

A High Percentage of Healthy Volunteers Fail to Pass Criteria-Based Return to Sport Testing for Arthroscopic Bankart Repair

Amit Momaya¹, Mathew Daniel Hargreaves, Audria Wood, John Nicholas Manfredi, Eugene Willis Brabston², Aaron Casp³, Thomas Evely, Kevin E. Wilk⁴, Michael S Bagwell

¹UAB Orthopedic Surgery, ²University of Alabama Birmingham, ³University of Alabama at Birmingham, ⁴Champion Sports Med

INTRODUCTION: The rate of recurrent shoulder instability following return to sport (RTS) after Bankart repair remains unsatisfactory. This has led to the establishment of criteria-based return to sport (CBRTS) protocols which help providers determine if athletes are ready to return to their previous level of activity. However, there is a lack of evidence supporting passing thresholds for CBRTS protocols. This study aims to evaluate whether healthy volunteers can pass a previously published CBRTS protocol.

METHODS: This was a single-institution prospective single cohort study. The study was conducted in March 2024 and included 26 volunteers with no previous history of upper extremity injury or surgery. Volunteers were assessed according to a previously published CBRTS protocol: (i) isometric testing of external rotation (ER) and internal rotation (IR) in the supine and prone position at 0° and 90° as assessed by hand-held dynamometry; (ii) isokinetic strength testing of ER and IR at 60°/s and 180°/s as assessed by Biodex Isokinetic Dynamometer; (iii) endurance testing of side lying ER, prone ER, and prone Y test; and (iv) functional testing via closed kinetic chain upper extremity (CKCUE) stability test and unilateral shot put test. A limb symmetry index (LSI) and proportion of volunteers that passed each test were calculated for each test. LSI was calculated as the non-dominant arm value divided by dominant arm value for each test. A passing LSI value for all of the tests was defined as LSI within 10% of the contralateral side, except for the shot put test, for which a passing value was defined as 80% ≤ LSI ≤ 110%. A passing score for the CKCUE stability test was greater than or equal to 21.

RESULTS: The 26 study participants had an average age of 24.8 years (range, 23-35) and included 14 males and 12 females. Despite the mean LSI for each of the isokinetic tests falling within the passing range, the proportion of volunteers passing the isokinetic tests ranged from 30.8% to 57.7%. For isometric testing, the proportion of volunteers passing each test ranged from 46.2% to 69.2%. For endurance testing, the proportion of volunteers passing each test ranged from 19.2% to 30.8%. Lastly, 50% of volunteers passed the CKCUE stability test, while 96.2% of volunteers passed the unilateral shot put test. A non-dominant arm deficit was apparent in 10 of the 12 tests that involved bilateral testing (Table 1).

DISCUSSION AND CONCLUSION:

This study demonstrates that a high percentage of healthy individuals are unable to pass many of the post-Bankart repair CBRTS protocol tests. Clinicians should take such findings into account when utilizing CBRTS testing for athletes after arthroscopic Bankart repair. The benchmark LSI should be set at a value that is practical while still protecting against recurrent instability.

Table 1: Healthy Volunteer Performance of Post-Bankart Repair Criteria-Based Return to Sport Protocol		
Isokinetic Testing	Proportion Passing LSI ≥ 90, ≤ 110 (%)	Average Non-Dominant Arm Deficit (%)
ER 60 deg/s	42.3	-1.5 (21.2)
IR 60 deg/s	34.6	4.7 (22.7)
ER 180 deg/s	57.7	-1.3 (14.6)
IR 180 deg/s	30.8	1.0 (23.1)
Isometric Testing	Proportion Passing LSI ≥ 90, ≤ 110 (%)	Average Non-Dominant Arm Deficit (%)
Supine ER	69.2	2.1 (10.3)
Supine IR	57.7	2.0 (15.4)
Prone ER	46.2	11.2 (12.0)
Prone IR	69.2	3.2 (9.2)
Endurance Testing	Proportion Passing LSI ≥ 90, ≤ 110 (%)	Average Non-Dominant Arm Deficit (%)
Side Lying ER	19.2	8.9 (39.1)
Prone ER	19.2	6.1 (43.6)
Prone Y	30.8	1.3 (35.8)
Functional Testing	Proportion Passing CKCUE ≥ 21 (%)	Average
CKCUE	50	21.2 (6.6)
Functional Testing	Proportion Passing LSI ≥ 80, ≤ 110 (%)	Average Non-Dominant Arm Deficit (%)
Shot Put	96.2	6.4 (6.9)