

Upper Extremity Functional/Return to Sport Testing Protocol

1. Strength Testing

- a. Biodex (see Biodex protocol) **OR**
- b. ER in neutral: Supine
- c. IR in neutral: Supine
- d. ER at 90/90
- e. IR at 90/90
- f. Scaption at 90 deg: Seated

Interpretation of Results¹:

- a. *ER: IR Ratio: 72-76%*
- b. *Strength to BW:*
 - i. *ER: 18-23%*
 - ii. *IR: 26-32%*
- c. *Bil Comparison:*
 - i. *90% Limb Symmetry Index*
 - ii. *In throwers, LSI should be >100% if affected side is throwing shoulder*

2. Modified (Isometric) Prone Scapular Endurance Test: Fatigue Protocol

- a. Prone with arm at 90 deg ER and 90 deg horizontal abduction with weight that is 2% BW. Contralateral hand behind back to mitigate assistance
- b. Place a stool 5 inches below the hand after setting them into scapular retraction
- c. Stop time when hand touches stool

Interpretation of Results¹:

- a. *> 90% Limb Symmetry Index*

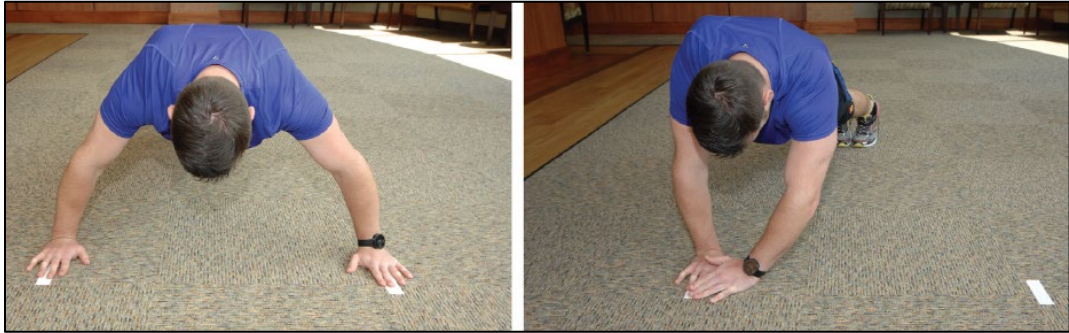


3. **CKC UE Stability Test:**

- a. Start in pushup position with hands 36 inches (mark with tape)
- b. Alternating hand taps across body to touch opposing piece of tape as many times as possible in 15 seconds
- c. Female standard testing position is on knees in modified pushup position
- d. For smaller or youth athletes, tape can be shoulder width apart

Interpretation of Results¹:

- a. *>25 Reps for RTS*
- b. *>21 Reps for return to practice*



4. **Prone Plyo Ball Drops:**

- a. Patient in prone position on table with 2# plyoball in hand
- b. Perform ball drops and catches for 30 seconds with the shoulder abducted to 90 and elbow extended

Interpretation of Results¹:

- *90% LSI for return to practice*
- *100% LSI for return to sport*



5. Misc Tests As Determined by PT:

a. 90/90 Ball Taps:

- i. Stand in doorway at 90 deg abduction and bounce 2# plyoball against the wall for 30 seconds
- ii. Count number of bounces on each side

Interpretation of Results:

a. 110% or greater on the dominant side

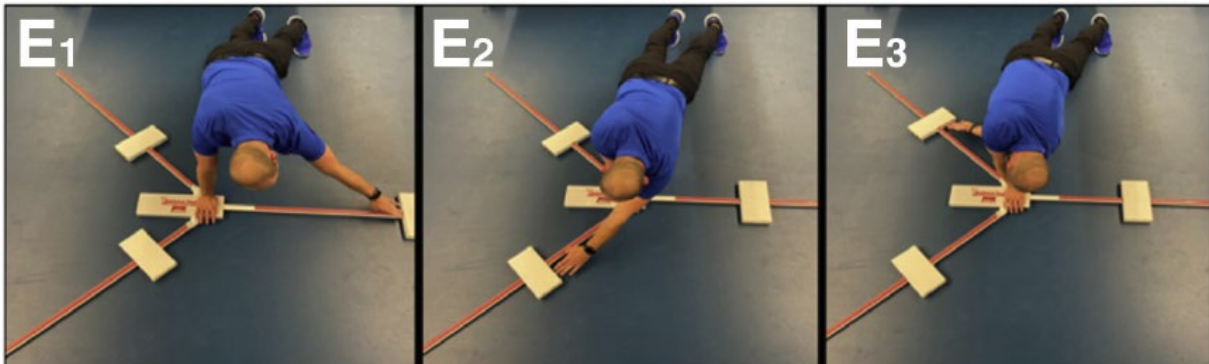


b. UE Y Balance Test:

- i. Stance arm is arm being measured, just as with LQYBT
- ii. Reach is named in terms of directional relationship to the stance arm
- iii. Start with right thumb just behind and parallel to red line in a pushup position with feet shoulder width apart and hands directly under shoulders
- iv. Unlike LQYBT, all 3 reach directions are performed sequentially, one right after another without a break in this order:
 1. Right medial reach, right inferolateral reach, right superolateral reach
 2. Rest
 3. Left medial reach, left inferolateral reach, left superolateral reach
 4. Rest
- v. Take the best number for each direction out of 3 attempts

Interpretation of Results²:

- 90% LSI

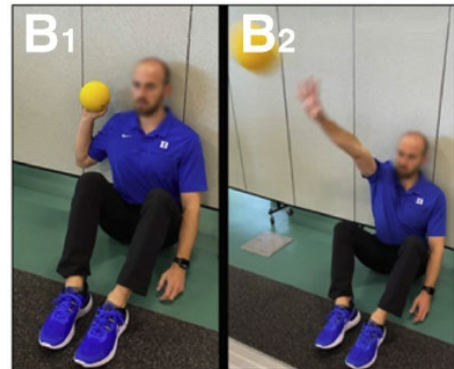


c. Seated Shotput Test:

- i. Starting Position: Sit with back against a wall, knees bent to 90°, feet flat on the floor
- ii. Hold medicine ball at shoulder height and push (not throw) as far forward as possible, keeping head, scapula on nontest side, and back in contact with wall and nonthrowing arm in their lap
- iii. 2 practice trials, one at 75% and one at 100% with 20-30s rest between trials
- iv. Complete 3 max effort trials with a rest between each throw
- v. Distance measured from wall to site of ball contact with the floor

Interpretation of Results²:

- Expected asymmetry of 3-13% between dominant and nondominant sides.

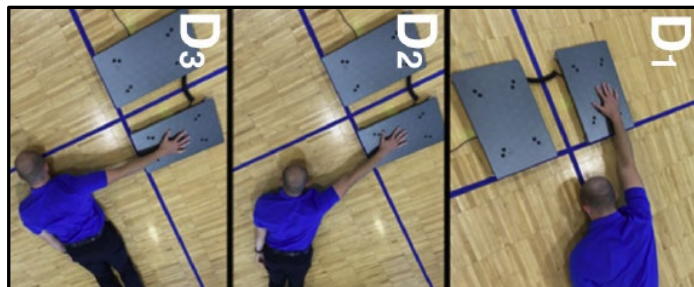


d. ASH Test:

- i. Starting Position: Prone on floor with forehead resting on 4 cm foam block (or towel) and hand placed on a vertical axis platform.
- ii. Push down from the shoulder in 3 consecutive test positions maximally for 3 seconds:
 2. I-test: Shoulder positioned in full abduction (180°), forearm in pronation and elbow in full extension. Contralateral arm at the side.
 3. Y-test: Shoulder positioned at 135°, forearm in pronation and elbow in full extension. The contralateral arm placed behind the back
 4. T-test: Shoulder positioned at 90°, forearm in pronation and elbow in full extension. The contralateral arm is placed behind the back.

Interpretation of Results²:

- 90% Limb Symmetry Index

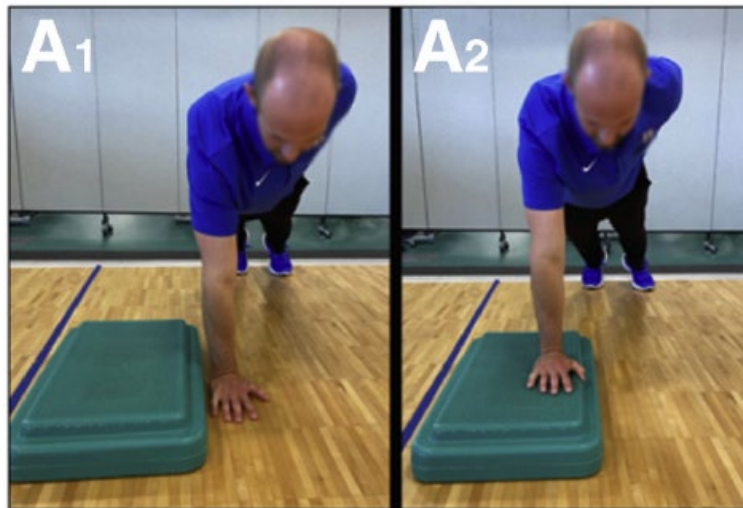


e. One Arm Hop Test:

- a. Patient in one arm pushup position with back flat, feet and shoulders apart, weight bearing (WB) arm positioned perpendicular to floor
- b. Place non weight bearing hand in posterior aspect of low back
- c. Patient uses WB arm to hop onto 4 inch step
- d. Patient uses WB arm to hop back down to starting position
- e. Repeat 5 times as quickly as possible
- f. Acceptable test is when patient fully hops onto the rubber portion of step, does not use other hand, does not touch down with a knee, keeps back flat, and feet in the same position.

Interpretation of Results²:

- *Expected asymmetry of 4.4 seconds between dominant and nondominant sides*



References:

1. Wilk KE, Bagwell MS, Davies GJ, Arrigo CA. Return To Sport Participation Criteria Following Shoulder Injury: A Clinical Commentary. *Int J Sports Phys Ther.* 2020 Aug;15(4):624-642.
2. Otley T, Myers H, Lau BC, Taylor DC. Return to Sport After Shoulder Stabilization Procedures: A Criteria-Based Testing Continuum to Guide Rehabilitation and Inform Return-to-Play Decision Making. *Arthrosc Sports Med Rehabil.* 2022 Jan 28;4(1):237-e246.