

Upper Extremity Functional Assessment

Patient Name: _____

MRN: _____

Date of Injury/Surgery: _____

Surgery/Surgeon: _____

Concomitant Injuries/Procedures: _____

	Operative/Injured Limb	Non-operative/injured Limb	Limb Symmetry Index
Passive range of motion: ER-0-IR at 90 degrees ABD	- 0 -	- 0 -	-
Joint position sense-mid range (3 trials each limb)			-
Joint position sense-end range (3 trials each limb)			-
External rotation strength (average/3 trials)			
External rotation in scapular plane			
External rotation in 90 degrees abduction			
Eccentric external rotation in scapular plane			
Internal rotation strength (average/3 trials)			
Internal rotation in scapular plane			
Internal rotation in 90 degrees abduction			
Ratio ER/IR in scapular plane			
Ratio ER/IR in 90 degrees abduction			
Periscapular strength (average/3 trials)			
Middle Trapezius			
Lower Trapezius			
Motor Control			
Scapular Dyskinesis Test	Symmetry: Y or N		
Functional Performance Tests (average /3 trials)			
Upper Quarter Y-Balance			
Closed Kinetic Chain Upper Extremity Stability	Males: ≥ 21 Y or N Females: ≥ 23 Y or N		
Single Arm Seated Shot-Put Test			
Shoulder Endurance			
Posterior Shoulder Endurance Test			

Ready to return to sport? YES NO

Recommendations: _____

Examiner: _____

Joint Position Sense begins with the patient in a supine position. Arm is ABD to 90 degrees with elbow flexed to 90 degrees. With the patient's eyes closed, the arm is passively moved to an angle of either IR or ER by the clinician. This angle is measured with either an inclinometer or goniometer. The arm is then passively moved between IR and ER and then the patient is asked to actively reproduce the angle measured. This is repeated at varying angles for 3 trials and recorded for both mid-range and end range. A > 5 degree error is considered abnormal.

Strength Testing

External rotation strength is measured using a handheld dynamometer. The patient is lying in supine and instructed to apply a maximal isometric force against the HHD positioned just proximal to the wrist and the average of 3 trials is recorded for each limb. 3 trials each are taken in the scapular plane and ABD at 90 degrees.

Internal rotation strength is measured using a handheld dynamometer. The patient is lying in supine and instructed to apply a maximal isometric force against the HHD positioned just proximal to the wrist and the average of 3 trials is recorded for each limb. 3 trials each are taken in the scapular plane and ABD at 90 degrees.

Eccentric external rotation strength is measured using the HUMAC system seated in both the scapular plane and 90 degrees of abduction. An average of 3 trials is recorded for each limb.

ER/IR Ratio is calculated for each limb based on the average of 3 trials. The average isometric external rotation strength is divided by the average internal rotation strength.

Middle Trapezius is measured using a handheld dynamometer. The patient is lying in prone with the arm abducted to 90 degrees and instructed to apply maximal isometric force against the HHD positioned just proximal to the elbow in the horizontal abduction direction. An average of 3 trials is recorded for each limb.

Lower Trapezius is measured using a handheld dynamometer. The patient is lying in prone with the arm elevated to 120 degrees and instructed to apply maximal isometric force against the HHD positioned just proximal to the elbow in the elevation direction. An average of 3 trials is recorded for each limb.

Motor Control

Scapular Dyskinesis Test is performed with the patient standing facing away. Patient begins with the arms by the sides fully extended and shoulders in neutral rotation. Bilateral flexion and ABD are performed with full range of motion. Arms are elevated at a cadence of 25 beats per minute for five repetitions. Patients < 150 lbs use 3 lb weights, patients > 150 lbs use 5 lb weights. The examiner determines symmetry or asymmetry and documents the quality of the movement.

Functional Performance Tests

Upper Quarter Y-Balance Test starts with patient in a pushup position with the feet no more than 12 inches apart. The subject performs maximal effort reaches with the free hand in three directions (medial, superolateral, and inferolateral) named in relation to the stationary hand. The distance reached is recorded for each hand taking the highest of score of 3 trials. The sum of the 3 reach directions is calculated for a composite score. Arm length is utilized to normalize reach score. Arm length is calculated by measuring from C7 to longest finger.

Y-Balance UE Test			
Arm Length (from C7 to tip of longest digit)			-
Medial (Best of 3)			-
Superolateral (Best of 3)			-
Inferolateral (Best of 3)			-
Composite Score			-
Normalized Reach (M,S,I) Composite score/3 x arm length			

Closed Kinetic Chain Upper Extremity Stability Test starts with two strips of 1.5 inch athletic tape placed parallel to each other 36 inches apart measured with a standard tape measure. The starting position is the patient has one hand on each piece of tape in the pushup position. Males keep the knees off the ground, females take modified position (on knees). The patient moves one hand to reach across their body and touch the piece of tape lying under the opposing hand. After touching the tape line, the hand is returned to the original starting position. The patient performs the same movement with the other hand. The patient repeats this for 15 seconds and each touch to the tape is counted as one. An average of 3 trials is recorded.

The patient should be instructed to keep a straight back with their hands and shoulders in a perpendicular position.

Single-Arm Seated Shot-Put Test begins with the patient take a long-seated position against a backrest/wall. Grip a 2 kg medicine ball in their hand while keeping their elbow tucked against their torso as far back in the backrest/wall as possible. The opposite arm is placed in the patients lap. Patients are instructed to shot-put the medicine ball as hard as you can to obtain the greatest distance. Patients are also instructed not to bend knees during the test. Test is repeated if patients cross the midline of their torso with the test arm, moved torso from backrest/wall, bent their knees, or preloaded before putting the ball. An average of 3 trials is recorded.

Reference additional sport-specific functional performance tests below for overhead and power athletes

Shoulder Endurance

Posterior Shoulder Endurance Test starts with the patient in prone with the test shoulder off the table and the arm perpendicular to the floor with elbow extended. Patient holds a weight equal to 2% of body weight. Patient is instructed to horizontally abduct the arm to 90 degrees at a cadence of 30 beats per minute. There is a one second hold at the top of the arc of motion. Repeat until patient fatigues indicated by inability to hold arm at top of the arc of motion (1 second), compensation with elevation of entire upper torso, or verbal report of inability to continue. Repetitions are counted.

Upper Extremity Functional Assessment-Overhead Athletes

	Operative Limb	Non-operative Limb	Limb Symmetry Index
Athletic Shoulder Test			>100% or < 100%
Wall throws Test at 90/90			>100% or <100%
BABER			>100% or < 100% > 16 Y or N

Functional Performance Tests

Athletic Shoulder (ASH) Test is performed with the patient in the prone position. The shoulder is tested in the I (180 degrees shoulder abduction), Y (135 degrees shoulder abduction) and T (90 degrees shoulder abduction) positions using a handheld dynamometer placed under the palm of the hand (a force plate can also be used). The contralateral arm is positioned in the patient's low back. Three trials of maximum force are performed in each position. An average of 3 trials is recorded for each limb and each position.

Wall throws test at 90/90 Patient stands in a doorway and throws a 2 lb plyo ball against the wall at 90 degrees of ABD for 30 seconds. The number of throws on both the dominant and non-dominant shoulder are calculated.

BABER Patient holds a 6-7 lb medicine ball at their shoulder with elbow bent. Instruct the patient to extend their elbow at 90 degrees of shoulder abduction until full extension. Return the ball to the shoulder and press the ball overhead to 180 degrees of shoulder flexion. Return the ball to the shoulder. Count the number of repetitions in one minute for dominant and non-dominant arm. Repetitions do not count if elbow does not fully extend, the ball is not returned to the shoulder or the ball is dropped.

Upper Extremity Functional Assessment-Power Athletes

	Operative/Injured Limb	Non-operative/injured Limb	Limb Symmetry Index
Standing Cable Press			>90 % or < 90%
One arm hop test			>95% or < 95%
Athletic Shoulder Test			>100% or < 100%

Functional Performance Tests

Standing Cable Press Test Patient holds the cable handle and is instructed to perform a smooth pressing motion. Resistance is set to 30% of athletes body weight. The terminal arm position is 90 degrees of flexion, neutral horizontal ABD and ADD and full pronation. Test is performed to a 60-bpm metronome. Task is performed to failure as defined by unable to keep up with the metronome, compensatory strategies or inability to achieve terminal arm position. Count number of reps for dominant and nondominant side. Calculate LSI.

One-arm hop test Patient starts in a plank position immediately to the side of a 4-inch step. The patient uses weight bearing arm to hop on to the step and lands on entire hand. The non-weight bearing hand is placed behind on the low back. The patient then uses the weight bearing arm to hop off the step landing in the starting position. The patient repeats this movement five times as quickly as possible. Begin time when the patient leaves the ground on the first hop lands the last hop.

Athletic Shoulder (ASH) Test is performed with the patient in the prone position. The shoulder is tested in the I (180 degrees shoulder abduction), Y (135 degrees shoulder abduction) and T (90 degrees shoulder abduction) positions using a handheld dynamometer placed under the palm of the hand (a force plate can also be used). The contralateral arm is positioned in the patient's low back. Three trials of maximum force are performed in each position. An average of 3 trials is recorded for each limb and each position.

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