
قال الله تعالى :
﴿ يَرْفَعِ ٱللَّهُ ٱلَّذِينَ ءَامَنُواْ مِنكُمْ وَٱلَّذِينَ أُوتُواْ
ٱلْعِلْمَ دَرَجَٰتٍ ۚ وَٱللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ ﴿١١﴾ ﴾
سورة المجادلة

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Introduction to manual therapy

❖ **Manual Therapy**: is a skilled, specific hand on approach used by clinicians including physical therapists to diagnose and treat soft tissue and joint structures.

❖ **Purpose of manual therapy**:

1. Decreasing pain.
2. Improving joint ROM and alignment.
3. Improving contractile and noncontractile tissue repair.
4. Improving stability and extensibility.
5. Facilitating function**.**

❖ **Types of manual therapy**:

1- Soft tissue techniques.

- Cross-fiber stretch.
- Longitudinal stretch.
- Direct pressure.
- Deep friction.
- Neural mobilization.

2- Articulatory techniques (mobilizations).

They are passive, skilled manual therapy techniques applied to joints and related soft tissues at varying speeds and amplitudes using physiological or accessory motions for therapeutic purposes.

3- Thrust techniques (manipulations).

Thrust is a high-velocity, short-amplitude motion such that the patient cannot prevent the motion. The motion is performed at the end of the pathological limit of the joint and is intended to alter positional relationships, snap adhesions, or stimulate joint receptors.

*Pathological limit means the end of the available ROM when there is restriction.

❖ **Indications for manual therapy:**

(A) For Spine:

1. Pain radiating towards the extremities connected with irritation and compression of the nerve roots.
2. Pain originating from excessively tense muscles.
3. Pain caused by degenerative disease or protruded / herniated intervertebral disc.

4. Stiffness caused by contraction or blocking of intervertebral and sacroiliac joints.
5. Spine-related headaches, dizziness.
6. Asymmetrical posture.

(B) For Peripheral joints:

1. Pain caused by muscle attachment and tendon injuries.
2. Conditions after injuries and after orthopedic procedures within the bones, joints, ligaments and muscles.
3. Pain caused by arthrosis.
4. Preparation for elective surgery and rehabilitation after treatment.
5. Joint stiffness caused by immobilization or degeneration.
6. Increased / decreased tone of soft tissues that change the posture and overload other tissues.

❖ **Contraindications to manual therapy**:

(A) General:

1. Unbearable pain (no possibility to perform the examination).
2. Severe osteoporosis.
3. Blood clotting problems.
4. Skin lesions.
5. Severe internal medicine disorders.

(B) Local:

1. Acute inflammatory process.
2. Cancer.
3. Injuries, fractures, sprains in the phase of immobilization.
4. Capsular- articular instability.
5. Pathologies of the vertebrobasilar artery.
6. Ligamentous laxity of the cervical spine.
7. Symptoms of spinal cord compression.
8. Progressive muscle paralysis.
9. Pregnancy.

Medical Massage

❖ **Definition:**

Massage is defined as the scientific manipulation done with hands on the soft tissues of the body in order to produce effects on the nervous, Muscular, and circulatory systems to improve function.

❖ **History of massage**:

- The word massage comes from "mass" that denoting "to press". Massage is used therapeutically since ages by many civilizations from 5000 years ago.
- Almost all civilization like: Hindus of India, Chinese, Japanese, Egyptians, Greeks, and Romans.
- Hippocrates described its medical uses as well.

❖ **Types of massage techniques**:

1- Stroking Technique.

A. Effleurage:

➢ Aims:

1- Introduce touch to the patient.
2- Put the patient at ease.
3- Warm the superficial tissues.
4- Relax the muscles.
5- Allow you to palpate and sense the condition of the tissue.
6- Stimulate the peripheral nerves.
7- Increase blood and lymph flow, thus aiding in the removal of waste products.
8- Stretch tissues.
9- Relax the patient before the end of the session.

➢ Application method:

- The hands are passed rhythmically and continuously over a patient's skin, in one direction only figure 1.
- The word effleurage is derived from French, meaning "to skim". It involves stroking movements of the hands sliding over the skin and is always the first and last technique (as well as being used between other techniques) applied in a massage session.
- Effleurage may be used with varying tempo and pressure according to the stage of the condition and whatever the desired effect of the massage is.

- You should use a wide surface area of the palmar surfaces of the hands and fingers, either with both hands simultaneously or by alternating hands. Pressure is sustained throughout the stroke and is always toward the heart to encourage venous return. On the return stroke, the hands should maintain light contact and avoid the same path taken by the upward stroke.
- The position, speed and direction of the movements will vary depending on aim of technique and the part of the body being massaged. For example, long, stroking movements may be used on the legs and arms, while a more circular motion may be preferred for the back and neck.
- The hands should be relaxed and should follow the natural contours of the client's body. The technique should not be rushed, as you need time and quality of movement to determine any tissue abnormalities that require attention. Quick movements will not allow the client to relax and will certainly be more painful if any areas are tender.

Fig.1: Application method of effleurage.

B. Stroking:

- Aims:
  1. Slow stroking (1 stroke per 5 seconds): gives sedative effect.
  2. Fast stroking (4 stroke per 5 seconds): gives stimulating effect.
- Application method:

These are unidirectional manipulation in which the practitioners hand passes usually from proximal to distal down the length of the tissues at speed compatible with the desired effect. Also, the direction of stroking may be varied to give greater comfort. The depth of the stroking is minimal to give relaxation or stimulation figure 2.

Fig.2: Application method of stroking.

2.Petrissage technique:

- Petrissage: is derived from a French word, meaning "to knead". The basic movement is to compress, pick up and then release the soft tissues.
- Aims:
  - Assists venous and lymphatic drainage.
  - Assists fluid interchanges.
  - Increases mobility of the tissues.
  - It has an effect on somato-visceral reflexes.
- It is generally used when a deeper effect than effleurage is desired, and its techniques include:

  a) Kneading:
  - It is a massage technique applied with pressure by lifting the muscle in circular and upwards motions
  - .Kneading is used to break down and realign collagen fibers to increase flexibility and range of movement in the muscle. It relieves tensions in the muscle fibers and improves deeper blood.
  - Kneading technique includes:
    - Thumb kneading figure 3.
    - Finger kneading.
    - Palmar kneading.
    - Knuckle kneading.
    - Open C- kneading.

Fig.3: Thumb kneading.

b) Picking up:

- It is a massage technique in which the tissues are compressed against underlying bone then lifted, squeezed, and released.
- It is often performed single handed with the thumb and thenar eminence as one component and the medial 2 or 3 fingers and hypothenar eminence as the other component of the grasp.
- Types of grasps:
    - C- shaped grasp: for large and wide area.
    - V- shaped grasp: for small and narrow area figure 4.

Fig.4: V- shaped grasp.

c) Wringing:

- It is a massage technique in which the tissues are compressed against underlying structures then pull them with one hand while pushing them in the prior mentioned direction with the thumb of the opposite hand (the structure is wringed between the two hands) figure 5.

Fig.5: Wringing technique.

d) Rolling:

- It is a massage technique in which the tissues are lifted and rolled between thumb and fingers.
- Types:
  - Skin rolling: performed on back, abdomen, thighs, knees, and scar tissues figure 6.
  - Muscle rolling: performed at the long axis of the muscle fibers figure 6.

Fig.6: Rolling technique.

e) Shaking technique:

- It is a massage technique in which the muscle is Shacked by moving it with rapid radial and ulnar deviations (sideways), like biceps, triceps, calf muscles and small muscles of thenar and hypothenar eminences figure 7.

Fig.7: Shaking technique.

3. Tapotment/percussion:

- It is a massage technique in which the part is struck down the hands figure 8.
- Types:
  - Hacking: skin is struck by using the back of the tip of three medial fingers figure 9.
  - Clapping: skin is struck by using the whole palmar aspect (slight cupping the hands) figure 10.
  - Vibration: involves a movement in which the tissues are pressed and released using an up and down motion figure 11.
  - Beating: using the dorsal aspect of middle phalanx of loosely clenched fist (thumb is inside the fist) figure 12.
  - Pounding: using the ulnar aspect of loosely clenched fist figure 13.
  - Tapping: using the tips of the finger pads figure 14.

Fig.9: Hacking.

Fig.10: Clapping.

Fig.11: Vibration.


Fig.12: Beating.


Fig.13: Pounding.


Fig.14: Tapping.

4.Friction Massage:

- Types:
  - Circular: Small circular perpendicular motion directed at underlying structures figure 15.
  - Longitudinal: Use strong pressure in perpendicular longitudinal direction to fibers figure 16.
  - Transverse: Use strong pressure in perpendicular transverse direction to fibers figure 17.


Fig.15: Circular.

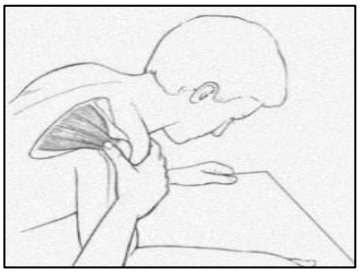


Fig.16: Longitudinal.


Fig.17: Transverse.

- Friction: Is penetrating pressure applied by fingertips, knuckle, elbow.
- Cyriax: The founder of the friction therapy, believed that deep frictions are appropriate for the treatment of tendinopathy, muscle strains, ligament lesions and scar healing.
- Friction is a massage technique used to:
  - Increase circulation.
  - Release areas of tight; particularly around joints and adhesions within the muscles or tendons.
  - Minimize the scarring that develops perpendicular to the actin and myosin filaments, to facilitate the proliferation of the fibroblasts in the scar and to develop a strong, mobile scar.
- Friction induces the following to influence cell behavior in all soft tissues:
  - Traumatic hyperemia, which helps to evacuate pain triggering metabolites.

- Movement of the affected structure which prevents or destroys adhesions and helps optimize the quality of scar tissue.
- Stimulation of mechanoreceptors, producing a quantity of afferent impulses that stimulate a temporary analgesia.
- Fibroblastic proliferation, responsible for the repair and regeneration of collagen.
- Realignment of collagen fibers, determined by the magnitude of applied pressure.

➢ **The 8 rules of deep friction massage are:**

- Diagnostic movements and palpation for the exact location on tissue.
- The therapist's fingers and patient's skin must move simultaneously to avoid injury to the skin.
- The massage must be perpendicular to the tissue's fiber.
- The massage must be given with sufficient sweep to treat the whole area.
- The friction must be given deeply, within the patient's pain tolerance. The pain will gradually diminish during the massage.
- The patient must adopt a posture that will adequately expose the tendon.
- If the lesion lies in the belly of the muscle, the muscle must be put on slack. This will aid in separation of the muscle fibers during the massage.
- Tendons with a sheath must be put on stretch to assure maximum success of the massage.

❖ **Effects of therapeutic massage**:

A. Mechanical effects.

1- Constant passage of hands over the skin results in:

- Removing dead surface cells.
- Allows the sweat glands, the hair follicles and sebaceous glands to be free of obstruction and to function better.

2-The increased lubrication effect is seen in subjects with desquamation.

3- Used in management of scars by inducing space; thus:

- Loosening up the adhesions.
- Inducing scar tissue mobilization.

B. Physiological effects:

1. **Circulatory effect.**
   - Initial capillary constriction occurs in response to light pressure seen as a transient white line then flushing of blood (vasodilation) occurs with release which can increase temperature of area.
   - Skin rolling massage release a histamine related substance.
   - Increase circulation of the skin due to intermittent pressure applied and relieved during massage.
   - Increased lymphatic drainage.
   - Improved venous return to heart.
2. **Effect on nervous system.**
   - Slow rhythmic stroking: gives relaxation effect.
   - Fast stroking: gives excitatory effect.
   - Deep massage: gives relaxation/inhibitory effect.
3. **Effect on pain.**
   - Pain caused due to muscle spasm or tightness; slow and deep massage.
   - Pain caused due to nerve compression (radiculopathy); deep massage along the neuromuscular interface till the end point of radiating pain.
   - Stimulation of C-tactile afferents (unmyelinated, low threshold mechanoreceptors, found only in hairy skin, class of touch sensitive nerve fibers); respond to low force slow stroking resulting in decreasing pain.
   - Modulates pain through gate control & β-endorphins.
4. **Effect on musculoskeletal system.**
   - Slow deep massage; reducing tone in spasmodic muscles.
   - Quick stroking massage; improving tone in flaccid muscles.
   - Constant deep massage; improving the flexibility as well as the extensibility of muscles.
   - Increase range of motion.
   - Does not increase strength.
5. **Effects on Metabolism.**
   - Does not alter general metabolism.
   - No alterations in acid-base equilibrium of blood.
   - Assists in removal of lactic acid.
6. **Effect on psychological system.**

- Relieving tension/anxious moods by reducing tension in muscle indirectly reducing anxiety in subjects.
- Increasing sympathetic activity.
- Stimulation of C-tactile afferents may mediate oxytocin release (a hormone produced in the hypothalamus and released in the blood stream by the pituitary gland) resulting in decreasing pain and depression**.**

❖ **Assessment:**

The part to be massaged by :

A. Observation.

1. Postural evaluation: observation of each bony landmark or joint position with respect to contralateral side figure 18.
2. Movement evaluation: observe during movement for any muscular tightness while performing movement. Example, compare the angle of hip flexion with knee extension figure 19.

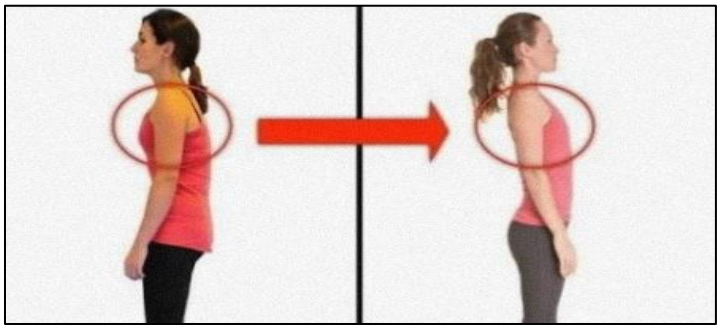


Fig.18: Postural evaluation.

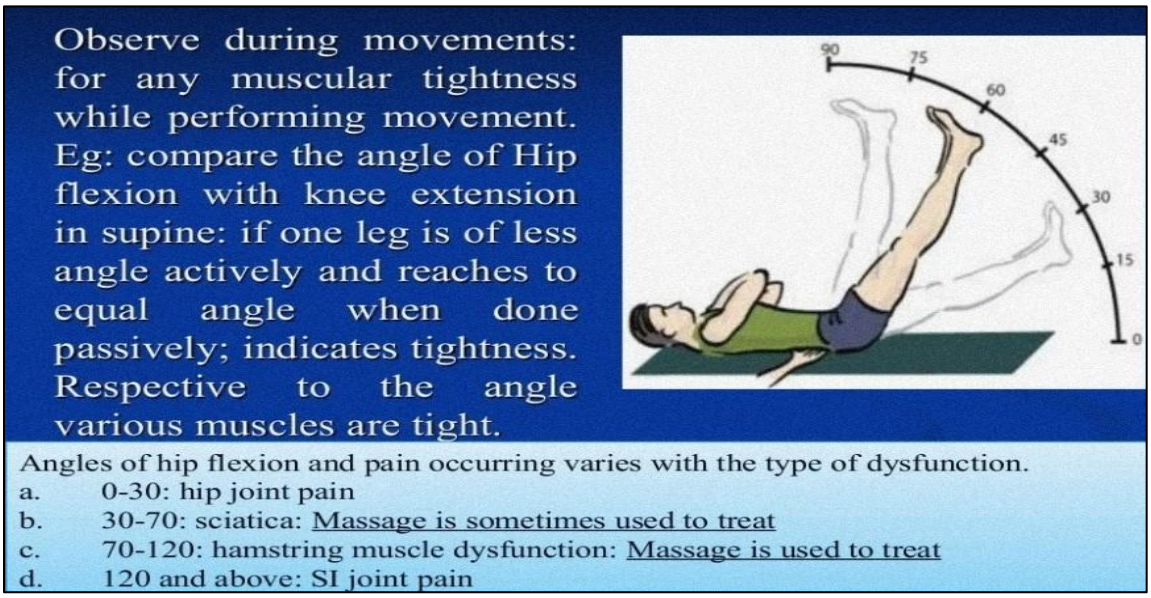


Fig.19: Movement evaluation.

B. Palpation: there are various soft tissue palpation techniques, used to assess the muscle turgor including؛

1. Flat palpation: for flatter and mor superficial muscles figure 20.
2. Snapping palpation: for cord like structures which are deeply located figure 21.
3. Pincer palpation: for superficial bulk like biceps brachii muscle figure 22.

Fig.20: Flat palpation.

Fig.21: Snapping palpation.

Fig.22: Pincer palpation.

❖ **Preparation:**

- Equipment Set Up:
  - Table: in the center and adjustable.
  - Towels and pillows: to cover and position.
  - Lubricant:
- Should be absorbed slightly by skin but does not make it slippery.
- The types of lubricants that may be used are olive oil, mineral oil, cocoa butter, hydro lanolin, analgesic creams.
- Alcohol can be used for cleaning.
- Also, powder may be used as a lubricant.

❖ **Posture:**

- For patient:
  - Should be in a relaxed, comfortable position.
  - Part involved in treatment must be adequately supported.
  - Prone, supine, seated.
  - Clothing should be removed from part being treated.
- For therapist:
  - Back: Work with your back as straight as possible. By flexing your hips and knees.
  - Foot position: You can move in an antero-posterior direction without placing undue strain on your back.

❖ **Hand Position**:

- The most useful areas of the hand to use are the ulnar border and base of the thumb.
- Other important areas are the palm and the palmar surfaces of the fingers and thumbs. They provide sensory feedback, thus allowing you to adapt your massage with regard to timing and pressure according to the nature of the tissue. It is for this reason that the use of elbows and knuckles should be avoided.
- Keep your arms and hands relaxed while massaging, with the hands conforming to the contours of the body.
- Always pour the oil onto your own hands, never directly onto the client.
- Try to warm the oil (and your hands) before applying to the naked skin. If this is not possible, at least warn the client of what is to come.

❖ **Physical Contact**:

Try to always maintain contact with your client. This allows them to relax، especially if they are lying face down. Removal of the hands may also be interpreted as an indication that the session is over and so cause unwanted movement.

❖ **<u>Therapeutic Effects For Massage</u>**:

- Increase coordination.
- Decrease pain and neuromuscular excitability.
- Stimulate circulation.
- Facilitate healing.
- Improve lymphatic flow and remove lactic acid.
- Increase blood flow and venous return.
- Retard muscle atrophy.
- Increase range of motion.
- Edema.

❖ **<u>Indications For Massage:</u>**

- Myofascial trigger points.
- Stretching scar tissue and adhesions.
- Muscle spasm.
- Myositis, bursitis, fibrositis, and tendinitis.
- Revascularization.

- Raynaud's disease.
- Intermittent claudication.
- Dysmenorrhea.
- Headaches and migraines.

❖ **Contraindications For Massage**:

- Arteriosclerosis.
- Thrombosis, embolism.
- Severe varicose veins.
- Acute phlebitis.
- Synovitis.
- Abscesses.
- Local cancer.
- Skin infections.
- Acute inflammatory conditions.
- Cellulitis.

MYOFASCIAL RELEASE

Fascia: is specialized connective tissue (CT) that surrounds every muscle, nerve, bone, blood vessel, and organ at cellular levels and serves as a lubricant to allow motion and provides form and structure for the body.

Connective Tissue (CT): is an adaptive tissue that responds to trauma to protect the body.

CT is made of:

1. Collagen: provides support, strength, stabilization.
2. Elastin: provides dynamic flexibility and absorbs tensile forces.
3. Ground Substance: (gelatinous material with high water content) surrounds every cell to provide cushion and lubrication between cells figure 1.

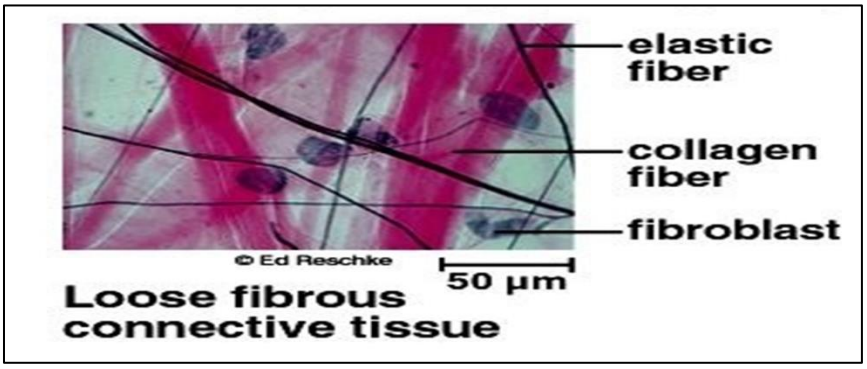


Fig.1: Fibrous connective Tissue.

❖ **The functions of fascia include:**

1. Supporting vessels and nerves.
2. Allowing muscles to move over one another.
3. Providing stability and contour as well as fluidity and lubrication.
4. Participating in reflex loops from Paccinian corpuscles afferent fibers. Contracting and relaxing to respond to deformation.

❖ **The layers of fascia**

A. **Superficial fascia:**

- Elastic fibers under the surface of the skin figure 2.
- Varying in thickness, form, elasticity, resistance and content.
- It contains the platysma muscle, cutaneous nerves, capillaries and lymphatic vessels.

B. Deep fascia:

- It separate muscles and organs for contouring of the body figure 2.

C. deepest layer:

- It is the Dura Mater which surrounds the brain.

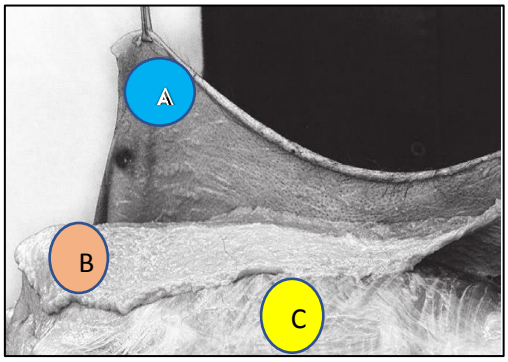
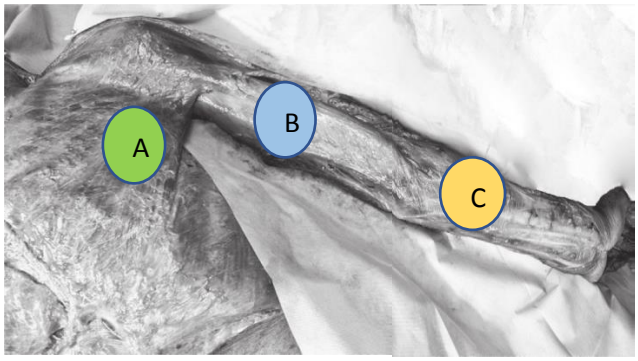


Fig.2: Show , A.Skin, B. Superficial fascia, C. Deep fascia.



A. Pectoralis fascia, B. Brachial fascia, C. Antebrachial fascia.

❖ Thoracolumbar Fascia:

- It acts as a bridge structure between the muscles of the trunk and the extremities.
- It is the most extensive connection between latissimus dorsi and gluteus maximus muscles figure 3.
- Function:
  1. It is expressed in the activities of locomotion and provides trunk stabilization figure 4.
  2. It provides myofascial force transmission between the gluteus maximus and latissimus dorsi muscles on the opposite side.

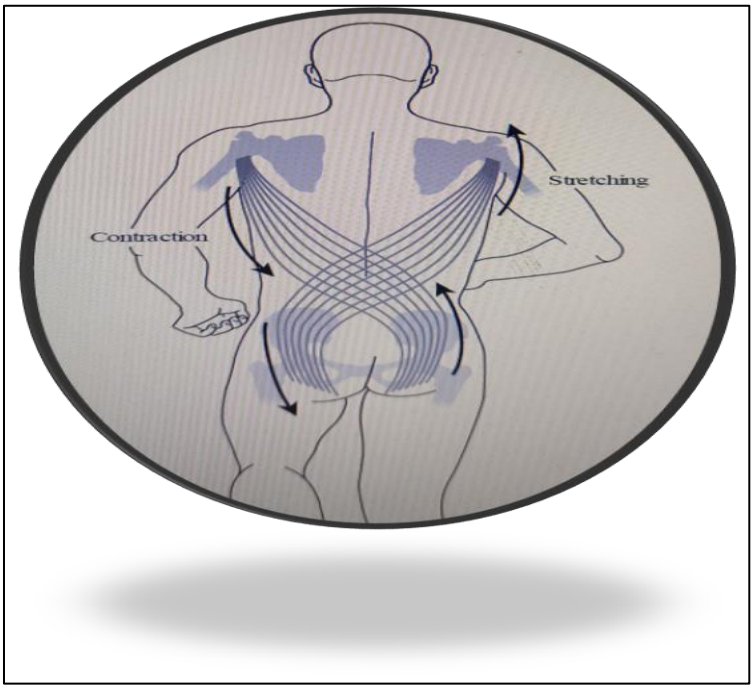


Fig.3: Thoracolumbar Fascia.

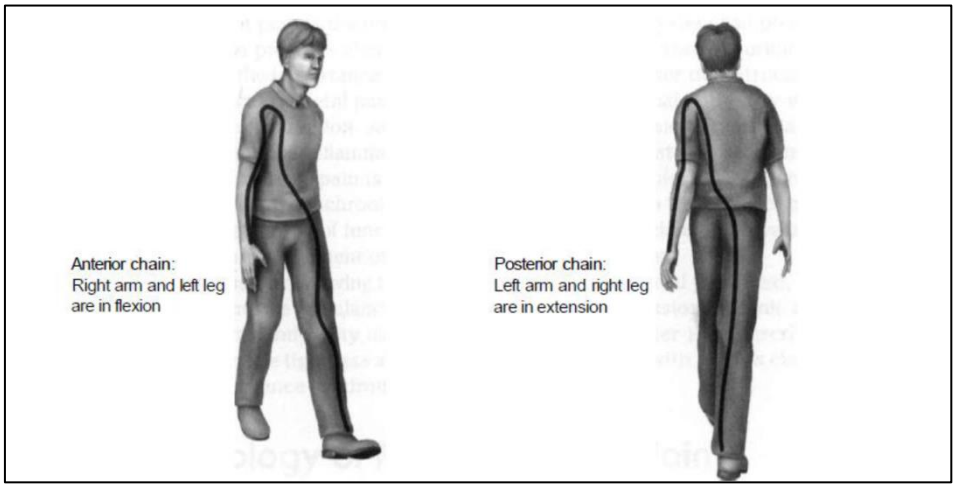


Fig.4: Reciprocal locomotion.

❖ **Fascia Restrictions:**

- Cause: trauma.
  - Commonly during one single event.
  - Or micro-traumas overtime.
- Body's reaction to trauma:
  - Collagen becomes dense and fibrosis.
  - Elastin loses its resiliency.
  - Ground substance solidities.
- Fascia Restrictions result in: Abnormal strain patterns, Compression joints, and muscles Pain and imbalances.

❖ **Causes of Myofascial Dysfunction:**

1. Back Pain.	2. Jaw Pain (TMJ).	3. Disc Problems.
4. Headaches.	5. Sports Injuries.	6. Whiplash.
7. Fibromyalgia.	8. Neurological.	9. Dysfunction.
10. Chronic Pain.	11. Carpal Tunnel.	12. Adhesions.
13. Lymphedema.	14. Chronic Fatigue.	15. Neck Pain.
16. Scoliosis.	17. Sciatica, Sprains, strain.	18. Hypermobility.
19. Immobilization.	20. Injections, Traumas.	21. Stressors.
22. Scars.	23. Inflammation.	24. After Surgery.
25. Pelvic Floor Pain.	26. Mastectomy Pain.	27. Endometriosis.
28. Problematic Breast.	29. Implant/Reduction.	30. Coccydynia.
31. Episiotomy Scars.	32. Disease.	33. Vulvodynia.

❖ **Myofascial release "induction"**

- Myofascial induction therapy: is an assemblage of procedures focused on optimizing function and balance within the fascial system.
- Aims:
  - Local correction.
  - Recovery of global dynamics.
  - Pain- free body use.

❖ **Bases for clinical applications:**

Assessment process:

1- Anamnesis including the patient's retrospective pathology:
   - Misuse: reduced coordination and / or stability.
   - Abuse: trauma.
   - Overuse: repetitive movements and / or excess load.
   - Disuse: atrophy or reduced load capacity.

2- Static evaluation of posture (observation).

3- Dynamic evaluation of posture:
   - Use global functional tests focusing on a movement quality analysis or basic daily activities, with special attention paid to the presence of any compensation movements.
   - Specific functional tests focused on the specific structure involved * for example, muscle (strength), elasticity including tissue palpation and ROM tests.

❖ **The treatment protocol is divided into two phases:**

A. Superficial (local) procedures:
- They are addressed to the surface and / or local restrictions detectable through direct palpation.
- These techniques consist of different strokes, applied from the most superficial to the deepest level.
- The main goal is the correction of subcutaneous restrictions (related to the superficial fascia) as well as those affecting muscles, tendons, and ligaments.

B. Deep myofascial induction therapy:
- It is an evaluation and treatment process, which uses movements and three-dimensionally sustained pressures applied to the entire myofascial system.
- It aims to release of restrictions.

❖ **Best When Used with Physical therapy treatments:**
- Perform MFR after biomechanical dysfunctions have been treated with muscle energy or mobilizations.

- Perform MFR after calming severe muscular spasms using techniques such as Strain Counter-Strain or Trigger Point Release.
- Teach self-MFR techniques such as with pressure or foam rolling.
- Strengthen and educate to ensure the dysfunction does not reoccur.

❖ **Therapeutic Effects & Benefits of Myofascial release:**

1. Decreased pain.
2. Improved blood flow.
3. Improved alignment.
4. Improved joint function.
5. Improved sleep.
6. Improved quality of life.
7. Decreased anxiety.
8. Decreased fatigue.
9. Decreased stiffness.
10. Decreased muscle activity & vigor after stressful exercise or performance.

❖ **Contraindications for Myofascial release:**

- Malignancy.
- Aneurysm.
- Acute rheumatoid arthritis.
- Advanced diabetes.
- Severe osteoporosis.
- Healing fractures.
- Anticoagulant therapy.
- Inflammatory soft tissue process in the acute phase.
- Acute circulatory deficiency.

N.B: Please also note that there may be an initial feeling of soreness after treatment as the body accommodates to this new balanced state.

❖ **Examples of Practical Applications for Upper Quadrant Disorders:**

The following techniques are examples of the therapeutic strategies used in myofascial restrictions associated with the most common pathologies of the upper quadrant.

❖ **Techniques related to the cervical spine:**

Clinical considerations:

- A forward-head posture, with resulting overextension of the occipital muscles required to maintain a horizontal line of sight, causes continued tension on the hyoid muscles. The prolonged and repetitive tension leads to the jaw being depressed and moved backward, so forcing the person to open the mouth, which is countered by contraction of the temporal and masseter muscles, tensing the fascial system. This may result in temporomandibular joint movement limitation and / or distortion.

- The hyoid bone is involved in activities such as swallowing, talking, chewing, playing wind instruments, etc. The bone is fixed to the prevertebral and superficial fascia and, for this reason, fascial dysfunction may directly affect its proper functioning, resulting in dysfunctional dynamics of its 14 pairs of muscles.
- The three scalene muscles ex the lower cervical spine while the suboccipital muscles extend the head and contribute to protrusion. The scalenes, which must perform their duty of stabilizing the first rib, actually apply traction from the cervical vertebrae downwards and forwards.
- The muscles along the head and the length of the neck have a major role in maintaining the correct head position in the sagittal plane. Both groups are powerful flexors and have the role of counteracting the strong and prolonged tension of the paravertebral muscles and those of the common extensor mass.

1- Suboccipital induction.

- The patient is in supine position, and the clinician is seated on a chair at the patient's head.
- The clinician places both hands under the head, and then touches the suboccipital space with the second to the fifth fingertips, trying to place the fingers vertically. Applying the pressure towards the ceiling, the therapist follows the induction principles. The minimum application time should be 4 minutes figure 5.

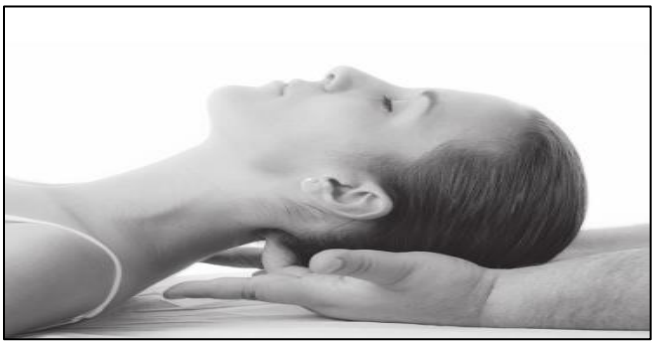


Fig.5: Suboccipital induction.

2- Suprahyoid region induction.

- The patient is in supine position and the clinician stands at one side.
- The clinician places the caudal hand above and around the hyoid bone. The endings of the index and middle fingers of the cranial hand should be placed on the soft part of the mandible directly under the chin. With the caudal hand the clinician applies slight traction in the caudal direction, while with the cranial

hand applying traction towards the head figure 6. Applying a three-dimensional pressure, the clinician follows the induction principles.

Fig.6: Suprahyoid region induction.

3- Induction of the scalene muscles.

- The patient is in supine position and the clinician is seated on a chair at the patient's head.
- The clinician places both thumbs along the supraclavicular space, and maintains that position or approximately 60–90 seconds until there is a rotation of the head to one side. The therapist then makes contact from the side the head turned towards, while with the thumb of the other hand continuing the releasing maneuver figure 7.
- Pressure over the brachial plexus should be avoided. If any sensation of pins and needles is felt towards the upper limb, the fingers must release the hold on the brachial plexus.

Fig.7: Myofascial induction of the scalene muscles.

4- Induction of the prevertebral fascia.

- With the patient in supine position, the clinician slightly turns the patient's head to one side and then places the fingers underneath the muscular mass of the sternocleidomastoid muscle (over the scalene and above the transverse process of the vertebral bodies of the middle and low cervical vertebrae) following the principles of induction figure 8.

- At no time should pressure be applied over the trachea and / or carotid artery.

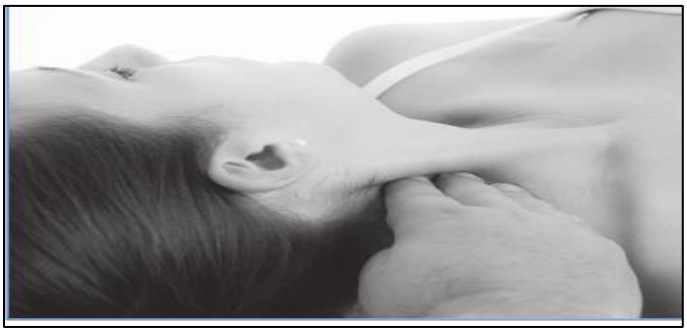


Fig.8: Induction of the prevertebral fascia.

❖ **Techniques related to the shoulder girdle:**

Clinical considerations:

- The shoulder girdle connects the trunk with the hand via the small sternoclavicular joint. Without this joint connection, the dynamic continuity would be maintained by the myofascial structures alone. The trapezius, infraspinatus, supraspinatus and deltoid muscles connect to the spine of the scapula and represent the most important muscular connection or the dynamics of shoulder motion.
- The fascial insertions form a fibrous link. A fascial entrapment can change the distribution of tensional lines in the scapular region. The dysfunctional scapular movements alter the dynamics of the thoraco-scapular and scapulohumeral movements, contributing to the dysfunction and shoulder pain.

1- Induction of the pectoralis and deltoid fascia.

- The patient is in supine position, and the clinician crosses the hands, placing the cranial hand over the front of the shoulder and the caudal hand over the ipsilateral edge of the sternum figure 9.
- Applying three-dimensional force, the clinician follows the principles of induction.

Fig.9: Induction of the pectoralis and deltoid fascia.

2- Induction of the clavipectoral and the pectoralis minor muscle fascia.

- The patient is in supine position, and the clinician holds the patient's arm with the cranial hand, abducting it approximately at 90° while applying a very gentle traction figure 10.
- The caudal hand, in prone position, is introduced into the space between the pectoralis major and the ribs and slowly directs the fingers medially and cranially. Applying a three-dimensional force.

Fig.10: Induction of the clavipectoral and pectoralis minor muscle fascia.

3- Integrated induction of the arm.

- The patient is in supine position, and the clinician places the caudal hand at the level of the sternum and with the cranial hand holds the patient's arm at an elevation of approximately 120°, applying a very gentle traction figure 11.
- Applying the three- dimensional force, the clinician follows the principles of induction. Facilitated movement of the upper limb should be allowed.

Fig.11: Integrated myofascial induction of the arm.

4- Induction of the spine of the scapula.

- The patient is seated and the therapist stands behind him / her. The clinician's external hand contacts the supraspinous fossa, pressing with the fingers in the direction of the spine at the scapula without causing pain.
- The other hand of the therapist is placed on the patient's head, simply to hold it. Applying a three- dimensional force, the clinician follows the principles of

induction. It is normal to note head movement and the therapist should follow this figure12.

Fig.12: Myofascial induction of the spine of the scapula.

5- Induction of the trapezius muscle.

- This technique follows the same principles as previously described. The leading hand of the therapist changes position as the fingers are placed on the upper edge of the trapezius muscle and contact the upper fibers figure 13.
- Painful reactions should be avoided and treated with special care.

Fig.13: Myofascial induction of the trapezius muscle.

❖ **Techniques related to the brachial and antebrachial fascia**

Clinical considerations:

- Lateral epicondylalgia, or tennis elbow, is the most common pathology in the elbow region; it is generally associated with an excessive traction generated by the extensor musculature, and numerous tendons are fixed in the epicondyle.
- The muscle most of ten involved in this pathology is the extensor carpi radialis brevis. It is believed that the pathology is caused by the exaggerated traction of its tendon.
- In the other cases, the tendon was fixed on the fascia of the extensor carpi radialis longus, extensor digitorum communis, supinator and the radial collateral ligament. This example reveals the need to analyses and focus the therapy to the broad fascial bonds. Finally, the connection of the brachial biceps fascia with the antebrachial fascia through the fibrosus is also important.

1- Induction of the brachial and antebrachial fascia link.

- The patient is in supine position, with the arm abducted at approximately 90°, and the forearm fixed and in relaxed supination.
- The therapist places the outer hand (with palm down) over the ventral face of the medium third of the forearm. The inner hand (with palm up) is placed underneath, embracing the elbow and the near end of the forearm figure 14.
- Both hands softly press the forearm and perform a traction intention – the upper in caudal direction and the lower in cranial direction. The principles of induction are followed.

Fig. 14: Induction of the connection of the brachial and antebrachial fascia.

2- Induction of the bicipital fascia.

- With the patient in supine position and the forearm supine, the therapist places the hands (without crossing them) so that the fingers contact both ends of the bicipital fascia figure 15.
- The therapist presses with both hands opposite to each other. The principles of induction are followed.

Fig.15: Induction of the bicipital fascia.

3- Induction of the extensor retinaculum.

- With the patient in supine position and the forearm pronated, the therapist crosses the hands and places the caudal hand at the retinaculum region and the cranial hand on the back of the distal part of the forearm figure 16.
- The therapist then uses both hands to apply pressure towards the limb in both cranial and caudal directions. The principles of induction are followed.

Fig.16: Myofascial induction of the extensor retinaculum.

❖ **Techniques related to the fascia of the hand:**

1-Induction of the carpal tunnel and palmar fascia.

- The clinician places the thumbs on the region of the carpal tunnel and the fixed index fingers over the back of the wrist, forming a clamp. Holding the patient's wrist, the clinician then per forms a telescopic three-dimensional traction while slightly extending the wrist.
- The principles of induction are followed. Considerable pressure should be maintained and the therapist's fingers not allowed to slip over the patient's skin. The same strategy is used to treat the palmar fascia, modifying the position of the fingers figure 17.

Fig.17: Induction of the carpal tunnel and palmar fascia.

2- Telescopic three-dimensional induction.

- The clinician uses the non-dominant hand to stabilize the metacarpal bone or phalanx of the finger to be treated.
- The level of the stabilization will depend on the place of the pathology. With the other hand, the clinician holds the distal phalanx of the patient's finger between the thumb, the index of and the middle fingers figure 18.
- A global treatment may be per formed (simultaneously at all articular levels) or one only over a given level. The facilitated movement is followed.

Fig.18: Telescopic myofascial induction.

3- Interosseous induction.

- The clinician places the thumbs over the palmar ace of the metacarpophalangeal joints, so that he may separate the proximal phalanxes o the patient's fingers.
- The other fingers stabilize the patient's hand. With the thumbs, the therapist exercises a three-dimensional pressure. The same strategy may be applied over the dorsal interosseous after changing the position of the hands figure 19.

Fig. 19: Interosseous myofascial induction.

Examples of Practical Applications for Lower Quadrant Disorders:

❖ **Techniques related to the lumbopelvic region.**

- To protect the fragile structures of the lumbar spine, the support of the myofascial complex that surrounds the trunk is needed. One of the most important structures is the thoracolumbar fascia, which assists with lumbopelvic stability, static posture and movement.
- This fascial complex is continuous with the paraspinal muscles in the thoracic and cervical regions and even reaches to the cranial base. In the lower end, the thoracolumbar fascia is anchored to the iliac crest. From there it continues with the gluteal fascia and fascia lata complex, linking to the lower extremity fascial system.
- The critical point on the lumbar region is the lumbar inter fascial triangle (LIFT) region, which includes aponeurotic structures from almost all the muscles in this area.

1- Induction of the lumbar interfascial triangle area.

a) Stroke application:

- The patient is side-lying. The clinician stands in front of the patient and, with the cranial hand, stabilizes the trunk. The caudal forearm (with the thumb up) is placed in the space between the last rib and the iliac crest.
- The clinician (while avoiding sliding the forearm over the skin) applies a stroke backwards and forwards (i.e. with flexion and extension of the clinician's arm) over the underlying structures figure 20.
- The length of displacement is about 10 cm. The entire maneuver is repeated in three sets of 15 strokes each set. The clinician performs a very gentle pressure toward the table but avoids causing pain. Between the applications, the clinician can separate the patient's forearm from the body but should do so slowly.

Fig.20: Induction of the lumbar interfascial triangle region (stroke application).

b) Deep induction application:

- The patient is in prone position and the clinician stands at the level of the pelvis, acing the patient's head. The clinician places his / her elbow over the ipsilateral lumbar region between the last rib, the iliac crest and laterally to the paravertebral muscles.
- Next, the therapist presses the elbow towards the table. The other hand is placed over the patient's tight tissues in a cranial direction. This maneuver shortens the quadratus lumborum and facilitates access.
- The clinician should take advantage of his / her body weight. This position is held or approximately 3–5 minutes, and the principles of induction are followed figure 21.

Fig.21: Induction of the lumbar interfascial triangle region (deep induction application).

c) Cross-hands induction of the lumbar spine:

- The patient is in prone position and the clinician is standing at the level of the patient's back.
- The clinician crosses both hands and places them on the patient's back and then presses with a slight force towards the table and in craniocaudal direction. The principles of induction are followed figure 22.

Fig.22: Cross-hands myofascial induction of the lumbar spine.

2- Hip exor region induction.

- The patient is in supine position, and the clinician places his / her cranial hand on the anterior superior iliac spine and the other hand on the anterior upper third of the thigh.
- The clinician then presses with a slight force towards the table and in a craniocaudal direction. This position is held or approximately 3–5 minutes, and the principles of induction are followed figure 23.

Fig.23: Hip exor region myofascial induction.

❖ **Techniques related to the thigh region**

1- Stroke on the iliotibial band.

- The patient is in supine position, with the thigh flexed and the foot supported over the table. The clinician with his / her cranial hand stabilizes the patient's knee, then, with the cranial hand, performs a stroke on the posterior edge of the iliotibial band from the knee level to the trochanteric region.
- Contact can be made with one finger reinforced by the other, with the knuckle, or with the elbow (the choice depends on the tissue resistance perceived). The therapist should avoid causing excessive pain.

- The stroke movement should cease or 6–7 seconds at each entrapment site and a constant force maintained. The therapist should not separate the hands before reaching the end of the stroke figure 24.
- This procedure is repeated three times. If pain results from friction on the skin, a small amount of water-based lubricant can be used. The procedure is repeated three times on the same area.

Fig.24: Stroke on the iliotibial band.

2- Stroke on the isquiotibial path.

- The patient is in prone position, and the clinician fixes the gluteal fascial area with his / her cranial hand, while with the other hand performs a longitudinal stroke.
- Contact can be made with one finger reinforced by the other with the knuckle or elbow (the choice depends on the tissue resistance perceived). The stroke pathway is from the ischial tuberosity to the entrance to the popliteal fossa. The therapist should avoid pressing in the region of the fossa itself, and avoid precipitating excessive pain.
- The stroke movement should cease or 6–7 seconds in each entrapment site while a constant force is maintained. The therapist should not separate the hands before reaching the end of the stroke figure 25.
- This procedure is repeated three times. I pain results from friction on the skin, a small amount of water-based lubricant can be used. The procedure is repeated three times along the same route.

Fig.25: Stroke on the isquiotibial path.

3- Adductor path stroke.

- The patient is in prone position, and the clinician is standing at the level o the patient with the thigh of the ipsilateral leg flexed to 90°; with the caudal hand the clinician holds this position and places the cranial hand over the posterior part of the patient's thigh.
- The clinician then introduces the fingertips within the mass of the adductor muscles in the most hypomobile area and performs the stroke perpendicular to the thigh line figure 26.
- The therapist should be cautious of pain. Three sets of 15 strokes are made, with the amplitude of the slip ranging between 3 and 4 cm.

Fig.26: Adductor path stroke.

4- The knee extensor fascia induction.

- The patient is in supine position, and the clinician places his / her hands on the mass of the quadriceps so that the cranial hand is just above the patella and the other hand is on the upper third of the thigh.
- The clinician then presses with a slight force towards the table and in a craniocaudal direction. This position is held or approximately 3–5 minutes. The principles of induction are followed figure 27.

Fig.27: The knee extensor fascia induction.

Techniques related to the knee and the leg region

Clinical considerations:

- The knee joint allows the lower limb to perform with both maximal stability and efficient mobility. On dissections of the popliteal region, it can be observed that the interconnection between the tendons of the hamstrings and

gastrocnemius creates a cross-link. This relationship varies depending on whether the knee is being flexed or extended.

- The fascial structure is very dense and tough in the center, but thin and elastic on the sides, whereas the tendons of the muscles are as mentioned above. The deep layer protects the great vessels and vital lower leg nerves, forming a femoral canal. Decompression of this region is the main focus of the treatment.
- The fascial system of the leg is linked to the dynamics of its compartments. Myo fascial restrictions on the internal compartment are related to jogging and rapid - walking activities, especially if this is done on rigid surfaces. Pain of ten develops on the inner edge of the tibia and involves the origin of the posterior tibialis muscle.
- In extreme cases, sustained and repetitive traction on this area can lead to mechanical stress, causing difficulty in walking, cramps, night-time pain and even tibial fracture.
- Restrictions in the lateral compartment are rarer, and usually occur several hours after intense exercise. The posterior compartment can be affected by overuse and prolonged periods of inactivity; the resulting pain may be referred to the plantar fascia, affecting the proper functioning of the Achilles complex, and may even lead to total rupture.
- The Achilles tendon inserts into the calcaneus, forming a small loop. Therefore, the plantar fascia may create some functional problems in plantar flexion; it has therefore been suggested that treatment of myofascial restrictions be directed into the posterior compartment and the plantar fascia as a unit.
- The plantar fascia includes the extrinsic and the intrinsic muscles of the foot. It is responsible for monitoring the integrity of the plantar arches, as well or stabilizing the foot in the last phase of walking. The fascia takes excessive loads during ambulation and climbing stairs, or taking the first steps in the morning. The performance of myofascial induction therapy may enable increased mobility and improved function of the entire complex of the plantar arches.

1- The popliteal fossa induction.

- The patient is in prone position, and the clinician places the hands (without crossing them) on the thigh and leg, without directly contacting the popliteal fossa.
- The therapist then applies pressure with both hands towards the extremity and the fossa. The principles of induction are followed figure 28.

Fig.28: The popliteal fossa myofascial induction.

2- The posterior compartment of the leg release.

- The patient is in prone position, with the knee flexed at 90° and the clinician sitting on the table behind the patient on the treated side. The clinician flexes all his / her fingers (excluding the thumbs) of both hands and contacts the space between the two gastrocnemius muscles at the level of the middle third of the leg.
- The clinician then attempts to move apart the fingers of both hands (without sliding on the skin) and hold the pressure or 3 to 5 minutes. The principles of induction should be followed figure 29.

Fig.29: The posterior compartment myofascial induction.

3- The lateral compartment of the leg release.

a) Stroke application:

- The patient is in supine position, and the clinician grasps the calcaneus and, with the index finger of the other hand (reinforced by the middle finger), contacts the outer edge of the tibia.
- The finger should slide directly on the conversion line of the fascia to the periosteum. A slow and smooth technique is performed in a cranial direction over the deep fascia close to the periosteum while monitoring or pain. Three repeat strokes are performed figure 30.

Fig.30: External compartment release (stroke application).

b) Deep induction application:

- The clinician crosses the hands to perform this procedure.
- The cranial hand contacts below the knee and the caudal hand are over the external malleolus figure 31.

Fig.31: External compartment release (deep induction application).

4- Plantar fascia induction.

- The clinician holds the patient's foot on the medial side and places one hand on the heel and the other on the metatarsal region at the level of the hallux. The thumbs should be orientated longitudinally. The clinician then applies pressure towards the foot and in a longitudinal direction.
- The clinician follows the facilitated movement three-dimensionally or at least 3–5 minutes. During the course of treatment, the hand placed on the metatarsus must control the position of the hallux and change the degree of flexion and extension to allow a more complete treatment. During the application of the technique, the clinician's thumbs should move to the direction of the release without sliding over the skin figure 32.

Fig.32: Plantar fascia induction.

Dry Needling

Dry Needling for Trigger Points: Treating the relevant trigger points (TrPs) with invasive procedures.

Requirements:

1. Knowledge of the functional anatomy of muscles.
2. Identify TrPs with palpation.
3. Once aTrP is identified, the clinician must visualize its location in a three-dimensional perspective and appreciate the depth and presence of neighboring structures, including arteries, veins, nerves and internal organs.
4. Accurately identify when the needle penetrates the skin, the subcutaneous connective tissue and fascial layers, the muscle, and ultimately the taut band and TrP.

Indications of dry needling:

1. Identification of myofascial trigger points in the deep muscle.
2. It reproduces the patient's pattern of pain.
3. Identification of 'Jump' sign on palpation on MTrP (the minimum criteria for diagnosis of myofascial trigger points).

Risks of dry needling:

1. Due to the invasive nature of the procedure, there is a risk of penetrating vital organs and other body structures, such as the lungs, intestines, kidneys, urethra, nerves and arteries, and the brainstem through the foramen magnum.
2. Infection.

Benefits of dry needling:

1. Decrease pain by:
   - Release of endorphins.
   - Stimulation of mechanoreceptors coupled to slow conducting unmyelinated C- fiber afferents.
   - Reduce end-plate noise at TrPs.
   - Reduce chemical concentrations associated with pain and inflammation.
2. Restore normal muscle activation patterns in combination of with other therapeutic techniques such as stretching.
3. Provide more restful sleep.
4. Increases pain threshold.
5. Improves joints range of motion and functional disabilities.

Guidelines for Dry Needling

1. patients are lying down during any needling procedures, because of the risk of Vaso depressive syncope.

2. For every muscle, anatomical landmarks should be identified, including the margins of the muscle and any relevant bony structures (e.g. the medial and lateral borders of the scapula and the scapular spine when needling the supraspinatus muscle) to assure safe needling.
3. Hand washing and other hygienic measures.
4. Following needling procedures:
   - Hemostasis must be accomplished to prevent or minimize local bleeding especially with patients who routinely take anticoagulants.
   - Help, restore and maintain range of motion.
   - Facilitate a return to normal function.

Needling procedures

1. Use of needles in tubes is recommended.
2. The tube is placed on the skin overlying the TrP and the needle is quickly tapped into the skin figure 1,2.
3. The tube is removed, and the needle is moved in and out into the region of the TrP by drawing the needle back to the subcutaneous tissue and redirecting it.
4. The objective of needling is to elicit so-called local twitch responses.

Fig.1: Scalene muscles.

Fig.2: Deltoid muscle.

Procedure post treatment:

1. Assess ROM for:
   - Restriction.
   - Pain.
1. Give patient a stretching program.
2. Identify activities that may reactivate MTrP.

Absolute Contraindications

1. In a patient with needle phobia.
2. Unable to give consent, communication, cognitive, age-related factors.
3. Medical emergency or acute medical condition.

4. Over an area or limb with lymphedema as this may increase the risk of infection/cellulitis.

Relative Contraindications:

1. Abnormal bleeding tendency.
2. Compromised immune system.
3. Vascular disease.
4. Diabetes.
5. Pregnancy.
6. Children.
7. Patients with epilepsy.
8. Psychological status.
9. Patient allergies.
10. Patient medication.
11. Unsuitable patient for any reason.

Acupressure

Acupressure : is an oriental massage in which the finger press on a particular points (Acupuncture points) on the body to ease aches , pain , tension , fatigue and symptoms of disease.

Acupuncture: is an ancient Chinese therapy that involves alleviating pain and symptoms by inserting needles in to the skin at specific points of the body called acupuncture points.

Meridians: They are the pathways or energy channels that believed to be related to the internal organs of the body figure 1.

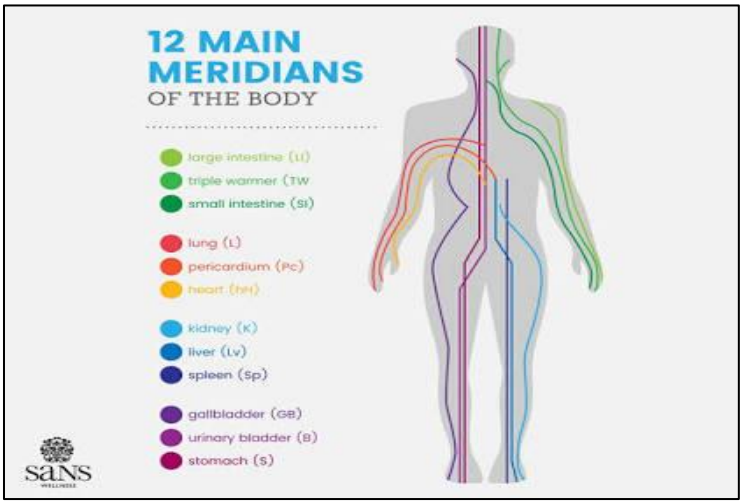


Fig.1: Meridians of the body.

Function of Meridians:

1) They are pathways that connect the acupuncture points to each other's as well as to the internal organs.
2) They are distinct channels that circulate electrical energy throughout the body.
3) They are the master communication system of universal life energy, connecting the organs with all :
   - Sensory aspects of the body.
   - Physiological aspects of the body.
   - Emotional aspects of the body.

- There are 12 Meridians and 2000 acupuncture points.
- Meridians are called after the organs they represent ,e.g. lung, kidney, heart and stomach
- The physical network energy (Qi) and the needles are used to:
  - decrease or increase the flow of energy.
  - unblock it if it is impeded.

Traditional Chinese medicine sees the body as being comprised of two natural forces (Yin and Yang) which are complementary and opposing to each other's.

1. Yin: female force, calm, passive or static , dark, cold, swelling, moisture.
2. Yang: male force, aggressive, active or dynamic, light, heat, contraction, dryness.

Imbalance between Yin and Yang cause diseases . For example :

- If a person suffers from headache or hypertension there is excess of Yang.
- If a person suffers from feeling of cold or fluid retention there is excess of Yin.

How Acupressure work?

- Acupressure points "also called potent points" are places on the skin that are sensitive to bioelectrical impulses in the body and conduct those impulses readily.
- Asian culture conceived these points as junctures of pathways that carried the human energy.
- Stimulating these points with pressure , needle , or heat triggers the release of endorphins (neurochemical that relieve pain). As a result, pain is blocked and the flow of blood and oxygen to the affected area is increased. This causes the muscle to relax and promotes healing.
- Acupressure inhibits pain signals sent to the brain through closing the "gate" of the pain signals and preventing painful sensation from passing through the spinal cord to the brain.
- Acupressure can help rebalance the body by dissolving tensions and stresses that keep it for functioning smoothly and inhibit the immune system.
- Acupressure enable the body to adapt to environmental changes and resist illness.
- As a point is pressed, the muscle tension yields to the finger pressure, enabling the fibers to elongate and relax, blood to flow freely (brings more oxygen and nutrients) and toxins to be released and eliminated.
- When the blood and energy circulate properly , we have great sense of harmony, health and well-being.

Therapeutic effect of acupressure:

1. Regulating the balance of Yin and Yang.
2. Clearing the meridians and stimulating the circulation of blood and vital energy.
3. Improving the conductivity of the nerves.
4. Improvement in the general condition of patients.

Location of acupoints:

- Due to individual anatomical variation, the best location is described by "cun" this is a unit of measurement based on the patient's anatomy. 1 cun is the length of middle phalanx of the middle finger.
- Locate the acupoint by referring to anatomical landmarks.
- Muscular points lie within a muscular cord , band or knot of tension.
- 365 points are named by Chinese.
- The imagery of its name offers insight into the point benefit or location.
- In addition to the name , each point was assigned an identification number to track its placement along the body for example: ST3 or GB21.

Important acupressure points:

1. **The large intestine (colon) (LI4):** in the webbing between our thumb and index finger figure 2.
   - ➢ Effects:
   - Relieves arthritis pain in hands.
   - Benefits the colon.
   - Relieves in face and head area, e.g. headache, toothache , sinus problem.

Fig.2: The large intestine (colon) (LI4) point.

2. Tonic points:

- ➢ Effect:
- improve condition and maintain general health.
- fortify various internal organs and vital systems of the body.

3. Command points: lie between the elbow and fingers and between the knee and toes.

➢ Effects:

(a) The tsing or nail point: being at the start of the meridian, it is always at the side of the nail figure 3.

(b) The source point: is on the meridian affects the actual organ associated with the meridian.

(c) The accumulation point: transfers energy from one meridian to another, thus creating balance of energy.

Fig.3: The tsing or nail point.

(d) The great point:

- The most important points on the meridian and can serve more than one function.
- <u>There is more than 12 points as following:</u>
  - Stomach meridian St36.
  - Heart meridian Ht7.
  - Small intestine meridian Si3.
  - Kidney meridian Ki6.
  - lung meridian Lu7.
  - Liver meridian Li3
  - Spleen meridian Sp6.
  - Pericardium meridian P6.
  - Three heater meridian TH5.
  - Bladder meridian Bl62.
  - Large intestine meridian Li4.
  - Gall bladder meridian GB41.

<u>Practical application</u>:

- Apply pressure on acupressure points.
- Local points are pressed for up to 1 min, whilst the more distal points for up to 3 min.
- Patient may or may not remove clothes.
- Patient is lying or seated in a comfortable position.
- Body area to be treated is supported.
- The pressure is stationary or rotatory, keeping contact with the skin with gradual increasing it.

<u>Methods:</u>

1. Tip and Pad of finger or thumb.
2. Tap the point with one or two fingers.
3. Use the knuckle or elbow over thick muscular or fascial layers.

Reflexology

Reflexology is a systematic practice in which applying some pressure to any particular points on the feet and hands give impacts on the health of related parts of the body.

Each point of the pressure acts as the sensors on the feet and hands and is links with different parts of body specifically. These sensors will be stimulated by applying the reflexology technique.

There is a term in reflexology called **reflex zone therapy:** is where the body is divided into ten longitudinal zones from head to toe figure 1.

In the reflex zone therapy, there are five zones on both sides of the body in which each zone diverge down the particular arm, and also continue straight down the body and down the particular leg to line up with a toe on the respective foot.

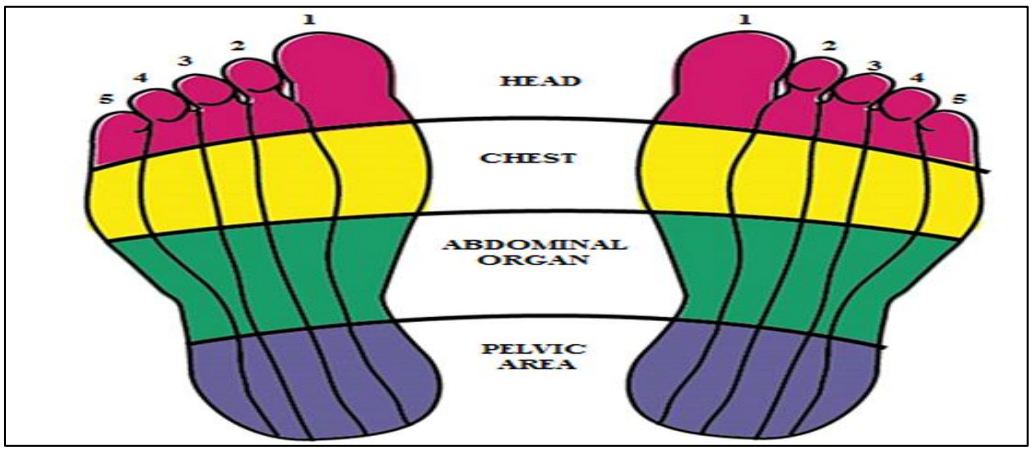


Fig.1: Zone therapy reflex.

Reflexology is a complementary therapy not an alternative therapy which based on reflexology maps figure 2.

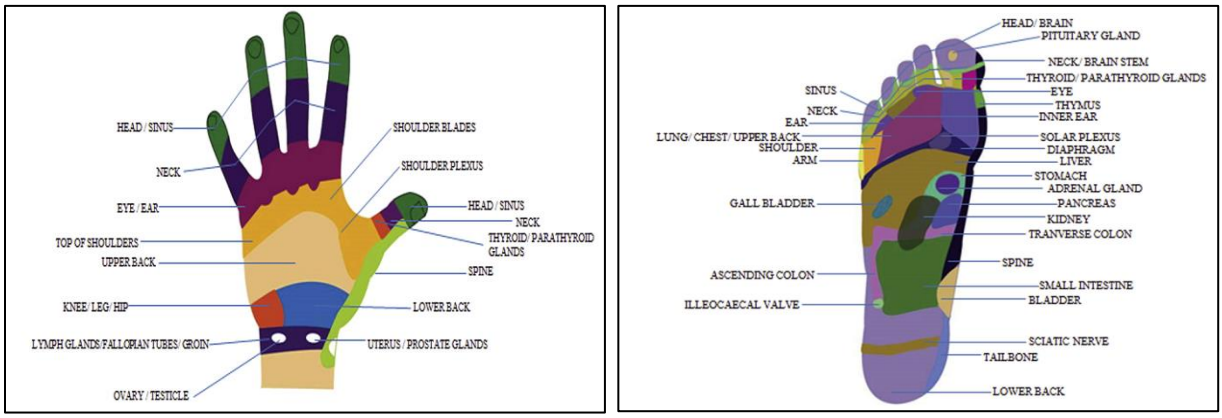


Fig.2: Maps of reflexology in the hand and foot.

Benefits of reflexology:

1) Reducing stress and induce general relaxation.
2) Decrease pain by releasing endorphin which is a body's natural pain-relieving chemical.
3) Generally improves body health condition.
4) Improve the blood and energy circulation.
5) Maintain the homoeostasis.

Theories that support reflexology:

Energy theory advocates that body parts can communicate using electromagnetic fields and the communication can be blocked.

- Energy flow: can be restored by reflexology.
- Energy pathway: which is blocked can be opened by reflexology.

Reflexology can break up the lactic acid crystal that usually deposited in the feet and allow energy to flow efficiently

Methods of application:

- Ingham method: Not use any tools.
- Rwo Shur method: Use tools such as a wooden stick.

Reflexology techniques:

1- Rotating thumb technique
2- Fingers technique
3- Knead technique
4- spinal twist technique
5- Thumb walking technique

Session: 30 - 60 min. 1/ week for 4 - 8 weeks.