Anatomy: The glenohumeral joint of the shoulder complex is a synovial joint composed of three bones: humerus, scapula, and clavicle. Overall, stability is achieved through the static and dynamic structures of the associated muscles, tendons and ligaments. Normally the head of the humerus remains centered in the glenoid fossa, which allows for the joint surfaces to align congruently with one another and move through a full range of motion. Glenohumeral instability and subsequent dislocation is the inability to maintain the humeral head in the glenoid fossa. The glenohumeral joint is the most mobile joint in the body, making it more susceptible to injury and dislocation.

The static stabilizers of the glenohumeral joint consist of the joint capsule, ligaments and the labrum. The inferior glenohumeral ligament (IGHL) is the primary ligamentous restraint to anterior glenohumeral translation, specifically with the arm abducted and externally rotated. The dynamic stabilizers are composed primarily of the rotator cuff muscles, but also include the scapular stabilizer musculature and the biceps.

Causes/Mechanism of Injury: When the force placed on the shoulder is greater than the supporting structures of the shoulder can accommodate, a dislocation occurs. Individuals often present with a direction of instability that can predispose them to a dislocation. An anterior dislocation accounts for about 97% of recurrent or first time dislocations. This can be caused by the arm being positioned in an excessive amount of abduction and external rotation. In this position, the inferior glenohumeral complex serves as the primary restraint to anterior glenohumeral translation. Due to a lack of ligamentous support and dynamic stabilization, the glenohumeral joint is most susceptible to dislocation in the 90 degree abduction and 90 degree external rotation. Common mechanisms of injury for shoulder dislocation include falling head first off a bike or making an arm tackle in football. Other Some individuals genetically have more laxity in their supporting ligaments making them more prone to dislocation.

As a result of this anterior translation, the anterior inferior labrum and capsule can detach, known as a Bankart lesion. A Bankart lesion has been shown in around 85% of patients who have suffered a dislocation. During dislocation from the glenoid fossa a Hill-Sachs lesion can occur, which is a
compression fracture at the posterior superior aspect of the humeral head. Supporting structures that may be deficient in an anterior dislocation are the anterior capsule, long head of biceps, subscapularis, superior and middle glenohumeral ligaments. When there is a thinning in the anterior capsule, it may present between the superior and middle glenohumeral ligaments. As a result of its inherent weakness, the humeral head is more prone to dislocate in this space.

When an anterior dislocation results from a traumatic event, the anteroinferiorly displaced humeral head stretches and typically tears resulting in a loss of integrity of the anterior ligamentous capsule, often resulting in a detachment of the anterior inferior labrum and may have a Hill-Sachs lesion present. In severe cases, concurrent rotator cuff injuries may occur.

**Symptoms:** Following an acute anterior glenohumeral dislocation an individual may present with the arm held in an abducted and ER position. They may have a loss of normal contour of the deltoid and acromion prominent posteriorly and laterally. The humeral head may be palpable anteriorly, pain or limitation with movements in all directions. The humeral head may be palpable below the coracoid process towards the axilla.

Following the acute dislocation individuals may present with pain or soreness in the affected shoulder. On thorough examination, the patient may also present with damage to rotator cuff musculature, bone, vascular, and nervous structures. Vascular structure damage is a result of traction of the axillary blood vessels during the dislocation. A clinician can determine if an axillary artery injury is present by looking for reduced pulse pressure or a transient coolness in the hands. Peripheral nerve injuries following an anterior dislocation are common due to the proximity of the axillary and radial nerves.

**Treatment/Management:** Treatment following a dislocation with emphasize increasing stabilization of the glenohumeral joint. In the acute phase an individual may be placed in a brace for immobilization preferably a brace which places the arm in 10 degrees of external rotation. Exercise programs should begin within a protected ROM including isometrics for the rotator cuff and biceps. When stretching is permitted a passive stretch to the posterior portion of the joint capsule will be beneficial. Following this phase the program should increase strength and regain control of the rotator cuff. All strengthening should be working to increase dynamic stability. Strengthening should follow the pattern of first strengthening the rotator cuff, then the scapular musculature, then the deltoids followed by the pectoralis and latisimus dorsi. The final stages of rehabilitation should include prriorioceptive and functional strengthening.

Surgical intervention may be indicated with certain individuals. Surgical management can include repair of a Bankart lesion, a capsular shift (overlapping and suturing the joint capsule), or a heat probe used to shrink the capsular tissue.