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Sports Acupuncture: For the Thorax, Abdomen and Breathing Mechanics

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WHAT YOU NEED TO KNOW

- The thoracic spine, abdomen and rib cage are a common source of pain and dysfunction for many people.
- The goal is to improve conditioning, motor control, and mobility of the thorax, abdomen, and mechanics of breathing.

Sports acupuncture blends the principles and techniques from traditional Chinese medicine (TCM) with Western sports medicine to assess and treat the patient's injury from an integrated perspective.

The thoracic spine, abdomen and rib cage are a common source of pain and dysfunction for many people. When the thoracic spine does not move properly it will influence the movement and postural dynamics of the body above and below. This area can have an impact on everything including the shoulders, neck, lower back, and how you breathe.

It's a two-way street, in that the other way is true as well: Faulty breathing mechanics will play a key role in posture and spinal stabilization. The thorax and abdomen are the epicenter where a lot can go wrong with the body. If you're an athlete, the mobility and motor control of this area could be the difference between winning or losing.

I often discover considerable postural tension in a person's mid- and upper back. I assess and notice that they can't rotate their torso or fully extend their upper back. Along with this, I'll observe that their rib cage doesn't expand properly during a deep breath.

Since poor breathing mechanics can affect lumbar, scapular and cervical movement, it may have a

detrimental effect on functional movement. Here again is where I'll use the functional movement screen (FMS) as a tool for assessing the body's kinetic chain, evaluating the body as a connected system of interdependent segments.[1]

Breathing requires synchronized concentric activity of the diaphragm and pelvic floor, as well as eccentric activity of all muscles that insert into the thorax and abdominal wall muscles. Improper sequencing during an abdominal breath can alter motor control patterns of postural muscles and spinal stabilizers, resulting in pain and dysfunction.[2]

Muscles & Mechanics of Proper Breathing

Many muscles assist in the ability to take a breath. There are six primary and approximately 14 accessory muscles of inhalation and exhalation.[3] The diaphragm is the primary muscle responsible for providing 70-80% of the inhalation force.[2] When there is dysfunctional breathing, the accessory muscles will compensate and replace the primary movers.

A normal breath at rest is referred to as a diaphragmatic or abdominal breath. Upon inhalation, the diaphragm should move down toward the pelvic floor symmetrically while flattening and compressing the internal organs; the lower rib cage should move proportionately and symmetrically in a lateral, ventral and dorsal direction or inflate out in all directions.[4]

The abdominal walls should all expand equally in a cylindrical manner. The sternum moves ventrally while the intercostal spaces between the ribs expand minimally at the end of inhalation.[4]

I've seen two common types of breathing disorders: apical-chest or thoracic dominant breathing, which is characterized by excessive movement of the sternum and shoulders toward the head, and minimal to no abdominal movement during inhalation.[5] The other is called paradoxical breathing, when the chest expands during inhalation and the abdomen is drawn inward and then during exhalation, pushed outward.[3]

The breathing mechanics are in reverse of the normal movements.[6] These patients aren't always aware and are often surprised because this is normal for them. With both types of patients, this means that the shoulder and neck muscles are doing too much of the work without the reward of a deep breath.

This dysfunctional breathing often leaves people out of breath while doing any sort of physical activity. It also leads to headaches, tension in the upper back, neck pain, shoulder pain, and numbness.[7]

I treat many mixed martial arts (MMA) athletes, and this is a region of the body that I often see as dysfunctional. What I will see is that the rib cage doesn't move in the manner it's supposed to, or it has poor structure because of trauma, years of habitual unilateral movement patterns, or poor posture to the point that breathing is stressed and inefficient.

The MMA athlete, by nature, is in a unique position to sustain injury to the ribs and because of the increase in cardiopulmonary demands, needs to be able to expand both the front and back of their chest wall efficiently. A person may complain of rib pain on the front, back or side, or they may be seized in a twisted alignment. These are all indications to use sports acupuncture in the thoracic spine area.

Treating the Ribs, Thoracic Spine and Abdomen

It is important to understand the biomechanics of the ribs, and to be skilled with palpating the anatomy of the spine and sternum. It is helpful to understand what the rings of ribs should feel like when you breathe, twist, reach up and just stand.

The thoracic spine and ribs are primarily treated within a cun or finger's width of the spinous process by releasing the thoracic spine multifidus muscles, which can and will impact the intercostal muscles, releasing the tension, even in the front of the body.[2]

Another area I go to when treating dysfunction in this area is the abdominal muscles. My colleagues (shout out to Jenny and Derrick) discovered that needling the transverse abdominis (TrA) and the internal and external obliques can help clear up discomfort, and improve muscle activation timing, breathing dynamics and mobility. It's not so much from a tension release perspective, but more to activate these muscles to better do their job.

These muscles are not always working properly when there are compensatory bracing patterns, particularly of the lower back with anterior pelvic tilt. The TrA and internal / external obliques are weak. This limits its synergistic performance for stabilizing, aligning, and protecting the lower back, and will have an impact on breathing.

You'll notice after needling that the patient's thoracic rotation and extension improve. It will also help pull back an anterior pelvic tilt, along with easing low back tension and pain. It's a strange place to needle, but relatively safe and effective. (Check out my next article, which elaborates on this transversus abdominis point.)

To help tie it all in and reinforce these treatments, at our clinic we incorporate corrective exercises. The goal is to improve conditioning, motor control, and mobility of the thorax, abdomen, and mechanics of breathing. Some of the exercises we teach include diaphragmic breathing, intrinsic stabilization subsystem (ISS) integration, and thoracic mobility drills.

References

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