

Innate Motion Fitness

The Movement Within

B-BOYING AND BUILDING HEALTHY SHOULDERS-ROUND 2 RANGE OF MOTION

BY MATT AVILA, CES

Warm Up

The shoulders need sufficient range of motion to successfully execute movements such as halos, airflares, and many freezes. Without sufficient range of motion, these movements become difficult to attain and the risk of injury associated with these moves increases.

Particular muscle groups around the shoulder joint have a propensity of becoming tight and developing restrictions that adversely affect the shoulder's range of motion. In this article we will cover what causes these muscles to become tight, how they affect movement, which muscles are at the most risk, and strategies to correct the issue.

Causes of Tight Muscles

The following are examples of common reasons why muscles become tight and overactive.

1. Habitual movement patterns

Movement patterns that are repetitively performed cause the muscles responsible for that movement to become overactive. Some examples of repetitive movements in b-boying are footwork, power moves, and the constant pushing off the floor associated with b-boying.

2. Overuse

Every time you train, you are causing tiny amounts of damage to muscle tissue and other structures such as tendons and ligaments. When the body repairs the damage, these structures are built stronger and better adapted to the stresses that were placed on them, which results in a progression of strength and capability. However these structures need time to rebuild and heal. Overuse is when a muscle or any structure is used beyond its capability to recover. Overused muscle fibers become overactive and stay in a more contracted position than normal.

B-boying is a pushing activity, meaning movements like floor-work, power moves, freezes, and virtually every movement in b-boying requires pushing the body away from the ground. Therefore, the muscle groups that are responsible for pushing motions are

at greater risk to becoming overused. Additional risk is incurred when an imbalanced conditioning program is introduced that exposes the body to even **more** pushing motions without addressing recovery strategies such as self-myofascial release and static stretching, along with neglecting to train the opposite muscle groups.

3. Poor postural habits

Posture is a position that the body is held in for a given amount of time. The time spent in any given posture can have a significant effect on the condition of muscles. Poor postural habits keep certain muscle groups in their shortened position for extended periods of time, which causes them to adapt to that position. The movements and some of the training practices in b-boying encourage poor posture by causing the muscles responsible for pushing motions to become tight and overactive through repetitive use. When this muscle group becomes tight it pulls the body into the rounded shoulders/forward head posture, known as Upper Crossed Syndrome (figure 1).

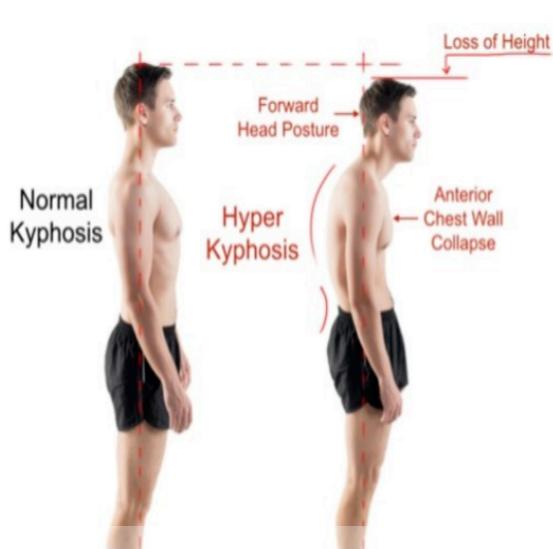


Figure 1

Common lifestyle habits can also contribute to this postural misalignment. This posture is common in people who remain seated for extended periods of time. It could be seated at a desk in a classroom or the library studying, in front of a computer at an office, behind the wheel on long daily commutes, and even playing video games for long periods of time can all lead to the rounded shoulders/forward head posture. This is because when people sit for long periods of time they have a tendency to slouch over and assume the forward head/rounded shoulders position (figure 2). The muscles of the chest and the neck sit in their shortened positions, causing them to adapt to that posture.



Figure 2

Tight Muscles and Range of Motion

A tight muscle decreases a joint's range of motion by restricting the movement of the joint in the opposite action of the tight muscle. For example, the Bicep is the muscle that bends the elbow and the Tricep is the muscle that straightens the elbow. If the Bicep becomes tight, it pulls on the elbow joint with more force than it should, which makes it difficult for the Tricep to straighten the elbow. This imbalance impedes on the normal joint function and decreases the joint's movement capability. When the muscles associated with pushing motions and poor posture become tight, they pull the shoulders inward/towards the body and sink the chest in which makes it difficult for the shoulders to move

outward/away from the body and extend the chest out. The outward and away motion of the shoulders paired with extending the chest is needed for full range of motion of the arms during overhead movements like halos and airflares. Thus if the muscle groups that pull the shoulders inward are too tight then the shoulder cannot move into the right position to properly execute the technique. The inability for a joint to move into a proper position can alter movement patterns, cause wear and tear on the joint, and lead to pain and injury.

Self-myofascial Release and Static Stretching

Self-myofascial release is a technique that involves using a tool such as a foam roller or other massage device to apply deep pressure to tight muscles to massage out any knots and break up restrictions that have developed in the tissues. This technique has been shown to decrease muscle tension and improve muscle elasticity, thus increasing joint range of motion.

Self-myofascial Release is easy to perform and can be done as part of a warm-up and a cool-down. Use the massage tool shown to slowly roll over the treated area. Pause and apply pressure to particularly tender areas known as trigger points or knots that are found for roughly 30 seconds until the muscle relaxes and the intensity of the sensation decreases, then continue to slowly roll the treatment area. Spend 1-3 minutes per area. A sense of relief should be felt after the treatment and the muscle should feel looser. We will then take advantage of the increase of muscle elasticity from the release and follow it with a stretch to further lengthen the muscles. Regular releasing and stretching will help tight muscles adapt to a longer length, allowing for greater range of motion of the shoulder.

The Target Muscles

The following muscle groups have a high degree of use in b-boying due to their association with pushing motions, which puts them at greater risk of being tight or overused. They are also the muscle groups that are affected by poor postural habits that are caused by the repetitive of these muscles or by lifestyle habits outside of training.

The Upper Trapezius and Levator Scapulae

The Trapezius and Levator Scapulae are located on the back of the neck and upper back region. The Trapezius originates at the base of the skull/vertebrae in the neck and attaches to the clavicle/shoulder blade (figure 3). The Trapezius's actions are elevation (shrugging the shoulders up), squeezing together, and pulling down the shoulder blades, as well as extending the neck (tilting the head back and bringing the chin up). The muscle is divided into the upper, middle, and lower portions. The fibers of the upper trapezius that are around the neck and shoulders shrug the shoulders up and extend the neck and are prone to



Figure 3

becoming tight and overactive. The fibers in the middle and lower portions of the trapezius retract and depress the shoulder blades and are prone to being under active due to lack of use.

The Levator Scapulae originates from vertebrae in the neck and attaches on the high border of the shoulder blade (figure 4) and its action is to elevation the shoulder blades. When the Trapezius and Levator scapulae are tight, they hold the scapula in the elevated position, which shrugs up the shoulders and forces the neck into extension, protruding the head forward. This is disadvantageous for the shoulder because the scapula acts as the foundation for the shoulder joint. If the scapula is pulled out of its optimal position, the stability of the shoulder decreases.

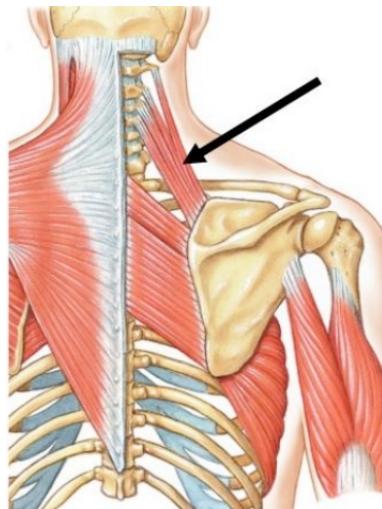


Figure 4

Many movements in B-boying rely heavily on the neck and upper trapezius making these muscles susceptible to becoming tight. Movements such as head swipes, halos, windmill variations, windmill transitions, back rocks, transitions off the back, and handstand based moves require a significant recruitment of the upper Trapezius and the Levator scapulae for successful execution.

Trapezius and Levator Scapulae Self-myofascial Release

To release the Trapezius and Levator Scapulae, use any type of firm ball such as a lacross ball, tennis ball, or baseball. The choice of ball depends on your level of tolerance to the pressure applied by the tool. A softer ball like a tennis ball will apply less pressure than a firmer ball like a baseball. Use the ball to massage the target muscle, releasing any tender spots that are found.



The levator scapulae originates from the top of the neck and attaches to the shoulder blade (figure 4)



The trapezius is a big muscle and runs from the base of the skull, towards both shoulders, and down to the middle of the back (figure 3)

Stretching the Trapezius and Levator Scapulae

1. Anchor arm to a stationary base
2. Use the other hand to gently pull the head away from the anchored arm, lengthening the target muscle

The stretch should be felt from the base of the skull and down the neck. Repeat 3 times on each side and hold each stretch for 30 seconds – 1 minute.



Anchor the arm by holding the bottom of a chair



To stretch the upper Trapezius, gently pull the ear to the shoulder



To Stretch the Levator Scapulae, gently pull the head down at a 45-degree angle

The Scalenes and Sternocleidomastoid

The Scalenes and Sternocleidomastoid are located towards the front of the neck. The Scalene muscles originate from the vertebrae in the neck and attach to the first/second rib (figure 5). The Sternocleidomastoid originates on the sternum/clavicle and inserts on a bony prominence on the skull that is just behind the ear (figure 6). These muscles are responsible for side-to-side bending of the head, rotation of the head, flexing the neck, and assisting in inhalation. When the head is pushed forward both of these muscles are forced into their shortened position. Prolonged or repeated positioning will cause them to adapt to their shortened length, keeping

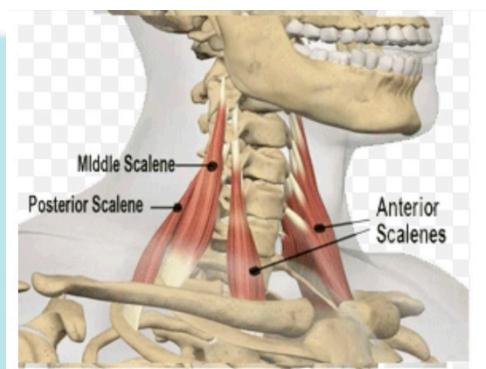


Figure 5

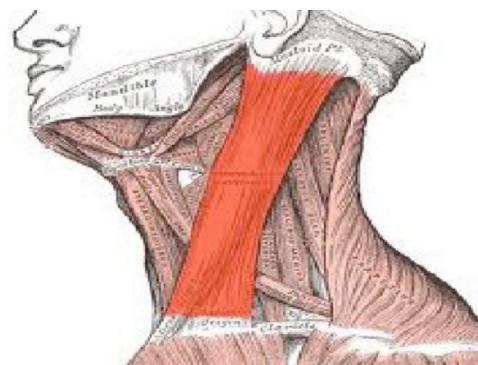


Figure 6

the head protruded forward.

Stretching the Scalenus and Sternocleidomastoid

Due to their location on the body, these muscles are difficult to release using any sort of massage tool so we will skip to static stretching. For cases of excessive tightness I recommend seeing a professional massage therapist for a manual release of these muscles. *I would recommend working with a massage therapist for maximum results with any training program*



1. Begin by anchoring the arm to a stationary base.
2. Tilt chin up and away from the anchored arm at a 45-degree angle.

The stretch should be felt all the way from the clavicle, side of the neck, and even through the jaw. Repeat 3 times and hold each stretch for 30 seconds-1 minute

Pectoral Muscles

The Pectoral muscles are located on the chest. This muscle group is comprised of two muscles, the Pectoralis Minor and Pectoralis Major (figure 7). Their main job is forward pushing motions, making them one of the main muscle groups involved with b-boying. Because of their high degree of use, they are prone to becoming tight and overactive. When the pectorals become tight they sink the chest in, pull the shoulders inward, and tip the scapula out of place. Tight pectorals hold the upper body inward and restrict the outward motion needed for overhead movements.

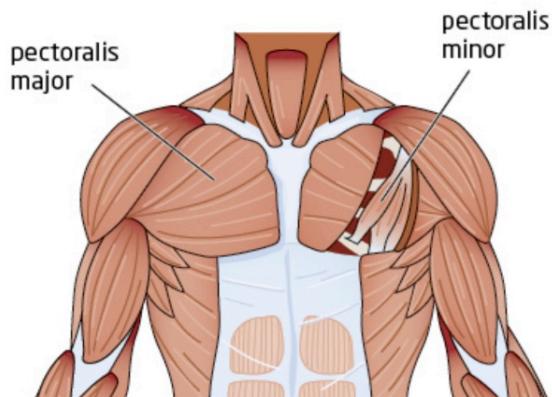


Figure 7



Pectoral Self-myofascial Release



To release the pectorals, the best tool to use is a lacrosse ball or any similar sized ball and a wall. Position the ball over the pectorals and use it to massage any tender areas.

Stretching the pectorals



1. Place forearms flat in a doorway
2. Move forward until a stretch is felt across the chest
3. Placing the arms higher or lower will stretch the pectorals at different angles and intensities. Play with any position where a stretch is felt.

Latissimus Dorsi

The Latissimus Dorsi, more commonly known as the “lats” are the pair of broad muscles on the back that originate from the spine (vertebra T7-S5)/the iliac crest (hip bone)/the lower 3 ribs/the lower tip of the shoulder blade and inserts onto the humerus (upper-arm bone) just below the shoulder joint (figure 8). The actions of the lats include extending the arm, bringing the arms towards the torso, and internally rotating the shoulder joint. When the lats are tight, they pull the shoulder joint out of its optimal alignment and into an internally rotated position and hold it towards the torso. The lats are associated with pulling motions rather than pushing motions. However slouching postures hold them in a shortened position where they become tight. Due to where they attach on the arm they hold the shoulders inward and down when they become tight, restricting overhead movements.

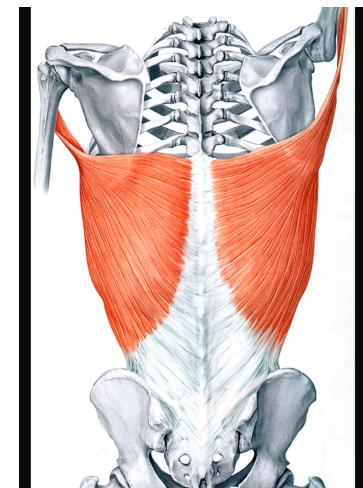


Figure 8

Latissimus Dorsi Self-myofascial release



A foam roller will be used to release the Latissimus Dorsi. Lay one side onto the foam roller. Use the roller to massage the area from pelvis all the way up to the armpit

Stretching the Latissimus Dorsi



1. Hold a doorway with one hand above the other
2. Bend away from the door and push the ribcage and hips out as far as possible. A stretch should be felt all the way up the side of the body from the pelvis to the shoulder/armpit.

Hold this position for 3 sets of 30 seconds-1 minute on both sides.

Cool Down

Tight muscles impede on shoulder function by restricting range of motion of the joint and pulling it out of its optimal alignment. In order to maintain good position and motion of the shoulder it is important to keep the tissues that are surrounding it mobile and restriction free. However, range of motion is only one aspect of shoulder health. Strengthening the correct muscle groups is also important in keeping the shoulders in good condition. This will be covered in round 3.



References

1. Cho C.H, Song K.S., Min B.W., Lee S.M, Chang S.H., Eum D.S (2009, May 14). Musculoskeletal Injuries in Break-dancers. Elsevier. 1207-1211
2. Cerullo, J. (2011). The luge Start: Rotator Cuff and Scapulothoracic Stabilization Exercises to Consider. Strength and Conditioning Journal, 33(4), 83-87
3. Clark, M., Lucett, S., & Sutton, B. G. (2014). NASM essentials of corrective exercise training: first edition revised. Chandler, AZ: National Academy of Sports Medicine.
4. Clippinger, K.S. (2007). Dance Anatomy and Kinesiology. Champaign, IL: Human Kinetics.
5. Floyd, R.T., & Thompson, C.W. (2004). Manual of structural kinesiology: nineteenth edition. Boston: McGraw-Hill.
6. Lauritis, M.D. (1997). The Scapulas Role in Glenohumeral Joint Movements with Implications for Resistance Exercise. Strength and Conditioning Journal, 19(2), 28-32
7. Ronai, Peter. (2005). Exercise Modifications and Strategies to Enhance Shoulder Function. Strength and Conditioning Journal, 36-45

Images

Figure 1: fitnessforbackpain.com/fixing-rounded-shoulders/

Figure 2: <http://www.physioleeds.co.uk/are-you-sitting-comfortably/>

Figure 3: <http://ispub.com/IJHA/3/1/22311>

Figure 4: <https://prezi.com/m/rlsz2etjh1b4/levator-scapula/>

Figure 5: <http://erikdalton.com/anterior-scalene-technique/>

Figure 6: https://www.slideshare.net/mobile/farhan_aq91/triangles-of-the-neck-ppt-year-1

Figure 7: <http://www.myhousecallmd.com/pectoral-tears-not-a-sexy-sports-injury/>

Figure 8: <http://www.gympaws.com/fitness/training-for-pull-ups>