

## Posture Evaluations, Part 4: Winged Scapula

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*Editor's note:* [Part 1](#) of this article ran in the March 12, 2010 issue; [part 2](#) appeared in the June 17, 2010 issue; and [part 3](#) ran in the Aug. 26 issue.

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Most of the time when we think of a winged scapula, we simply think of weak serratus anterior muscles. But the longer you are in practice, the more you notice posture and become a better "muscle whisperer." And then you begin to realize so much more. Let's explore the posture impairment of winged [scapula](#) as it relates to the serratus anterior, rhomboids, lower trapezius, and pectoralis muscles.

The biggest tip I can offer you to look for during static posture evaluation for scapular winging is this: If you can see the entire medial border of the shoulder blade, you should suspect serratus anterior dysfunction. If you see only a portion of the medial scapular border or the inferior angle (usually the lower half or third of the medial scapula border), then you should suspect excessive shortness of the pectoralis minor, and lower trapezius and serratus anterior muscle weakness dysfunction. Again, if you only see half or a third of the scapula border protruding away from the rib cage, this is known as "pseudo-winged" and implicates shortness of the pectoralis minor, along with lower trapezius and serratus anterior underactivity or weakness.

While looking at the scapula, ask yourself if you see [a forward shoulder](#). During static posture evaluation for forward shoulder posture, check for sagittal plane or transverse plane scapular resting position change. This change should make you think of adaptive shortening of the pectoralis minor muscle due to approximating the muscles' insertion sites on the coracoid process and ribs three, four and five.

Next, perform movement assessments to determine if we are dealing with true "winging" (serratus anterior) or "pseudo-winged" (lower trapezius). Here are three simple movement assessments to determine scapular winging:

- Ask the patient to raise both arms from their sides (palms facing each other). Observe the scapula from behind. During concentric elevation of the arms, you should notice prominence of the entire medial scapular border.
- Ask the patient to lower their arms from the overhead position (palms facing each other). Observe the scapula from behind. During eccentric lowering of the arms, you should notice prominence of the entire medial scapular border.
- Patient position: Push-up position (either against a wall or with palms on the floor with knees locked or with knees on the floor). Men can have shirts off, women can have a sports bra on. Notice the scapula during the up-and-down move. If the patient has a winged scapula

(prominence of the entire medial scapular border) the shoulder blade will stick out; this means the serratus anterior is weak. A strong serratus suction the scapula in during the movement, eliminating the winged look.

It is important to know the proper muscle function of the pectoralis minor, rhomboid, serratus anterior, and lower trapezius because [these muscles control scapular motion](#). The normal resting muscle length of the serratus anterior, pectoralis minor and lower trapezius allows the scapula to stay placed against the rib cage. The rhomboid muscles adduct and downwardly (medially) rotate the scapula. The serratus anterior allows you to abduct and upwardly (laterally) rotate your scapula when you raise your shoulder to flex your arm and move it away from your body.

Tom Meyers has described a direct fascial connection from the rhomboid to the medial border of the scapula into the serratus anterior; hence, he calls this the rhombo-serratus muscle. He suggests that these two muscles work together. A decreased pectoralis minor muscle resting length would result in an increase in the muscles' passive tension during arm elevation, restricting normal scapular upward rotation, posterior tipping and external rotation.

Patients with shorter or overactive pectoralis minor muscle resting length demonstrate increased scapular internal rotation during arm elevation and decreased scapular posterior tilting at higher arm elevation angles (90 degrees and 120 degrees) when compared with a group of subjects with a relatively longer pectoralis minor muscle resting length. The importance of understanding these muscle relationships is that any faulty muscle control can cause shoulder impingement.

### Resources

- [Ludewig PM, Cook TM](#). Alterations in shoulder kinematics and associated muscle activity in people with symptoms of shoulder impingement. *Phys Ther*, 2000;80:276 -291.
- [Borstad JD, Ludewig PM](#). The effect of long versus short pectoralis minor resting length on scapular kinematics in healthy individuals. *J Orthop Sports Phys Ther*, 2005;35(4):227-38.
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- Hebert LJ, Moffet H, McFadyen BJ, Dionne CE. [Scapular behavior in shoulder impingement syndrome](#). *Arch Phys Med Rehabil*, 2002;83: 60-69.
- Myers TW. *Anatomy Trains*. Churchill Livingstone; 2001.
- Comerford & Kinetic Control class notes, 2006.

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The follow-up article to this one will describe a corrective exercise strategy for scapular winging.

OCTOBER 2010