



SCAPULAR DYSKINESIAS

Liliana Rozo R.
Kinesiologa Magíster Terapia Manual Ortopédica
USA, CHILE, COLOMBIA
October 2017

The Scapula has its influences in an important way in: motion, muscular performance, motor control and shoulder posture, (2nd International Consensus about the Scapula, Lexington, Kentucky, 2013).¹

Physiologically, the scapula is the stable base, where the muscles that contribute to the dynamic stability, arm movement and mechanically originate; an adequate scapula-humeral rhythm (a coordinated movement pair between the scapula and the humerus) is required to allow a proper glenohumeral alignment and maximize the joint stability.²

DYSKINESIA DEFINITION

Dyskinesia is the alteration of the normal scapular kinematics. Dis: Alter. Kinetic Movement. This term involves a loss of normal control of the scapular movement,³ and it is also related to alterations in position and scapular movement⁴.

DYSKINESIA CAUSES

2nd International Consensus about the Scapula, Lexington, Kentucky, 2013⁵

- Bone causes: Thoracic kyphosis, unconsolidated clavicle fractures or poor union.
- Joint causes: Severe acromioclavicular instability, acromioclavicular osteoarthritis, instability and /or joint damage of the glenohumeral joint.
- Neurological causes: Cervical radiculopathy, injury to the long thoracic nerve or accessory spinal cord, in this case called the winged scapula (due to neural damage).
- Soft Tissue Causes: - Lack of flexibility, intrinsic muscular issues, shortening/rigidity of the pectoralis minor⁶ and of the biceps short portion (generate an anterior scapular tilt)⁷, - Lack of flexibility of the posterior tissues of the shoulder, which can generate a shoulder internal rotation deficit and a wind up that ends up limiting still more the internal rotation range and the horizontal abduction. – Alterations on the activation of the peri-scapular muscles, - Activation deficit and



muscle strength of the anterior serrate generates a decrease of the posterior tilt and superior scapular rotation for normal elevation; which is closely related to episodes of pinching and shoulder pain and, hence, dyskinesia⁸. – Alteration of the force couple of the upper and lower trapezius, and produces dysfunction in the superior rotation and in the posterior tilt. The alteration of the scapular movement⁹ and scapular position diminish the linear measurements of the subacromial space¹⁰, decrease of the rotator cuff strength¹¹, tension of the anterior glenohumeral ligaments¹².

CLÍNICAL EVALUATION OF DYSKINESIA

There are several methods of evaluating dyskinesia, some using equipment such as inclinometers, topographers, electromagnetic accessories, very sophisticated for access the daily clinic.

There are also manual observation techniques sometimes including manual scaling (SRT: Scapular Retraction / Reposition test).¹³

The first scapula consensus, in 2009¹⁴, and the second Consensus in 2013¹⁵, was recommended as the best option for the clinical evaluation of dyskinesia, the dynamic scapular dyskinesia test.

DYNAMIC SCAPULAR DYSKINESIA EVALUATION

Kibler and Colbs; described the test in 2002¹⁶, which consists of a visual classification system, in which the user to examine performs at least 3 elevations in the scapula-humeral flexion level and 3, in the coronal abduction level maintaining the thumbs upwards.

In both flexion and abduction, the user performs using hand weights ranging from 1 to 2.5 kilos, depending on the weight and body mass of the patient.

The test evaluator position himself behind the user to examine, in order to be able to observe the elevations carefully.

The evaluated user stands.

1. The dyskinesia found will be graduated in:

- **Normal:** Symmetrical, smooth, harmonic lift in concentric and eccentric. The scapula remains stable and with a minimal movement between 30 and 60 degrees of elevation, after this range,



rotates superiorly smooth and continuous and in the descent also rotates inferiorly harmonic and smooth. There is no evidence of winging or any abnormality.

- **Sutil or Slight:** Slight or questionable evidence of abnormality, not consistent.
- **Obvia:** Clear presence with marked findings of dyskinesia, at least 3/5 of the ROM; either dysrhythmia or winging (1inch or 2.54cms, or more displacement of the chest wall).

2. The findings of dyskinesia described in the test can be of two types:

- **Winging Abnormality:** The media border and/or lower angle of scapula move posteriorly, away from the chest wall.
- **Dysrhythmia:** The scapula demonstrates premature or excessive elevation or protraction, non-smooth movement, non-fluid movement or sprocket movement (during stops) during elevation or during descent, or also rapid lower rotation during descent of the arm.

3. The final scale of the tests is based on the combination or the tests of the flexion and abduction movement:

- **Normal Movement:** Both movement tests are normal or one movement is normal and the other is subtle or slight abnormality.
- **Subtle or mild Abnormal:** Both the flexion and abduction tests have subtle or mild abnormalities.
- **Obvious Abnormality:** On or two tests, or flexion or abduction, is graded in an obvious abnormality.

Kibler and Colbs, reported the reliability of the test, based on the visual classification system for capsular dysfunction, which defined three types of movement abnormalities¹⁷:

Type I: Prominence of the lower angle

Type II: Medial Edge Prominence

Type III: Excessive elevation of medial upper border

Type IV: Scapular movement, normal, symmetrical. No dyskinesia.

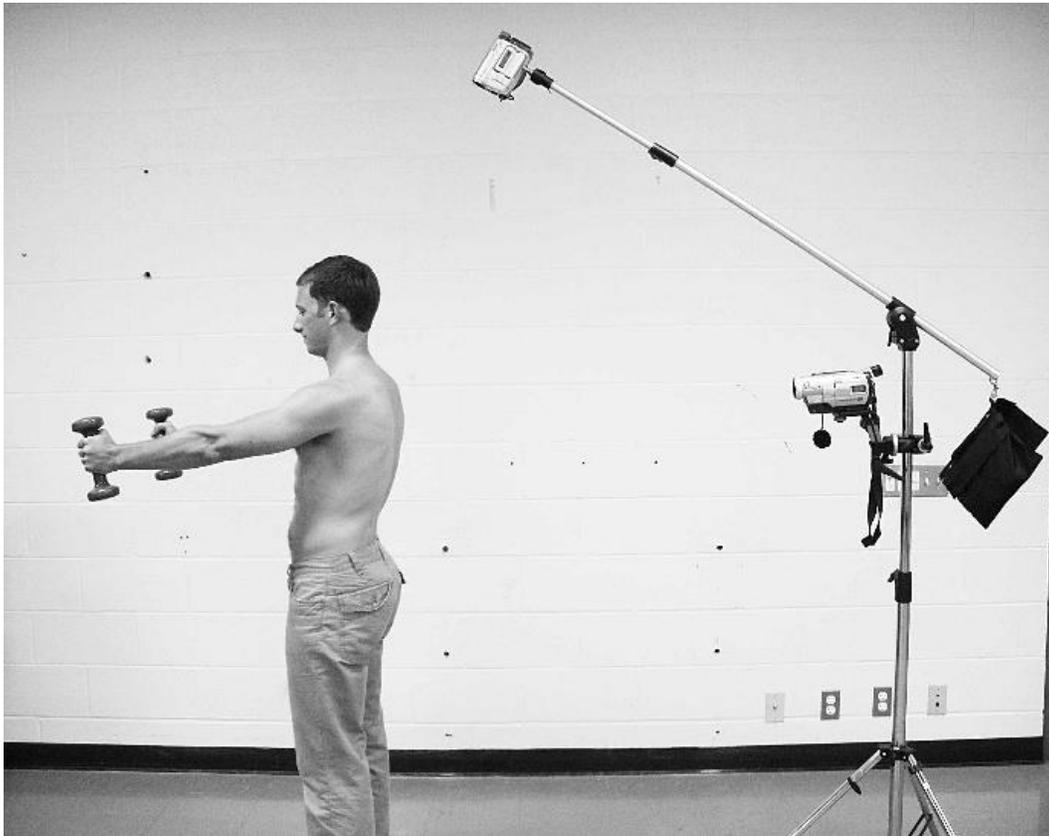


Figure n.10 TEST DE DYNAMIC SCAPULAR DYSKINESIA EVALUATION

Mc Clure, Philip, Tate, Angela, Kareha, Stephen. A clinical implicatiots for identifying Scapular Dyskinesis. Part 1: Reliability. Journal of Athletic Training, 2009;44(2):160-164. www.nata.org/jat

This test evaluates the performance of muscle recruitment mainly of the muscles of the anterior serratus, middle and lower trapezius in its function of stabilizing the scapula against the thorax during elevations.

Any dysfunction of the musculoskeletal system of the upper trunk room; should consider performing the scapular dyskinesia test and dynamic scapula control (serratus anterior, middle and lower trapezius, infraspinatus and their relationships in the force couple activation) as well as; of the coappliers of the humeral head: rotator cuff: supraspinatus, infraspinatus, minor round, subscapular and long portion of the biceps, among others.



BIBLIOGRAFÍA

1. Kibler, Ben., Ludewig, Paula et al. Clinical implications of scapular dyskinesis in shoulder injury: the 2013 Consensus Statement from the “scapular Summit”. <http://bjsm.bmj.com/> on August 1, 2017 - Published by group.bmj.com
2. Kibler WB, Sciascia AD, Wilkes T. Disorders of the scapula: winging and snapping. In press, Iannotti JP, Williams GR, eds. *Diagnosis of the shoulder: diagnosis and management*. Vol. 3rd edn. Philadelphia: Lippincott Williams and Wilkins, 2013.
3. Kibler WB, Ludewig PM, McClure PW, et al. Scapula summit 2009. *J Orthop Sports Phys Ther* 2009;39:A1–13.
4. Wright AA, Wassinger CA, Frank M, et al. Diagnostic accuracy of scapular physical examination tests for shoulder disorders: a systematic review. *Br J Sports Med* Published Online First: 18 October 2012 doi:10.1136/bjsports-2012-091573
5. Kibler, Ben., Ludewig, Paula et al. Clinical implications of scapular dyskinesis in shoulder injury: the 2013 Consensus Statement from the “scapular Summit”. <http://bjsm.bmj.com/> on August 1, 2017 - Published by group.bmj.com
6. 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):227–238.
7. 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;35:227–38.
8. Cools AM, Dewitte V, Lanszweert F, et al. Rehabilitation of scapular muscle balance. *Am J Sports Med* 2007;35:1744–51.
9. Silva RT, Hartmann LG, Laurino CF, et al. Clinical and ultrasonographic correlation of between scapular dyskinesia and subacromial space measurement among junior elite tennis players. *Br J Sports Med* 2010;44:407–10.
10. Seitz AL, McClure P, Lynch SS, et al. Effects of scapular dyskinesis and scapular assistance test on subacromial space during static arm elevation. *J Shoulder Elbow Surg* 2012;21:631–40.
11. Tate AR, McClure P, Kareha S, et al. Effect of the scapula reposition test on 51 shoulder impingement symptoms and elevation strength in overhead athletes. *J Orthop Sports Phys Ther* 2008;38:4–11.
12. Kibler WB, Sciascia AD, Dome DC. Evaluation of apparent and absolute 50 supraspinatus strength in patients with shoulder injury using the scapular retraction test. *Am J Sports Med* 2006;34:1643–7.
13. Uhl TL, Kibler WB, Gecewich B, et al. Evaluation of clinical assessment methods for scapular dyskinesis. *Arthroscopy* 2009;25:1240–8.
14. Kibler WB, Ludewig PM, McClure PW, et al. Scapula summit 2009. *J Orthop Sports Phys Ther* 2009;39:A1–13
15. Kibler, Ben., Ludewig, Paula et al. Clinical implications of scapular dyskinesis in shoulder injury: the 2013 Consensus Statement from the “scapular Summit”. <http://bjsm.bmj.com/> on August 1, 2017 - Published by group.bmj.com
16. Kibler WB, Uhl TL, Maddux JW, Brooks PV, Zeller B, McMullen J. Qualitative clinical evaluation of scapular dysfunction: a reliability study. *J Shoulder Elbow Surg*. 2002;11(6):550–556.
17. McClure, Philip, Tate, Angela, Kareha, Stephen. A clinical implications for identifying Scapular Dyskinesis. Part 1: Reliability. *Journal of Athletic Training*, 2009