Return to Sports Function in Overhead Athletes Following Surgical Management of Labral Tears: A Systematic Review

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INTRODUCTION:
Labral tears in the shoulder are frequent injuries, particularly in athletes due to strenuous overhead activities and imbalances in muscle mechanics. Surgical interventions, including SLAP repair and Biceps Tenodesis, offer potential remedies. This study aims to systematically review the literature to evaluate return to play rates and subsequent sports function following surgical treatment of labral tears in overhead athletes.
METHODS: Adhering to PRISMA guidelines, a systematic search of the literature was conducted on June 15, 2023, by ISH and articles screened by two independent reviewers APT and DB. Databases searched included PubMed, EMBASE, Cochrane Central Register of Controlled Trials. Studies were eligible for inclusion if they were original research, had a level of evidence I – IV, and reported on clinical or patient-reported outcomes (PROs) for overhead athletes who underwent operative management for labral tears resulting from overuse. Studies with mixed cohorts of overhead and non-overhead athletes were also included, with a focus on outcomes from the overhead athlete subset. Exclusion criteria included: articles not written in English, case reports, conference abstracts, systematic review/meta-analysis, literature review/expert-opinion articles, letter to the editors, biomechanical studies, cadaveric studies, traumatic labral/labrum tears, and labral tears with concomitant rotator cuff tear.
RESULTS:
The literature search returned 1917 articles (51 duplicates) and a total of 68 full-texts were screened for eligibility, ultimately yielding 23 studies for systematic review comprising 1,225 patients who underwent operative management (arthroscopic labral repair, posterior labral repair, capsulolabral reconstruction, SLAP repair, biceps tenodesis, or combined SLAP repair with biceps tenodesis). The patients had a mean age of 26.6 years (95% CI: 23.8 – 29.3 years; I2=67%). Percent males were 85% of the total sample (95% CI: 82 – 86%; I2=0%) and the dominant shoulder was affected in 87% of the cases (95% CI: 78 – 93%; I2=73%).

The overall return-to-play (RTP) rate was 87% (95% CI: 77 – 93%; I2=76%). However, only 65% (95% CI: 56 – 72%; I2=75%) managed to return to their previous level of play (Figure 1). A sub-group analysis exclusively for overhead athletes were found to have a RTP rate of 81% (95% CI: 69 – 89%; I2=77%), with 66% (95% CI: 54 – 75%; I2=81%) returning to their prior level of play (Figure 2). A further sub-group analysis, focusing solely on baseball pitchers, showed a lower RTP rate of 71% (95% CI: 53 – 85%; I2=62%), whereas baseball fielders had a slightly higher RTP of 83% (95% CI: 69 – 91%; I2=17%) (Figure 3). Furthermore, baseball pitchers had return to prior play (RTpP) of 54% (95% CI: 47 – 61%; I2=0%), whereas baseball fielders had higher RTpP of 80% (95% CI: 70 – 88%; I2=0%). The sub-analyses by surgical technique showed SLAP repairs with RTP of 88% (95% CI: 74 – 95%; I2=72%), whereas biceps tenodesis had RTP of 74% (95% CI: 44 – 91%; I2 82%) (Figure 4).

The American Shoulder and Elbow Surgeons (ASES) score was the most commonly reported PRO, found in 9 studies, with an average of 89.8 (95% CI: 87.3 – 92.3; I2=91%) (Figure 5A). This was followed by the Kerlan-Jobe Orthopaedic Clinic Shoulder & Elbow (KJOC) score in 5 studies, averaging 68.7 (95% CI: 61.2 – 76.2; I2=98%) (Figure 5B), the Visual Analogue Scale (VAS) score in 4 studies, averaging 1.0 (95% CI: 0.5 – 1.5; I2=83%) (Figure 5C), and the Constant score in 3 studies with an average of 95.3 (95% CI: 94.6 – 96.0; I2=0%) (Figure 5D).
DISCUSSION AND CONCLUSION:
A significant majority of overhead athletes achieved a return-to-play rate of 87%, yet only 65% returned to their former level of performance, with pitchers exhibiting considerably lower RTP (71% vs 83%) and RTpP(54% vs 80%) compared to fielders. PROs such as the ASES and KJOC indicated a high level of patient satisfaction post-operatively. Despite the high level of satisfaction, overhead athletes, especially pitchers, face specific obstacles in regaining pre-injury level of performance.

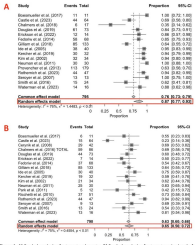

Figure 1. A) Pooled analysis of return-to-play rate. **B)** Pooled analysis of return-to-prior level of play.

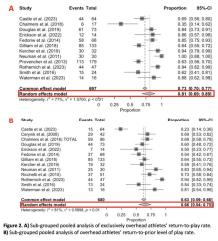

Figure 2. A) Sub-grouped pooled analysis of exclusively overhead athletes' return-to-play rate. **B)** Sub-grouped pooled analysis of overhead athletes' return-to-prior level of play rate.

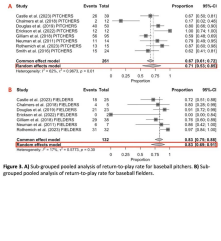

Figure 3. A) Sub-grouped pooled analysis of return-to-play rate for baseball pitchers. **B)** Sub-grouped pooled analysis of return-to-play rate for baseball fielders.

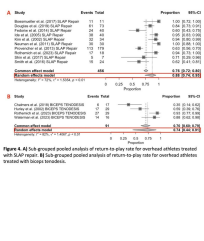

Figure 4. A) Sub-grouped pooled analysis of return-to-play rate for overhead athletes treated with SLAP repair. **B)** Sub-grouped pooled analysis of return-to-play rate for overhead athletes treated with biceps tenodesis.

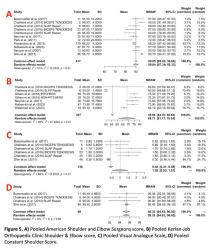

Figure 5. A) Pooled American Shoulder and Elbow Surgeons score, **B)** Pooled Kerlan-Jobe Orthopaedic Clinic Shoulder & Elbow score, **C)** Pooled Visual Analogue Scale, **D)** Pooled Constant Shoulder Score.