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# KSES 2026

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## Does Scapular Muscle Training Program Preoperatively Improve the Functional Outcomes and Decrease coracoid pain? : A Randomized Controlled Trial

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### Introduction and Background

Rotator cuff tears (RCTs) frequently disrupt scapular kinematics, contributing to shoulder dysfunction and symptoms such as coracoid tenderness. While scapular-focused rehabilitation is routinely implemented postoperatively, the potential benefits of initiating such training preoperatively remain unclear.

### Material and Method

In this prospective, double-blinded, randomized controlled trial, 30 patients scheduled for ARCR were randomly assigned to a prehabilitation group (n = 15) or a standard rehabilitation control group (n = 15). The intervention group participated in a 4–6 week supervised, home-based scapular training program focusing on mobility and strengthening exercises. Outcomes were assessed preoperatively and at 6 weeks, 3 months, and 6 months postoperatively. Evaluations included Visual analog scale (VAS) pain score, American Shoulder and Elbow Surgeons score (ASES) score, Shoulder Pain and Disability Index (SPADI) , Constant score, 5-level EQ-5D version (EQ-5D-5L), SICK scapular score, shoulder ROM, isometric periscapular muscle strength, and coracoid tenderness incidence.

### Results

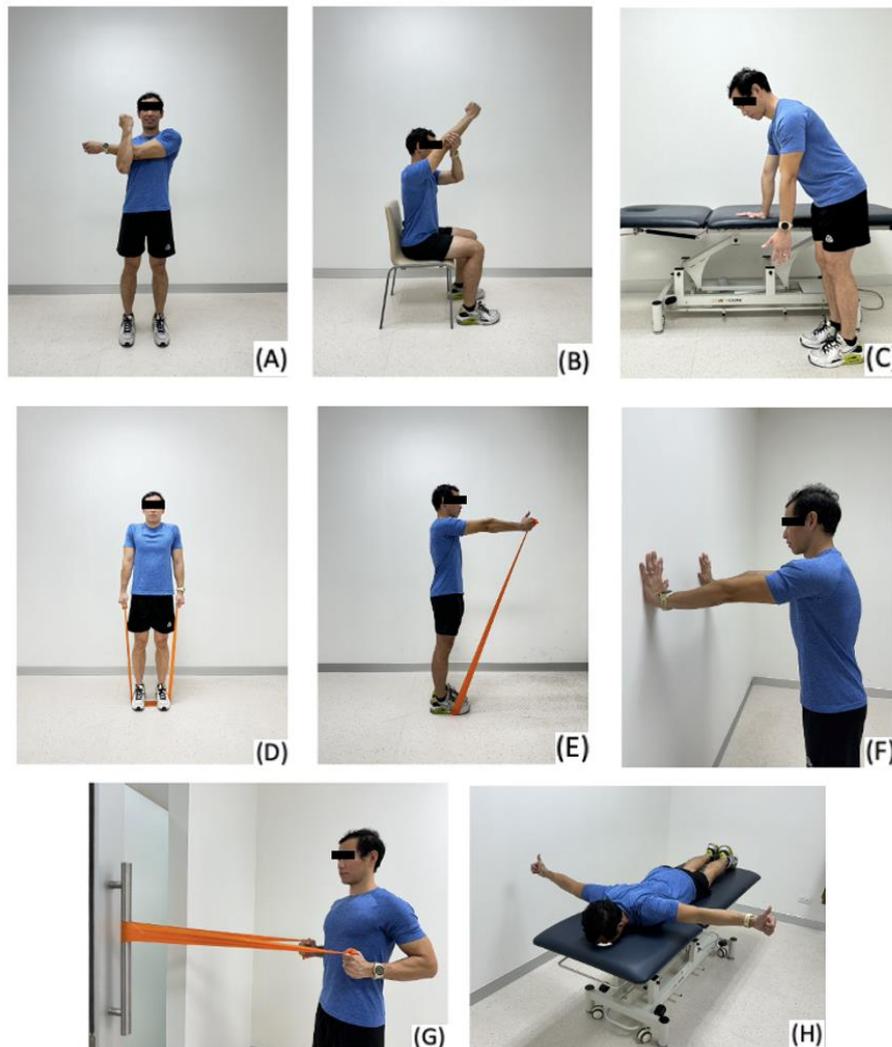
Both groups demonstrated improvement in clinical outcomes over time. At 6 weeks, the intervention group exhibited a significantly higher SICK scapular score ( $9.30 \pm 4.49$ ) compared to controls ( $6.13 \pm 2.38$ ,  $p = 0.020$ ), indicating early postoperative abnormal scapular kinematics. However, this difference diminished by 3 months, suggesting functional recovery. Coracoid tenderness prevalence decreased more in the intervention group (from 53.3% to 20.0%) than in controls (from 33.3% to 6.7%) by 3 months ( $p = 0.074$ ). At 3 months, the control group showed greater improvements in forward flexion and abduction, while the intervention group demonstrated superior gains in rhomboid and lower trapezius strength.

### Conclusions

Preoperative scapular-focused training improved periscapular muscle strength and was associated with a trend toward reduced coracoid tenderness. Although early scapular mechanics appeared worse at 6 weeks, normalization occurred by 3 months. Incorporating scapular-focused prehabilitation may enhance recovery following ARCR.



Figure & Table 1.



**Fig. 1.** This photograph demonstrates exercises included in the preoperative scapular rehabilitation program. (A) Pendulum exercise; (B) Crossover arm stretch; and (C) passive forward elevation. Periscapular muscle exercise for the intervention group. (D) Standing shoulder forward flexion; (E) Standing row; (F) Shoulder shrug; (G) Prone horizontal abduction (T-raise); and (H) Wall push-up plus.

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Figure & Table 2.



**Fig. 3.** This photograph demonstrates muscle power measurement: (A) Anterior deltoid; (B) Middle deltoid; (C) Posterior deltoid; (D) Upper trapezius; (E) Middle trapezius; (F) Lower trapezius; and (G) Rhomboid muscle.