophyseal Injuries**
- **Plantar Fasciitis**
- **Medial Tibial Stress Syndrome**
- **Elbow UCL Injuries**

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