



Scapular Dyskinesia (STAM ScapuloThoracic Abnormal Motion)

Scapular dyskinesia refers to the abnormal movement or positioning of the scapula (shoulder blade) during shoulder motion or at rest. The scapula plays a crucial role in shoulder function, providing a stable base for arm movements. Dyskinesia can result from muscle imbalance, nerve injury, joint stiffness, or injury leading to altered mechanics that affect shoulder function and may cause pain or discomfort.

Below is a three-phase rehabilitation protocol that begins with stretching of the shoulder, followed by conscious scapular control, and lastly, scapular muscle rehabilitation. Some of these exercises may be performed without a therapist's assistance. However, the guidance of a physical therapist is recommended. This protocol is meant to be shared with a therapist to help formulate a program specific to your needs.

Stretching Protocol

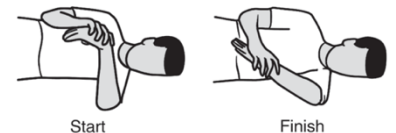
Initial stretches for scapular dyskinesia should include stretching the posterior capsule of the shoulder and the pectoralis minor, and they should be completed at a minimum once daily.

Posterior capsule stretches

- **Cross-Body Stretch** - Stand or sit up straight. Bring your affected arm across your body, using your non-affected arm to gently pull it closer to your chest. Hold the stretch for 30 seconds. You may repeat this up to 3 times.
- **Sleeper Stretch** – Start by lying on a bed/table on your side with your painful side down and place a towel or pillow under your head for support. Bend your bottom elbow to 90 degrees and place it perpendicular to your body. Then use your other hand to press down on the back of your forearm towards the bed/table to increase the stretch. The goal is to get your arm all the way down parallel to your body. Hold the stretch for 30 seconds, stretch a bit farther for 10 seconds then relax. You may repeat this up to 3 times.



Sleeper position





Pectoralis Minor stretches

- **Unilateral Corner Stretch** - Find a doorway and place your elbow against it with the arm in a flexed position. As you squeeze your shoulder blades together, take a step forward until a stretch is felt in the front of the shoulder. Hold the stretch for 30 seconds, stretch a bit farther for 10 seconds, then relax. You may find that placing the elbow at different heights will stretch various parts of the shoulder. You may repeat this up to 3 times.
- **Cools Scapular Exercise**¹ – This exercise is performed with the assistance of a therapist. While keeping the arm near the side and externally rotated, the pectoralis minor can be stretched by placing posterior pressure on the shoulder while stabilizing the trunk.¹



Adopted from: <https://ccsbismarck.com/pecstretching/>

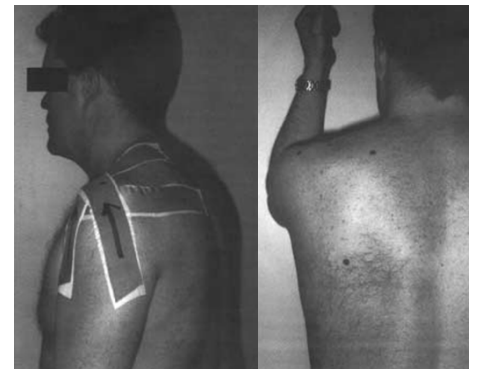


Adopted from: Ellenbecker et al. "Rehabilitation of shoulder impingement syndrome and rotator cuff injuries: an evidence-based review."

Conscious Scapular Control

This phase of rehabilitation is best performed under the guidance of a physical therapist. The goal is to recognize how to consciously activate the scapular stabilization muscles, particularly the serratus anterior and the trapezius. The aim is to perform these exercises without allowing winging of the scapula.

- **Scapular Retraction Exercise** - Grasp your hands together with fingers interlaced in front of your body. Squeeze your shoulder blades together and hold for 10 seconds. You may repeat this 3-5 times. The goal is to move the shoulder blades in unison and is best performed with the guidance of a therapist.
- **Scapular Orientation Exercise** – This grouping of exercises was originally described by Mottram in 1997 and continues to be used by physiotherapists today. The goal of these exercises are to use verbal, palpatory, and sometimes taping as feedback mechanisms to begin to consciously orient the scapula into a more neutral rotation while at rest. Once this is achieved, therapy advances with exercises focused on maintaining scapular orientation with progressively more arm elevation and rotation. The original article is available for free as PDF version and the link is listed below.²



Adopted from: Mottram, S. L. "Dynamic stability of the scapula."

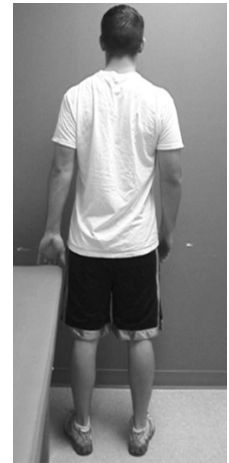


- **Inferior Glide Exercise** – While sitting in an upright position, place the arm out onto a firm surface and make a fist. With the thumb oriented up, apply pressure against the surface in a downward direction (adduction force) while maintaining scapular depression and holding for five seconds. You may repeat this 3-5 times. ³



Adopted from: Kibler WB et al. Electromyographic analysis of specific exercises for scapular control in early phases of shoulder rehabilitation.

- **Low Row Exercise** - While standing, place your open hand against a rigid surface that is located just behind your arm. Push your hand backward against the surface (shoulder extension) while retracting and depressing the scapula. Hold for five seconds and may be repeated 3-5 times. ³



Scapular Muscle Rehabilitation

Once improved scapular mechanics have been achieved, the final phase of rehabilitation is to begin to strengthen the muscles around the shoulder blade. Specifically, exercises that focus on training the lower trapezius and the serratus anterior are selected to promote optimal scapular mechanics. ⁴

- **Side-Lying External Rotation** – While lying on your side, place a towel or small pillow between your arm and torso. Bend your elbow to 90 degrees and externally rotate at the shoulder. When reaching the end of the exercise, pause for five seconds and repeat 3-5 times. This exercise may be started with body weight and can progress up to 1-5 lbs. ⁴





ORTHOPEDIC SPECIALISTS

- **Forward Elevation in Side-Lying Position** – While lying on your side, extend your arm out straight in front of you. Keeping your elbow straight, begin at your side and forward elevate your shoulder to approximately 100 degrees. When reaching the end of the exercise, pause for five seconds and repeat 3-5 times. This exercise may be started with body weight and can progress up to 1-5 lbs.⁴



- **Prone Extension** – While lying on your stomach (in the prone position), begin with your arms at your sides and elevate your hands off the table until a limit is reached. When reaching the end of the exercise, pause for five seconds and repeat 3-5 times. This exercise may be started with body weight and can progress up to 1-5 lbs.⁴



Adopted from: Cools et al. Rehabilitation of scapular muscle balance: which exercises to prescribe?

- **Push-Up Plus Variations** – This set of exercises focuses on strengthening the serratus anterior muscle. Progress through these exercises as you get stronger. In all of these exercises, a push-up is performed with scapular protraction (the plus) added to the end of the exercise. A typical progression involves wall push-up plus, followed by knee push-up plus, and ending with standard push-up plus exercises. The ending position of each of these exercises is shown below. Each set should include ten repetitions.⁵

Wall Push-up Plus



Knee Push-up Plus



Standard Push-up Plus



Adopted from: Ludewig et al. Relative balance of serratus anterior and upper trapezius muscle activity during push-up exercises.



References

1. Ellenbecker, Todd S., and Ann Cools. "Rehabilitation of shoulder impingement syndrome and rotator cuff injuries: an evidence-based review." *British journal of sports medicine* 44.5 (2010): 319-327.
2. Mottram, S. L. "Dynamic stability of the scapula." *Man ther* 2.3 (1997): 123-131.
Link to PDF: <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.moncamatafisioterapia.com/wp-content/uploads/2022/06/1.-1997-Dynamic-stability-of-the-ESCAPULA.pdf>
3. Kibler WB, Sciascia AD, Uhl TL, Tambay N, Cunningham T. Electromyographic analysis of specific exercises for scapular control in early phases of shoulder rehabilitation. *Am J Sports Med.* 2008 Sep;36(9):1789-98. doi: 10.1177/0363546508316281. Epub 2008 May 9. PMID: 18469224.
4. Cools AM, Dewitte V, Lanszweert F, Notebaert D, Roets A, Soetens B, Cagnie B, Witvrouw EE. Rehabilitation of scapular muscle balance: which exercises to prescribe? *Am J Sports Med.* 2007 Oct;35(10):1744-51. doi: 10.1177/0363546507303560. Epub 2007 Jul 2. PMID: 17606671.
5. Ludewig PM, Hoff MS, Osowski EE, Meschke SA, Rundquist PJ. Relative balance of serratus anterior and upper trapezius muscle activity during push-up exercises. *Am J Sports Med.* 2004 Mar;32(2):484-93. doi: 10.1177/0363546503258911. PMID: 14977678

ANDREW BOLTUCH, D.O.
BOARD - CERTIFIED ORTHOPEDIC SURGEON