Hyperkyphosis

Assessment

Postural assessment – lateral view

- Slight ankle plantarflexion is possible with knee hyperextension.
- With accompanying hyperlordosis the hip joints are flexed, the lumbar lordotic curve is increased and the bilateral anterior pelvic tilt is greater than 10 degrees in women and 5 degrees in men
- With flatback the hip joints are extended, the lumbar lordotic curve is decreased and the bilateral pelvic tilt is less than 5 degrees in female clients and less than 0 degrees in male clients.
- The thoracic curve is increased
- The acromioclavicular joints may be anterior
- The cervical lordotic curve is increased.
- The external auditory meatus is anterior to the plumb line with a head forward posture.

Posterior view-

- The scapulae are protracted and often winged.

Palpation

- The pectoral muscles, sternocleidomastiod, and anterior and upper cervical extensors are tender and hypertonic and contain trigger points.
- The pectoral fascia may be thickened and tender.

Testing

- AF ROM of the thoracic spine reveals a decrease in extension
- PR ROM of the cervical spine is reduced in forward flexion and lateral flexion. With shoulder protraction, there is reduced external rotation of the glenohumeral joint.
- AR strength testing reveals weakness in the middle trapezius and rhomboid.
- Pectoralis major and pectoralis minor tests are likely positive
- Shoulder adductor length tests are likely positive
- The straight leg raise test reveals an increase in hamstring length with an anterior pelvic tilt and a decrease in hamstring length with a posterior pelvic tilt.
- In the thoracic and cervical spine, anterior and lateral spinous challenge tests reveal areas of vertebral hypo- or hypermobility.
- Rib motion and levatores costarum fixation tests are positive with rib fixation.
- Spurling's test is positive with facet joint irritation
- Adson's, Wright's hyperabduction or costoclavicular syndrome test is positive with thoracic outlet syndrome.

General Treatment

- Positioning starts supine
- Hydrotherapy applications are pre-treatment heat applied over one pectoralis major muscle before treating the fascia, then moved to the other side. Cool applications are used on the stretched rhomboids.
- This treatment addresses a functional curve without including work to the pelvis.
- The treatment is performed in a context of relaxation

Specific Treatment

- Fascial techniques (slow skin rolling, crossed hands, fingertip spreading and connective tissue cutting) are applied to the pre heated pectoralis muscle
- Treat the fascia (slow skin rolling and fascial spreading) over the lower anterior intercostals and pec major attachments, the abdomen is uncovered.
- Swedish techniques (effleurage, fingertip kneading, muscle stripping and origin and insertion technique) for pec major, pec minor, subclavius, deltoids and anterior intercostals.
- The diaphragm is treated with costal border scooping and specific muscle stripping under the costal border using the client's breath.
- Cover the abdomen
- Apply muscle stripping and ischemic compressions to trigger points in the shoulder protractors
- The sternal attachments of pectoralis major are treated with fingertip kneading and fascial spreading.
- Pec major trigger points refer to the shoulder, chest and breast
- Pec minor is located by placing the clients hand on the abdomen, with the humerus in slight abduction. The therapist's thumbs are placed under the lateral border of pec major to palpate the smaller muscle. The client is asked to depress the shoulder, making pec minor palpably contract. Once the muscle is located, muscle stripping and origin and insertion technique are used on the tissue. Trigger points in pec minor refer to the anterior shoulder.
- Subclavius is palpated immediately inferior to the clavicle. The trigger point in this muscle refers pain down the arm into the lateral hand.
- Repetitive effleurage and petrissage are used on the shoulder protractors.
- Joint play to the sternoclavicular and acromioclavicular joints is indicated.
- Rib springing is also used to mobilize the ribs and stretch the anterior intercostals, allowing for fuller respiration
- PIR for the clavicular portion of pec major has the humerus at 90 degrees of abduction and the upper limb hanging off the table. The sternum is stabilized with the therapist's hands while the other hand is placed on the distal humerus. The client submaximally horizontally flexes the humerus against the therapist's resistance for 10 seconds and then relaxes, allowing the limb to fall into extension. Repeat at lest 3 times.
- To treat the sternal portion, the client's humerus is positioned in more than 120 degrees of abduction and the stretch is repeated.
- Latissimus dorsi is treated by repeated the stretch with the arm in 180 degrees of abduction of the glenohumeral joint, which is also full forward flexion. To stabilize the pelvis, the client's hips and knees are flexed so the feet are flat on the table and the lumbar spine is pressed into the table.
- To treat pec minor the arm is at the client's side with the hand on the abdomen. The client slides to the side of the table so the scapula is free to hang over the side of the table. The heel of the therapist's hand is placed on the coracoid process and the client submaximally protracts and depresses the scapula against the therapist's resistance.
- The tight upper cervical muscles, including the suboccipitals, are treated with fascial fingertip stroking, effleurage, fingertip kneading and golgi tendon organ release.
- The tight sternocleidomastiods, upper trapezius, scalenes and levator scap are treated with muscle stripping
- P ROM in all ranges is used on the cervical spine.
- Turn prone with pillows under the abdomen and ankles. Two towel rolls are placed under the shoulders, retracting them.

- Rhythmic techniques and Swedish techniques are used on latissimus dorsi, serratus posterior superior, subscapularis and the rotator cuff muscles
- To treat a short latissimus dorsi, the client's upper limb on the side to be treated is placed in full forward flexion, placing the stretch on the muscle. Ulnar border stripping is used in an inferior to superior direction along the muscle.
- Trigger points in latissimus dorsi refer inferior to the scapula and , sometimes down the extensor surface of the arm.
- The trigger point in serratus posterior superior is covered by the medial superior angle of the scapula. To locate it, the therapist allows the clients arm to hang off the side of the table, abducting the scapula and uncovering the trigger point.
- Rhomboid trigger points are activated by shortening of pectoralis major. They refer locally and are treated with ischemic compressions only, to avoid lengthening the tissues.
- Subscapularis is treated with muscle stripping and ischemic compressions.
- Joint play including spinous process oscillations is used on hypomobile vertebrae and ribs. The recoil technique is used for posterior rib fixation due to levator costarum tightness.
- The middle trapezius, rhomboids and thoracic erector spinae are treated with brisk, stimulating Swedish techniques such as alternating palmar kneading and tapotement
- End with effleurage

- The side lying position may be more comfortable for the client with extremely tender shoulder protractor muscles. The uppermost elbow is flexed and the limb is allowed to adduct with gravity's help across the torso, shortening the pectoralis muscles and making them less tender.
- The serratus anterior is located by the therapist extending the clients humerus and letting the arm hang behind the torso. Muscle stripping is used from the lateral attachments posteriorly around the rib cage, as far under the scapula as possible.
- Serratus anterior trigger points refer locally to the lateral thorax. The client may report that he is unable to take a deep breath when this trigger point is activated.
- PIR for serratus anterior is achieved by the therapist stabilizing the client's pelvis while extending and adducting the humerus against the client's resistance. The client is asked to inhale, which further stretches the muscle.