

## Upper Extremity Functional Assessment

The upper extremity functional assessment is designed to test the upper extremity following surgery or injury to determine the patient's readiness to return to sport. The assessment addresses ROM, proprioception, strength, endurance, motor control and functional testing. Descriptions of each test with recommended standards is found in the back. The assessment should be utilized once patient has completed the appropriate rehab and has been cleared by physician.

Patient Name: \_\_\_\_\_

MRN: \_\_\_\_\_

Injury/Surgery: \_\_\_\_\_

Date of Injury/Surgery: \_\_\_\_\_

Concomitant Injuries/Procedures: \_\_\_\_\_

|   | Operative Limb  | Non-operative limb | Limb Symmetry Index |
|---|---|--------------------|---------------------|
| Passive Range of Motion: ER-0-IR at 90° ABD                                 | - 0 -   | - 0 -              | -                   |
| Joint Position Sense – Mid range (Avg 3 trials each limb)                   |   |                    |                     |
| Joint Position Sense – end range (Avg. 3 trials each limb)                  |   |                    |                     |
| External Rotation Strength (Avg of 3 trials)<br><i>Handheld Dynamometer</i> |   |                    |                     |
| In scapular plane   |   |                    |                     |
| In 90° ABD  |   |                    |                     |
| Eccentric ER in scapular plane  |   |                    |                     |
| Internal Rotation strength (Avg/3 trials)<br><i>Handheld dynamometer</i>    |   |                    |                     |
| In scapular Plane   |   |                    |                     |
| In 90° ABD  |   |                    |                     |
| Ratio of ER/IR in scapular plane  |   |                    |                     |
| Ratio of ER/IR in 90° ABD   |   |                    |                     |
| Periscapular Strength (Avg/3 trials)  |   |                    |                     |
| Middle Trapezius  |   |                    |                     |
| Lower Trapezius   |   |                    |                     |
| Motor Control   |   |                    |                     |
| Scapular Dyskinesia Test  | Symmetry:   Yes   or   No                                 |                    |                     |
| Functional Performance Tests (Avg/3 trials)                                 |   |                    |                     |
| Upper Quarter Y-Balance   |   |                    |                     |
| Closed Kinetic Chain Upper Extremity Stability                              | Males: $\geq 21$ Yes or No    Females $\geq 23$ Yes or No |                    |                     |

|                                   |  |  |  |
|-----------------------------------|--|--|--|
| Single arm seated shot-put test   |  |  |  |
| Shoulder Endurance                |  |  |  |
| Posterior shoulder endurance test |  |  |  |

Cleared for sport activities:      Yes                  No

Recommendations:

Examiner: \_\_\_\_\_

**Joint Position Sense:** Patient in supine. Arm ABD to 90 degrees with elbow flexed 90 degrees. Patient’s eyes closed, move the patient’s arm passively to an angle of either ER or IR, measure that angle. Then passively move the shoulder through ER and IR, then ask patient to actively reproduce the angle measured. Repeat at various angles for 3 trials and record for both mid-range and end range.

- A > 5 degrees error is considered abnormal

**Strength Testing**

**External rotation strength:** Using a handheld dynamometer(HHD). Patient is supine and instructed to apply maximal isometric force against the HHD positioned just proximal to the wrist. Measured in both the scapular plane and in 90 degrees ABD. Average of 3 trials for each limb, in each position.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

**Internal rotation strength:** Using an HHD. Patient is supine and instruct them to apply a maximal isometric force against the HHD positioned just proximal to the wrist. Measured in both scapular plane and in 90 degrees ABD. Average of 3 trials for each limb, in each position.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

**Eccentric external rotation strength:** Measured with the HUMAC system. Patient is seated and it is measured in both scapular plane and 90 degrees ABD. Average of 3 trials for each limb, in each limb.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

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

- Limb Symmetry: involved arm  $\geq$  90% of uninvolved arm

**Middle Trapezius:** Measured with HHD. Patient in prone with arm ABD 90 degrees. Instruct patient to apply maximal isometric force against the HHD that is proximal to the elbow in the horizontal abduction direction. Average of 3 trials for each limb.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

**Lower Trapezius:** Measured with HHD. Patient in prone with arm elevated to 120 degrees. Instruct patient to apply maximal isometric force applied against the HHD that is just proximal to the elbow in the elevation direction. Average of 3 trials for each limb.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

## **Motor Control**

**Scapular dyskinesis test:** Patient is standing facing away from clinician. Patient's arms at the sides in neutral rotation. Bilateral shoulder flexion and ABD performed through the full range of motion. Arms elevated at a cadence of 25 bpm for 5 repetitions. Patients that weigh < 150lb use 3 lbs., patients weighing > 150lb use 5lbs. The clinician is determining if there is symmetry or asymmetry in scapulohumeral motion. Document the quality of motion.

## **Functional Performance tests**

**Upper Quarter Y-balance Test:** Patient in push-up position, with feet  $\leq$  12 inches apart. Patient performs a maximal effort reach with the free hand in 3 directions: medial, superolateral and inferolateral (named in relation to stationary arm). Distance reached is recorded for each hand. Average the 3 trials for each direction. The sum of the 3 directions is calculated for total excursion score.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

**Closed Kinetic Chain Upper Extremity Stability test (CKCUEST):** Place 2 strips of 1.5-inch athletic tape on the ground parallel to each other 36-inches apart. Starting Position: push-up position with one hand on each piece of tape. Males have knees off the ground, females may have knees on the ground in modified position. Move one hand across their body and touch the piece of tape on the opposite side, then return to starting position. Then perform with the opposite arm. Back should remain straight and hands and shoulders in a perpendicular position. Test is 15 seconds. Each tape touch is 1 repetition. Average of 3 trials.

**Single arm seated shot-put test:** Patient is long sitting with back against a wall/backrest. 2kg medicine ball is in their hand with elbow tucked against their torso as far back into the backrest/wall as possible. Opposite arm is on the patient's lap. Instruct patient to shot-put the medicine ball as hard as they can to throw the greatest distance. Patient's knees cannot bend. Test is repeated if the patient's test arm crosses midline, torso moved away from wall/backrest, knees bent, or preloaded before putting the ball. Average of 3 trials.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

## **Shoulder Endurance**

**Posterior shoulder endurance test:** Patient in prone with test shoulder off the table and arm perpendicular to the floor with elbow extended. Patient holds a weight that is 2% of bodyweight. Patient horizontally abducts the arm to 90 degrees at a cadence of 30 bpm. There is a 1 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, verbal report of inability to continue. Total repetitions are counted for each side.

- Limb Symmetry: Involved  $\geq$  90% of uninvolved

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| <b>Contact</b> | Please email *** with questions specific to this protocol |
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References