Scapula Dyskinesis: Assessment and Management

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Scapula Dyskinesis
What does it represent?
- Normal variability?
- Useful compensation?
- Initiate/Perpetuate symptoms?

Role of scapula dyskinesis – is it a problem?
- Is there “Dysfunction”?
  - Resting Posture??? (ICK scapula, Burkhart 03)
  - Visual Classification
    - Scapula Dyskinesis Test (McClure 09 JAT, Tate 09, JAT)
    - “Two /No” test (JAT, 08, Arthros)
  - Symptom Altering Tests
    - Scapula Retract/Reposition Test (Kibler 06 AAAM, Tate 08, JOSPT)
    - Scapula Assistance Test (Rubin 06, JOSPT)

Classifying scapular motion: the scapula dyskinesis test (SDT)
(McClure et al. JAT, 2009; Tate et al., JAT, 2009)
- 5 repetitions:
  - Abduction (weighted)
  - Abduction (unweighted)
- Rate scapular motion on each test as:
  - Normal (6) motion: no evidence of dyskinesis
  - Medial border and inferior angle relatively flat
  - Subtle (3) dyskinesis: minimal asymmetry, moderate dyskinesis
  - Obvious (2) dyskinesis: medial border, inferior angle at least 90° flat
  - Winging 2° or greater displacement of scapula from thorax
  - Dyskinesis

Similar prevalence of dyskinesis in patients with pain and without pain
- n = 137 (67 – patients; 68 – controls)
- Scapular Dyskinesis Test

Observational Scapular Dyskinesis: Known-Groups Validity in Patients With and Without Shoulder Pain
JOSPT 2017

Presence of Scap Dyskinesis → normal variability?
Scapular dyskinesis did not predict functional outcomes

- 45 patients with subacromial pain
- n = 13-18 (depending on rater)
- ve dyskinesis
- NO difference in functional outcomes at 3 mos follow up

Scapular dyskinesis increases the risk of future shoulder pain by 43% in asymptomatic athletes: a systematic review and meta-analysis

- 5 studies, 419 athletes
- Scap Dyskinesis: 56/160 developed pain (~1/3 chance)
- No Scap Dyskinesis: 65/259 developed pain (~1/4 chance)

Are Symptoms Related to Dyskinesis?

- Penn Shoulder Score (Logan et al 2014)
  - Pain Sub-scale
    - Total 10
    - Sv's at rest (0-10)
    - Sv's with normal use (0-10)
    - Sv's with strenuous use (0-10)
  - n = 104
  - Only subjects rated as obvious or normal by two raters
  - Rater disagree or subtle discarded
  - Odds ratios (95% CI)
  - Does having dyskinesis increase your odds of having sx's?... NO

Obvious Dyskinesis predictive of injury

Scapular dyskinesis: In high school baseball players sustaining throwing-related upper extremity injury: a prospective study

- High School Baseball (all positions, 248 players from 17 schools)
- Used Scap Dyskinesis Test pre-season and followed for 2 years
- Injury = missed exposure (practice or game)
- Identify scapular dyskinesis before the injury occurred. Of the 246 participants, 122 were identified as either having subtle or obvious scapular dyskinesis, yet only 4 of those individuals went on to sustain an injury. Individuals who were identified as having normal scapular motion patterns sustained the remaining 8 injuries. This observation indicates that use of the SDT as a pre-season screen assessment tool might be limited.

Obvious Dyskinesis NOT predictive of injury
McClure Scapular Exam

Symptom Altering Tests
- Modified Scapular Assistance Test
  - Rabin et al., JOSPT 2006
- Scapula Retraction Test
  - Klener et al., AJSM, 2006
- Scapula Reposition Test
  - Tate et al. (JOSPT 2008)

Is Scapula Dyskinesis a problem?
- a) Initiate/Perpetuate symptoms
- b) Normal variability
- c) Useful compensation
- d) ALL OF THE ABOVE

Is movement pattern associated with recovery?

Shoulder kinematics - no changes with exercise
- n = 39 patients with shoulder pain
- Outcomes
  - Scapular kinematics
  - Func. Outcomes – Penn Shoulder Score
  - 6–week rehabilitation
  - Strengthening, stretching, postural exercises, education

No kinematic changes with exercise
- No important changes in scapular and clavicle kinematics
- Functional outcomes improved
  - 20 points change in PSS

Kinematic changes with exercise
- n = 30; RCT
- "Control" – RC exercises
- Intervention – "Scap" + RC exercises
- Changes over time
  - Scap. Resting position changed (?)
  - Pattern remains similar
- SPADI changes – 20 points
Kinematic studies

- n = 46
- RCT
- Exercise + manual therapy
- Exercise alone
- Outcomes
  - Kinematics
  - DASH
  - Pressure pain thresholds

Functional improvements, no changes in movement patterns

- No differences between groups, pre-post exercise
- DASH improved in both groups (9-12 points)
- Pain thresholds improved in both groups

Scapular Dyskinesis: My Bottom Line

- Minimal evidence to suggest a relationship between dyskinesis and symptoms
- Emphasize symptom altering tests
- Closely evaluate impairments when symptoms are related to scapular motion
- True muscle weakness
- Poor motor control
- Match intervention to identified impairments
- Current evidence suggests symptom improvement is NOT associated with changes in movement patterns
- Not a simple “impingement” phenomenon