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135° Vs. 155° Humeral Head Inclination in Reverse Total Shoulder Arthroplasty: A Systematic Review

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Summary:
In reverse total shoulder arthroplasty, the 155° prosthesis has a significantly higher rate of scapular notching and dislocation compared to the 135° prosthesis. A lateralized glenoid with the 135° prosthesis may have contributed to this difference.

Abstract:
BACKGROUND
Appropriate humeral component inclination in reverse total shoulder arthroplasty (RTSA) is critical in overall construct stability, however components with increased inclination may result in increased scapular notching.

PURPOSE
To determine if a difference exists between RTSA prostheses with a 135° vs. 155° humeral component inclination with respect to both dislocation rates and scapular notching rates.

HYPOTHESIS
There will be more dislocations with the 135° and more scapular notching with the 155° prostheses.

METHODS
A systematic review was registered with PROSPERO and performed with Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines using three publicly available free databases. Therapeutic clinical outcome investigations reporting number of dislocations, number of patients with scapular notching, and post-operative range of motion following RTSA with levels of evidence I-IV were eligible for inclusion. All study and subject demographics were analyzed. Statistics were calculated using two-proportion Z-tests.

RESULTS
Seventy studies including 4128 shoulders (average age 71 years, 64% female) undergoing RTSA were included. Of these, 3461 (83.8%) utilized the 155° prosthesis and 667 (16.2%) utilized the 135° prosthesis. The rate of scapular notching was 2.00% in the 135° group and 28.11% in the 155° group ($p<0.0001$ $z=14.5$). The rate of dislocation was 2.00% in the 135° group and 3.50% in the 155° group ($p<0.039$ $z=2.07$). The post-operative range of motion is shown in Table 1 and Figure 2.

CONCLUSION
The 155° prosthesis has a significantly higher rate of scapular notching and dislocation compared to the 135° prosthesis. A lateralized glenoid with the 135° prosthesis may have contributed to this difference.