

CT Children's CLASP Guideline

Adolescent Shoulder Instability

INTRODUCTION

The shoulder joint has the greatest range of motion of any joint in the body and the highest risk for injury, accounting for 50% of all dislocations. Shoulder instability refers to the **glenohumeral joint** (humeral head and the cup/glenoid- which is part of the shoulder blade). This is different than a shoulder separation, which refers to the AC (acromioclavicular) joint between the clavicle and the shoulder blade.

Shoulder instability in an adolescent athlete can be either **atraumatic** or **traumatic**.

- **Traumatic instability:** Single event that results in an unexpected subluxation (a feeling of the shoulder slipping out of place) or dislocation, resolved by a spontaneous or manual reduction (sometimes on the field or in ED).
 - Anterior dislocations are common in young physically active athletes. The mechanism is typically a fall on an outstretched hand with the shoulder in abduction (ABD) and external rotation.
 - Posterior dislocations are less common. The mechanism is typically a fall in forward flexion, shoulder adduction (ADD) and internal rotation or a seizure.
 - Risk factors for recurrent traumatic instability include male gender, < 25 years of age, participation in a contact sport, and the presence of underlying pathologies (such as a tear of the glenoid labrum or bony injury).
- **Atraumatic multidirectional (MDI) instability:** Physiologic or acquired multidirectional instability (MDI). Patients with physiologic causes of atraumatic instability often present with global laxity. Patients with acquired causes of atraumatic instability are typically over-head athletes (e.g. swimmer, baseball player) subjected to repetitive microtrauma. Atraumatic instability is also common in younger females with some degree of hyperlaxity.

INITIAL EVALUATION AND MANAGEMENT

INITIAL EVALUATION:

- Targeted history and physical exam.
 - Mechanism of injury (will often give clues as to direction of instability)
 - Previous injuries to the shoulder
 - Numbness or tingling in distal extremity
 - Sometimes patients with atraumatic/multidirectional instability (MDI) can demonstrate their shoulder popping. Often there is no distinct injury.
 - Beighton score may be used to assess for laxity and support diagnosis of atraumatic MDI:

Beighton Criteria - Examination	Left		Right
Passive hyperextension of the fingers: passive dorsiflexion of the 5 th metacarpophalangeal joint to at least 90 degrees	1		1
Passive apposition of the thumb to the volar aspect of the ipsilateral forearm	1		1
Hyperextension of the elbow to at least 10 degrees	1		1
Hyperextension of the knee to at least 10 degrees	1		1
Flexion of the spine with placement of the palms flat on the floor without bending the knees		1	

Generalized joint hypermobility is present if:

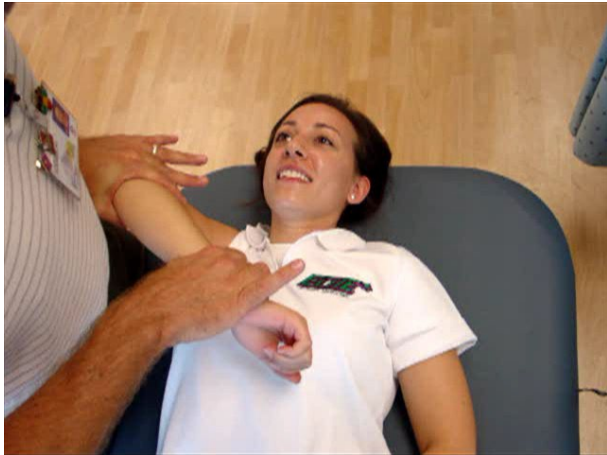
- Total score of ≥ 6 in children
- Total score of ≥ 5 in adolescents and younger adults
- Total score of ≥ 4 in adults aged 50 years and over

	<ul style="list-style-type: none"> ▪ Depending on history and acuity of injury, perform provocative testing to determine direction of instability (anterior, posterior, and/or inferior) – see Appendix A: Provocative Testing Demonstration ▪ Consider obtaining shoulder radiographs (AP, axillary, scapular Y) - Axillary view ensures glenohumeral joint is reduced and can also reveal fractures of the glenoid. These films can be done in the Sports Medicine office as well, so they are not essential for specialist referral. <p>INITIAL MANAGEMENT:</p> <ul style="list-style-type: none"> ▪ Dislocation: This means the humeral head is coming completely out of the joint, sometimes getting stuck there, sometimes will reduce on its own. If concern that shoulder is actively dislocated, refer to Emergency Department. Otherwise, refer to Connecticut Children’s Sports Medicine for initial management. ▪ Subluxation: This is a transient partial or incomplete dislocation, where the humeral head just slides too far but doesn't come out completely. Instruct patient to decrease activities that result in pain, restore normal range of motion. Physical therapy can be useful. ▪ Atraumatic multidirectional (MDI) instability: If not painful, can consider a course of physical therapy to strengthen peri-scapular and shoulder girdle musculature to aid in dynamic stabilization. If painful or interfering with activities, consider referral to Connecticut Children’s Sports Medicine for further evaluation. <p>For management of first-time dislocators, see Appendix B: First Time Dislocators</p>
WHEN TO REFER	<p>ROUTINE REFERRAL FOR CONNECTICUT CHILDREN’S SPORTS MEDICINE:</p> <ul style="list-style-type: none"> ▪ First-time dislocators ▪ Recurrent dislocators ▪ Atraumatic (MDI) instability that is concerning to the patient/family
HOW TO REFER	<p>Referral to Connecticut Children’s Sports Medicine via CT Children’s One Call Access Center Phone: 833.733.7669 Fax: 833.226.2329</p> <p>For more information on how to place referrals to Connecticut Children’s, click here.</p> <p>Information to be included with the referral:</p> <ul style="list-style-type: none"> ▪ Any pertinent clinic notes ▪ Any shoulder radiographs and other imaging if applicable
WHAT TO EXPECT	<p>What to expect from CT Children’s Visit:</p> <ul style="list-style-type: none"> ▪ When appropriate, MRI or CT scan for evaluation of concomitant pathologies such as labral tears, capsular lesions, and humeral head deformities. Often non-acute shoulder instability will be evaluated with an MRI arthrogram for better visualization of labral pathology. ▪ Proprioception and Functional Testing of the unstable shoulder ▪ If appropriate, recommendations for physical therapy versus surgical option with patient and family

APPENDIX A: Provocative Testing Demonstration



Anterior Apprehension Sign: Athlete is sitting or supine on table. Shoulder is placed in 90 degrees abduction. Clinician begins to externally rotate shoulder until the athlete expresses or shows a sign of apprehension.



Posterior Apprehension Sign: Athlete is sitting or supine on table. Shoulder is placed in 90 degrees forward flexion and slight adduction. Clinician applies a posterior directed force to the shoulder until the athlete expresses or shows a sign of apprehension or pain.



Sulcus Sign: Athlete is sitting with the shoulder resting at their side. Clinician applies a longitudinal traction on the arm. A positive test will reveal a noticeable sulcus superiorly to the head of the humerus. Athlete may report a “slipping” of their shoulder.

APPENDIX B: First Time Dislocators

- Risk of recurrence after first time traumatic dislocations is incredibly high in a young active population.
- Possible candidates for surgical stabilization are young athletes involved in collision/contact athletics at high risk of recurrence.
- Newer studies show benefit to considering surgical treatment for the first-time shoulder dislocation in a young athlete. Benefits include decreasing the risk of recurrent dislocation, which can decrease the risk for bone loss from the glenoid.
- Glenoid bone loss (from single or recurrent dislocation) is often best treated with a larger open procedure rather than the more common arthroscopic repair.