„Get Rhythm„, or what’s the link between scapular dyskinesis and Algorithm?

Rehabilitation of scapular dyskinesis: from the office worker to the elite overhead athlete

Adapted Critical appraised Paper and Commentary:
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Synopsis:

Question:
Are there any guidelines that may help the clinicians to rehabilitate patients with scapular dyskinesis? Presentation of a science-based clinical reasoning algorithm for patients with chronic complaints of the upper quadrant.

Background:
More than 60 % of individuals suffer from neck/shoulder pain at some stage throughout their life. There is a strong relationship between chronic neck pain, shoulder pain and dysfunction of the scapula. The scapula functions as a bridge between the shoulder complex and the cervical spine. Therefore it plays an important role in providing both: mobility and stability of this region. Although several authors have emphasized the relevance of restoring normal scapular kinematics through exercise and manual techniques, to date, no paper has thoroughly approached overall scapular rehabilitation guidelines decent for both patients with shoulder pain as well as patients with neck problems.

Design:
Literature Review
Scapular dyskinesis in relation to neck and shoulder pain:

There is evidence that patients with impingement symptoms and glenohumeral instability show altered scapula kinematics. Also patients with neck pain may display altered postural behavior especially in prolonged sitting tasks.

Scapular dynamic stability has been investigated in association with shoulder pathologies and following results has been reported:

- Reduced clavicle retraction
- Reduced scapular upward rotation and posterior tilt
- Increased clavicle elevation

In patients with insidious onset of neck pain and WAD significantly reduced clavicle retraction on the dominant side was demonstrated.

These changes in scapular kinematics can be attributed to altered scapular muscle activities or flexibility deficits in the soft tissue surrounding the scapula.

Definition of scapular movements by Ludewig 2009:

Definition of clavicle movements by Ludewig 2009:
Possible causes for abnormal scapular dynamics and impingement symptoms:

- **Lack of soft tissue flexibility**
  - Tightness of m. pectoralis minor
  - Posterior glenohumeral capsular stiffness

- **Lack of muscle performance**
  - Altered muscle activity patterns in strength and timing properties by
    - m. serratus anterior: decreased strength
    - m. trapezius upper-, middle- and lower portion:
      - upper portion: hyperactivity and early activation
      - middle and lower portion: decreased activity and late activation

**Cause-consequence relationship between scapular dyskinesis and neck or shoulder pain:**

There is no consensus about that. Possible potential factors could be:

- Pain
- Soft tissue stiffness
- Muscle activations or strength imbalance
- Muscle fatigue and thoracic posture

However, scapular dyskinesis may lead to neck and shoulder pain, therefore the therapist should always observe, examine and treat scapular dyskinesis in patients with shoulder and neck pain.

**Rehabilitation of scapular dyskinesis:**

Although considered to be key points in functional shoulder and neck rehabilitation, more proximal links in the kinetic chain, such as thoracic spine mobility and strength, core stability and lower limb function will not be addressed in these clinical guidelines.

Scapular rehabilitation clinical reasoning algorithm (Cools et al. 2014):
In accordance with the rehabilitation algorithm shown above, the paper gives more detailed information about the rehabilitation programs in different rehabilitation stages in detail.

1. Rehabilitation of flexibility deficits
   - Conscious muscle control
2. Rehabilitation of muscle performance deficits
   1. Muscle control
   2. Muscle control and strength necessary for daily activities
   3. Advanced control during sport movements

Conclusion:

There is evidence of scapular kinematic alterations associated with shoulder and neck pain. The available evidence in clinical trails support the use of therapeutic exercise in the rehabilitation of these patients. A science-based clinical reasoning algorithm with practical guidelines is provided which may help clinicians in the clinical decision process.

Commentary:

Altered scapular motion and position have been termed scapular dyskinesis. Alteration of motion is a general term that reflects the loss of normal control of scapular motion and is also called movement impairment syndrome. Searching for the definition of algorithm I found: “A step-by-step procedure for solving a problem, especially a mathematical rule or procedure used to compute a desired result. Any methodology for solving a certain kind of problem.”
In summary, the clinical reasoning algorithm pictured above is a clinically usable tool when clinicians should focus on the rehabilitation of scapular dysfunction in patients with neck or shoulder pain. In the upper part of the algorithm, a summary is presented of the possible causes for scapular dysfunction. In the lower part, therapeutic strategies are suggested. The algorithm is divided into two columns, as a patient presenting with scapular dyskinesis may have flexibility problems, muscle performance problems, or both. Each side of the table needs a specific therapeutic approach regarding rehabilitation. Soft tissue flexibility deficits need to be addressed by stretching and manual mobilization techniques. Modification of the movement system impairment by alteration of muscle activity is the main goal for the patient who has muscle performance problems. In the clinical setting, most scapular movement impairments in patients with shoulder impingement are decreased scapular posterior tilting, decreased scapular upward rotation and increased scapular internal rotation (Ludewig and Cook 2000). As treatment, most of the time I see a combination of interventions on both sides of the algorithm. For example, soft tissue techniques used in the beginning of treatment are combined with muscle performance work in progression. Therefore, in the table above, there should be a connecting arrow between the left and the right column. During the physical examination, it is essential to watch for deviations from the normal pattern of muscle activity while positioned behind the patient and to feel with one hand for changes in scapula motion during elevation and depression movements of the scapula.

As a clinician, I believe that this algorithm, which is called science-based...not evidence-based, could be used in manual therapy teaching programs. And I hope that you can „find the rythm and you won’t get the blues“ from this paper.

JOHNNY CASH LYRICS https://www.youtube.com/watch?v=Roug4qG7qCY

"Get Rhythm"
Hey, get rhythm when you get the blues
Come on, get rhythm when you get the blues
Get a rock ‘n’ roll feelin’ in your bones
Put taps on your toes and get gone
Get rhythm when you get the blues

References:


