Rehabilitation for MDI in the Female Athlete

John Dale PT, DPT, SCS, ATC, CSCS
Andrew Naylor PT, DPT, SCS
Disclosure

• No relevant financial relationship exists
Session Learning Objectives

• Discuss etiology of multidirectional shoulder instability in the female athletes

• Identify rehabilitation techniques for this population

• Review outcomes of rehabilitation vs surgery
Definition/Anatomy

• Symptomatic instability of the GH joint in more than one direction, one of which is inferior
• More severe cases have been reported in female patients
• Capsular redundancy is a predisposing factor
• Increased laxity of the inferior capsular pouch and a defective capsular rotator interval

Multidirectional Instability

- Often described as apprehension or inability to perform specific tasks
- May not be related to a traumatic event
- If traumatic, often a subluxation versus a complete dislocation
- Multifactorial etiology involving anatomical, biochemical, and neuromuscular abnormalities
Instability

- Joint Examination
  - Joint mobility assessment
    - Normal vs Pathological
  - Load and shift test
  - Sulcus sign
  - Apprehension Test
    - 52% sens, 99% spec
    - PPV 97.9%, NPV 72.8%
  - Relocation Test
    - 45.8% sens, 54.4% spec
    - PPV 43.9%, NPV 56.3%
  - Surprise Test
    - 63.9% sens, 98.9% spec
    - PPV 98.2%, NPV 77.9%

Clustering improves accuracy

Scapular Weakness/Dyskinesia

- SICK Scapula
  - Scapular malposition
  - Inferior medial border prominence
  - Coracoid pain/malposition
  - DysKinesis of scapular movement
- Scapular Assistance Test
- Increased winging with IR
- Separation with Weightbearing
- Movement faults compared to other side
Treatment

• Rest
  • Control Inflammation
  • Modify Usage

• Treatment
  • Medical
  • Rehabilitation

• Return to play
Soft Tissue Mobilization

• Posterior Shoulder
  • Inc in IR and Horiz Add ROM post tx
  • 40-80s of treatment
  • Laudner K et al. *IJSPT*. 2014

• Latissimus Dorsi

• Subscapularis
  • Al Dalah *J Phys Ther Sci*. 2014

• Pec Major/Minor

• Serratus Anterior

• Upper Trapezius
  Laudner et al. *IJSPT*. 2014
Strengthening Exercises

• Improve strength
• Build Endurance
• Improve neuromuscular activation
• Can be used post-performance to “fatigue out” muscles after sport
• Can be used pre-performance for “warm up”
  • Warm-up to throw, don’t throw to warm up!

Wilk KE and Macrina LC. Oper Tech Sports Med 2014
Scapular Stabilization
Neuromuscular Reeducation

• Sequencing of movement
  • Prone I’s T’s Y’s
• Tactile Cuing
• Visual Feedback
• Taping
  • Kinesio/McConnell
• Posture shirts

• Addresses:
  • Sport specific movements
  • Varied rate of movement
  • Kinesthetic feedback
  • Unexpected change in environment

Wilk KE and Macrina LC. Oper Tech Sports Med 2014
PNF Patterns/Manuals

• Scapular
  • Elevation/Depression
  • Protraction/Retraction

• Manual Resistance Exercise
  • Serratus Punch
  • D2 Pattern
  • Sidelying ER
  • Prone Exercises
Manual Rhythmic Stabilization

• Local Stabilizations
• Varied Positions
  • Early phase on table
  • Late phase in ½ kneeling or athletic stance
  • Eyes open and eyes closed
• Additional weights or bands
• Varied times to build endurance
• Find the “weakness” in range of motion
Closed Chain Stability
Proprioception Drills

Regional Fall Conference & Student Conclave
Sponsored by the DC, Delaware & Maryland Chapters of the American Physical Therapy Association
Local vs Global Stabilization

- Lumbopelvic Control
- Core Control
- Scapulothoracic stability
- Glenohumeral stability


Regional Fall Conference & Student Conclave
Sponsored by the DC, Delaware & Maryland Chapters
of the American Physical Therapy Association
CKCUES Test

- 108 subjects with and without SIS for reliability testing
- Each performed 4 reps, last 3 for stats
- CKCUES showed excellent reliability
- Scores greater in active vs. sedentary and SIS
- MDC ~2.05 - 3.91 touches
Ability of subjects with MDI to use proprioception to complete UE repositioning tasks was evaluated.

12 subjects with MDI and 12 controls were blindfolded and asked to reproduce a self selected target position.

10 reps completed.

3D motion analysis was used to track position and error.

Subjects with MDI showed significantly greater hand position error than control subjects.

No error was seen between symptomatic and asymptomatic limbs in the MDI group.

Subjects with MDI may have reduced capacity to use proprioception to refine and control movement.
The effect of exercise-based management for multidirectional instability of the glenohumeral joint: a systematic review

• 4 studies met inclusion criteria
• Exercise was favored over surgery for patient reported outcome measures
• Surgery was favored for impairment outcome measures
• Concluded ‘the effect of exercised-based management compared to surgery for MDI is difficult to determine due to participant heterogeneity and bias across studies’  
  
Purpose: to determine outcomes of capsulorrhaphy with suture anchors in males and females and those with traumatic vs atraumatic onset.

Cohort Study, prospective collection, retrospective review

Outcomes:
- Intraoperative findings
- Level of sports participation
- Patient satisfaction
- ASES, SANE, DASH, and SF-12 PCS scores
- Return to sport

41 patients (25 male, 20 female)
- Atraumatic 22, Traumatic 23 shoulders
- 64% had labral tears
- 16.7% experienced instability post op

Conclusion:
- APC with suture anchors effective and safe for patients with MDI.
- Labral tears found even in patients with classic atraumatic onset
- Male patients and those with traumatic onset had more favorable outcomes.
- Females may be more challenging with post operative subluxations and need for rotator cuff interval procedures.
Take Home Points

• Patience and completeness of rehabilitation program

• Address scapular AND rotator cuff function

• Balance open and closed kinetic chain stabilization

• Complete core and full body movement skills

• Surgery a good option AFTER failure of rehab
References


