

## **The Effect of Modified Posterior Shoulder Stretching Exercises on Posterior Shoulder Tightness, Shoulder Pain, and Dysfunction in Patients with Subacromial Impingement**

**Authors :** Ozge Tahran, Sevgi Sevi Yesilyaprak

**Abstract :** Objective: The aim of the study was to investigate the effect of the Wilk's modified two different stretching exercises on posterior shoulder tightness, pain, and dysfunction in patients with subacromial impingement syndrome (SIS). Method: This study was carried out on 67 patients who have more than 15° difference in shoulder internal rotation range of motion between two sides and had been diagnosed as SIS. Before treatment, all patients were randomly assigned into three groups. Standard physiotherapy programme was applied to the Group 3 (n=23), standard physiotherapy program with Wilk's modified cross-body stretching exercises were applied to Group 1 (n=22), and standard physiotherapy program with Wilk's modified sleeper stretching exercises were applied to Group 2 (n= 23). All the patients received 20 sessions of physiotherapy during 4 weeks, 5 days in a week by a physiotherapist. The patients continued their exercises at home at the weekends. Pain severity, shoulder rotation range of motion, posterior shoulder tightness, upper extremity functionality with Constant and Murley Score (CMS) and disability level with The Disabilities of the Arm, Shoulder and Hand Score (QuickDASH) were evaluated before and after physiotherapy programme. Results: Before treatment, demographic and anthropometric characteristics were similar in groups and there was no statistical difference ( $p > 0.05$ ). It was determined that pain severity decreased, shoulder rotation range of motion, posterior shoulder tightness, upper extremity functionality, and disability were improved after physiotherapy in both groups ( $p < 0.05$ ). Group 1 and 2 had better results in terms of reduction of pain severity during activity, increase in shoulder rotation range of motion, posterior shoulder mobility and upper extremity functionality and improvement in upper extremity disability, compared to Group 3 ( $p < 0.05$ ). Conclusion: Modified posterior shoulder stretching exercises in addition to standard physiotherapy programme is more effective for reduction of pain during activity, to improve shoulder rotation range of motion, posterior shoulder mobility, and upper extremity functionality in patients with SIS compared to standard physiotherapy programme alone.

**Keywords :** modified posterior shoulder stretching exercises, posterior shoulder tightness, shoulder complex, subacromial impingement syndrome

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