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# EDUCATIONAL COURSE OF DEEP TISSUE MASSAGE AND MYOFASCIAL RELEASE TECHNIQUES FOR SAMK PHYSIOTHERAPY STUDENTS

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The purpose of the thesis was to create an educational course of Deep Tissue Massage and Myofascial Release Techniques for SAMK physiotherapy students.

The theoretical part of the course covers introduction to the notion of Fascia (anatomy, physiology and pathology) together with main principles of Myofascial Release, and familiarizes students with various Myofascial Release methods practised worldwide. The main, practical part of the course is dedicated to learn and develop manual skills in applying selected techniques of Deep Tissue Massage and Myofascial Release adequately to clients' needs and feedback.

A literature search was conducted from Science Direct, PubMed and Ebsco databases to gather the latest updated evidence-based knowledge concerning Fascia and Myofascial Release. Among 150 articles found, 70 were selected as suitable references. Most of the authors revealed the need for the further research in this field.

The implementation of the course was successful, positive and constructive feedback was received. There were 16 students participating in both days of the course. The course developed manual skills, introduced new massage techniques and patient positioning, and increased the awareness of the importance and great effects deriving from deep bodywork.

CONTENTS

# 1 INTRODUCTION

The body demonstrates someone's own history. Repetitive everyday activities, stresses of everyday life, injuries and unhealthy movement patterns may contribute to the muscle imbalance in the organism. As the time goes, tightness, stiffness, chronic pain and/or compensatory strategies may be developed, resulting in poor posture, low energy capacity and consequently low self-esteem. Fascia remains too often medically neglected as the underlying cause of problems, nevertheless, hands-on therapist have been aware of its great importance for a long time. Bones, organs and muscles are seen to float within the fascial net, the uninterrupted three-dimension connective tissue system (Myers 1998). It's plastic and visco-elastic properties of changing the tension and shape under the influence of manual techniques and motion re-education, enables structural changes to be reversible. Variety of techniques, such as Deep Tissue Massage and Myofascial Release are used to awaken, lengthen and reposition the fascia, release its adhesions and apply the great awareness of movement education. (James et al. 2009, 229-238)

Fascia is fascinating, and that is why conducted studies concerning fascia's anatomy, cytology, histology and biomechanics have expanded internationally in recent years. Those studies bring knowledge which supports and gives background for body-working practitioners. Both, literature review and private practice, demonstrate that there is not one right way of performing the treatment. Moreover, no study gives guidelines about the dosage or timing. That makes the Deep Tissue Massage and Myofascial Release even more appealing, as therapist has to carry out his\her decision-making process. (Grant & Riggs 2008, 149-150; James et al. 2009, 230)

During the physiotherapy education, there is still not much attention paid to make young therapist understand the fascia and great benefits deriving from deep body-work. Most of the fascia studies and researches date back only from last few years, so it may take some time until this concept becomes commonly accepted. This thesis will help me personally to deepen knowledge related to the fascia, and the course given to other students will hopefully inspire them, make them understand the nature of the fascia and allow spreading the idea around.

# 2 PURPOSE OF THE THESIS

The aim of the thesis is to create an educational course of Deep Tissue Massage and Myofascial Release for second year and higher SAMK physiotherapy students. The theoretical part of the course, covers introduction to the concept of Fascia and main principles of Myofascial Release, and familiarizes students with various Myofascial Release methods practised worldwide. The main, practical part of the course is dedicated to learn and develop manual skills in applying selected techniques of Deep Tissue Massage and Myofascial Release adequately to clients' needs and feedback.

# 3 FASCIA

Fascia is a fascinating word, which unfortunately brings ambiguity in understanding the concept (Huijing & Langevin 2009, 1; LeMoon 2008, 206). Fascia studies have considerably increased during the last 3-5 years (James et al. 2009, 230). Despite large amount of researches being carried out, the real structure still remains unknown (Stecco C. et al. 2008, 225-230). Moreover, fascia and soft part of connective tissue system is held in high regard, but regrettably medically neglected (Grimm 2007, 1234-1235; Van der Wal 2009, 9).

Recommended terminology generated after Ist International Fascia Research Congress in 2007 states that 'Fascia is a soft tissue component of connective tissue system. It's an uninterrupted, three-dimensional web of tissue that extends from head to toe, from front to back, from interior to exterior, and interpenetrates and surrounds muscles, bones, organs, nerves, blood vessels and other structures. Fascia takes responsibility for maintaining structural integrity, for providing support and protection, and acts as shock absorber. Fascia has an essential role in hemodynamic and biochemical process and provides the matrix that allows for intercellular communica-

tion' (LeMoon 2008, 204-212). Chaitow (2006, 249) adds that 'Fascia extends to all dense fibrous connective tissues, including aponeuroses, ligaments, tendons, retinaculae, joint capsules, organ and vessel tunics, the epineurium, the meninges, the periostea, and all the endomysial and intermuscular fibers of the myofasciae.'

Any material produced by cells and excreted to the extra-cellular space within the tissues is named as extra-cellular matrix, ECM (LeMoon 2008, 207). Fibroblasts cells generate the contents of extra-cellular matrix and therefore they play an important role in healing processes. Water contributes to 70% of ECM, with the remaining 30% being amorphous ground substance, collagen and elastic fibers, proteins and glycosaminoglycans (Kesson & Atkins 2005, 33-35). Extra-cellular matrix integrates functions of various cell types and plays a vital role in mechanotransduction, process of perceiving and interpreting mechanical forces (Langevin 2006, 1074-1077).

Fascia's major component, protein collagen, is localized in various tissues and provides strength and flexibility for the system (LeMoon 2008, 206). Property of structure is determined by the layout of the collagen fibers (Kesson & Atkins 2005, 36). Irregularly and sparsely arranged collagen is present in non-dense, areolar, connective tissues, and forms the superficial fascia localized beneath the skin (Huijing & Langevin 2009, 1-4). Loose connective tissues (areolar tissue) lies also between muscles and fascia, allowing the fascia to slide over the muscle's epimysium. (Stecco C. et al. 2008, 255-230). Closely packed collagen creates the deep fascia (fascia profunda), a continuous sheet of dense fibrous connective tissue that interpenetrates and surrounds the muscles, bones, nerves and blood vessels. Aponeurosis, cartilage, ligaments, retinaculums and tendons are examples of autonomous collagenous structures, which remain closely connected to each other. (Huijing & Langevin 2009, 1-4)

Van der Wal (2009, 11) distinguishes two types of fasciae, the functional fascia enables muscles to glide and slide one upon another, the mechanical one serves as a connector for neighbouring muscles. Fascia is characterised by plastic, viscoelastic and piezoelectric properties (Walton 2008, 274-280). Plasticity is an ability to deform under mechanical stress (Kesson & Atkins 2005, 51). Viscoelastic properties are demonstrated during the long-lasting process of change in posture or activity, and involve the remodelling of collagenous matrix with amendment in collagen fiber

density and orientation. So far this process is proven in tendons, ligaments and joint capsules. (Langevin 2006, 1074-1077)

## 3.1 Innervation and response to touch

Fascia is densely innervated with mechanoreceptors and nociceptors (Langevin 2006, 1074-1077; Schleip 2003a, 17). The mechanoreceptors, such as Pacini corpucles, Ruffini organs and free-nerve endings, maintain muscular coordination via the constant feedback from ligaments. The function of fascial mechanoreceptors is presented in Table 1 (Schleip 2003b, 104-116).

Table 1. Fascial mechanoreceptors in myofascial manipulation (Schleip 2003b, 104-116)

| Receptor | Preferred location | Responsive to | Known result |
|---|---|---|---|
| **Pacini corpucles** | Myotendinous junctions,<br>Deep capsular layers,<br>Spinal ligaments,<br>Enveloping muscular tissues (fascia) | Rapid pressure changes,<br>Vibration<br>(high-velocity manipulation) | Increased proprioceptive feedback (sense of kinaesthesia) |
| **Ruffini receptors** | Ligaments of peripheral joints,<br>Dura mater,<br>Outer capsular layers,<br>Tissues associated with regular stretching | Like Pacini, plus:<br>Sustained pressure,<br>Especially responsive to lateral stretch<br>(slow and deep soft disuse techniques) | Inhibition of sympthathetic activity (changes in local vasolidation) |
| **Free nerve endings (interstitial receptors)** | Found almost everywhere,<br>Higher density in periosteum | Both rapid and sustained mechanical pressure<br>(50% responsive to high threshold pressure, other 50% to low pressure) | Changes in vasolidation (altered local pressure in fascial arterioles and capillaries, changed local tissue viscosity)<br>Increase in vagal tone (global relaxation) |

Stecco C. et al. (2007a, 38-43) provided evidence of rich innervation of the deep fascia of the upper limb in free nerve endings, Pacini and Ruffini receptors. Diversity in location of them suggest different functions, hence, recinaculum plays more perceptive function, while tendinous expansions are responsible for mechanical transmission of tension. That provides evidence for the hypothesis that fascia plays important role in dynamic proprioception.

Golgi receptors exist in ligaments, joint capsules and around myotendinous junctions. Slow stretch (as in Hatha yoga positions) activates them by involving alfa-motor neurons via the spinal cord, and subsequently relax correlated muscles. However, it only works when muscles contract actively, as it's related to the arrangement of the receptors. (Schleip 2003a, 11-19)

Chaundry et al. (2007, 159-167) studied in-vitro how human fascia behaves under mechanical stress of manual therapy. According to this study, in order to achieve viscoelastic deformation without the damage to the tissue, a constantly maintained force up to 60 seconds is recommended. It is proven, that thinner fascia requires less forces to achie§ ve a plastic deformation.

Based on researches, Schleip emphasises that fascia is alive and states that fascia possess within its collagen fibres smooth muscle cells, which contraction may be responsible for an increase in fascial tension and may influence musculoskeletal dynamics (Schleip et al. 2005, 273-277). Nevertheless, fascia itself is not able to voluntarily contract (Grant & Riggs 2008, 153). Schleip (2003b, 106) describes a new term of ligament contraction, in which fascia repetitively held in stretched position if followed by slow increase in resistance.

Schleip (2003b, 104-116) supports the theory that fascia is able to adapt to mechanical stress and proposes a neurodynamic/neurobiologic theory explaining the release of fascia (Figure 1). This is now proved that the deep and steady manual touch activate some mechanoreceptors, such as interstitial and Ruffini receptors, which trigger central and autonomic nervous system. The response of central nervous system changes the tonus of motor units linked with the muscles. The autonomic nervous system response increases vagal activity, alters local fluid dynamics (vasodilatation), tissue metabolism, lowers tonus of intrafascial smooth muscle cell and effects in global relaxation. The whole process may confirm a firm link between fascia and autonomous nervous system. On the contrary, a sudden deep pinching results in strong reaction from skeletal muscles, as a result of spinal reflex arc.

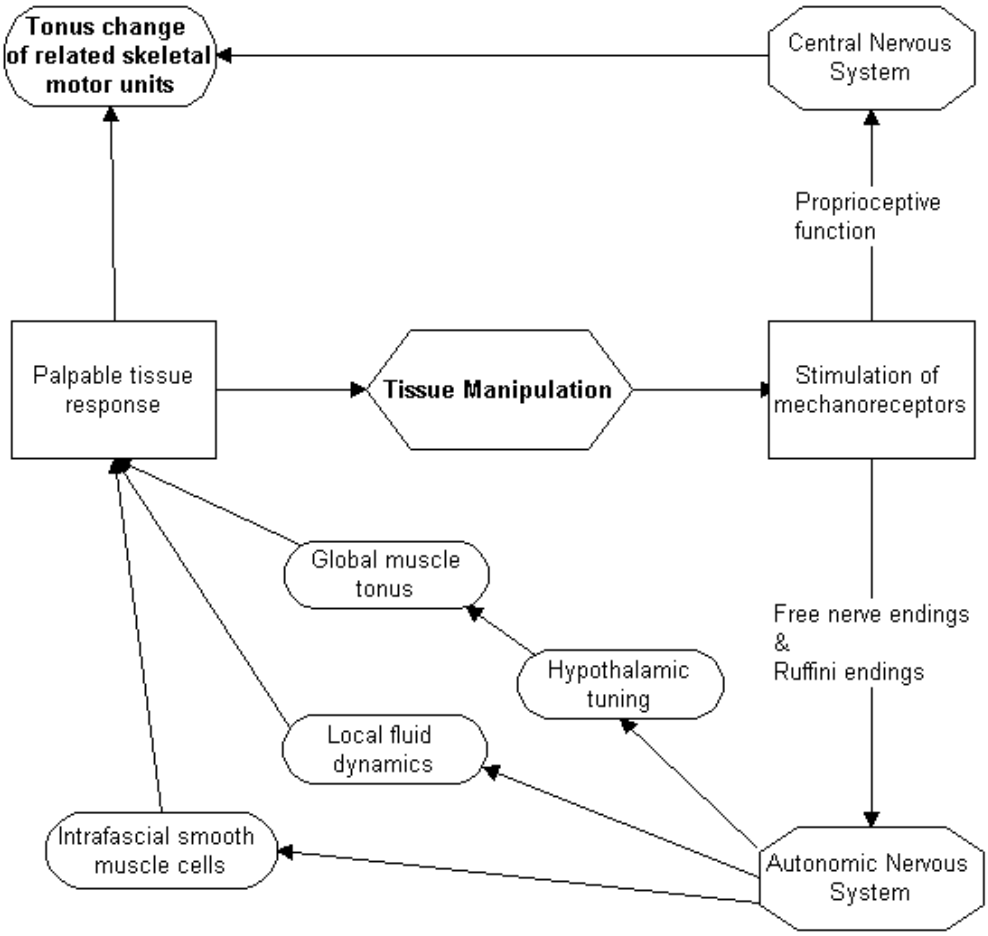



Figure 1. Neural dynamics of immediate tissue plasticity in myofascial manipulation (Schleip 2003b, 104-116)

There is also another explanation of fascial response to touch. Manual pressure, heat, passive or active movement raises the local temperature, which allows extra-cellular matrix for a transformation from pathological gel (dense fascia) into physiological sol (fluid fascia). The gradual releasing may free up strangled nerve endings with a result in sudden pain relieve. Subsequently, this may lead to the repositioning of collagen and elastic fibres in accordance with the lines of applied force, which helps restoring sliding properties, tensional balance and information transmission. (Pedrelli et al. 2009, 73-80; Walton 2008, 274-280)

## 3.2 Location and function

Stecco A. and Stecco C. (Stecco A. et al. 2009a, 35-42; 2009b, 53-62; 2009c, 255-261; Stecco C. et al. 2007a, 38-43; 2007b, 29-37; 2008, 225-230; 2010, 200-210), together with other researchers are strongly involved in study dissections which examine the anatomy and histology of various fasciae. Myers states (2007, 4) that when addressing a certain muscle, it should be understood as referral to the muscle and all fasciae connected to it. Collectively from the articles, selected information about some of the fascia are shown below in the Table 2.

Table 2. Location and function of selected fasciae

| Fascia/muscle | Description |
|---|---|
| **Pectoral fascia**<br><br>Stecco A. et al. 2009a.<br>Stecco A. et al. 2009b.<br>Stecco A. et al. 2009c. | - thin lamina, many elastic fibres, linked together with pectoralis major muscle<br>- acts as a myofascial unit in conjunction with pectoralis major muscles and activated according to the glenohumeral rhythm<br>- continues towards brachial fascia (clavicular part of pectoralis major goes into anterior brachial fascia, whereas costal part spreads into axillary fascia and then medial brachial fascia and medial intermuscular septum.<br>- deep layer origin on clavicle (covers pectoralis minor and serratus anterior), superficial layer continues as deep cervical fascia (covers pectoralis major, over serratus anterior, envelops latissimus dorsi, trapezius, spreads to gluteus maximus)<br>- laterally continues as deltoid fascia and expands into the brachial fascia, coming over serratus anterior continues with latisimus dorsi.<br>-medially – deep layer attaches to sternum, superficial joins with the pectoral fascia on the other side.<br>- the deepest layer of fascia covers intercostal muscles.<br>- all those muscles have many intersecting untramuscular septa which bond them with their fasciae.<br>- distally, fascia is stronger and more visible as rectus abdominis reinforces fascia with fibrous expansions. |
| **Deltoid fascia**<br>Stecco A. et al. 2009a | - adheres firmly to deltoid muscle |
| **Palmaris longus muscle**<br>Stecco A. et al. 2009b | - gives some expansions to the flexor retinaculum and fascia over the thenar eminence muscles |
| **Latisimus dorsi muscle**<br>Stecco A. et al. 2009b | - expands fibrous lamina to triceps brachii fascia |
| **Biceps brachii muscle**<br>Stecco A. et al. 2009b | - expand to the deep fascia of forearm (lacertus fibrosus or bicipital aponeurosis) – proximal antebrachial fascia |
| **Triceps brachii muscle**<br>Stecco A. et al. 2009b | - it's tendon inserts to some extent into the antebrachial fascia |

| | |
|---|---|
| **Extensor carpi ulnaris muscle** Stecco A. et al. 2009b. | - connects by fibrous expansions with the hypothenar eminence |
| **Fascia lata** Pedrelli et al. 2009 | - thick autonomous fascia from underlying muscles structures<br>- fascia lata continues with crural fascia, crural fascia envelops the tibialis anterior muscle |
| **Deep fascia of thigh** Pedrelli et al. 2009 | - thinner in proximal part, thicker near the knee where is reinforced by iliotibial tract<br>- deep fascia of iliopsoas continues of the fascia with rectus femoris |
| **Brachial fascia** Stecco C. et al. 2008 | - thinner in anterior region, thicker in posterior<br>- easy to separate from biceps brachii<br>- connected via expansions with pectoralis major, biceps brachii, palmaris longus |
| **Lumbodorsal fascia** | - healthy lumbodorsal fascia controlled by lordosis, minimises the stress within the spine (Gracovetsky 2008)<br>- impaired lumbopelvic proprioception and less mechanoreceptors in lumbar fascia are displayed with chronic low back pain (Schleip et al. 2005, 273-277). |
| **Antebrachial fascia** | - reinforced by lacertus fibrous and retinacula of the wrist<br>- connected via expansions with pectoralis major, biceps brachii, palmaris longus (Stecco A. et al. 2009a, Stecco A. et al. 2009b) |

Stecco C. and others (2007b, 29-37) after anatomical studies hypothesise that there exists a myofascial continuity between various muscles. Stecco A. and others (2009b, 53-62) also display the anatomical myofascial continuity, hereby confirms the concept of myofascial trains. Myers (2009, 73-202) distinguishes seven lines, collections of muscles based on myofascial connections (Appendix 7). Dissections performed by Stecco A. et al. (2009c, 255-261) demonstrate that pectoral fascia continues even into the fascia lata and this connection permits the transmission of the myofascial forces between the trunk and limbs. Muscles are connected to fascia by intermuscular septa or fibrous expansions with variation in the amount of connections (Stecco C. et al. 2008, 225-230). Working muscles produce the tension which is perceived by the fascia and transmitted at a distance, thus other muscles remain informed about the current local situation (Stecco A. et al. 2009c, 255-261).

Differences in fasciae of upper and lower limbs are caused by their function. Fascia of the upper limbs is thinner and presents more elastic fibres, this allows the limb to perform complex movements. Lower extremity's function is mainly postural control with simple movements, thus its fascia is thicker and similar to aponeurotic structure. Fascia is thicker in posterior part of both extremities. Fascia is able to adjust to the muscle volume during their contractions, nevertheless, deep fascia of both

limbs is capable of resisting high pressure and traction without a break, which is visible in compartment syndrome. (Stecco C. et al. 2008, 225-230)

Fascia controls the posture and regulate movements. The spinal mobility is limited by the lumbar fascia and the stability of foot is reachable thanks to the stiffness of the plantar fascia (Grant & Riggs 2008, 153; Schleip 2005, 273-277), knee is supported by iliotibial tract along the lateral thigh (Grant & Riggs 2008, 153). Retinacula are not static structures for joint stabilisation as the ligaments, but specialized fasciae for local spatial proprioception of the foot and ankle movements, and play integrative role of the fascial system in peripheral control of articular motility (Stecco C. 2010, 200-210). Additionally, Schultz & Rosemary (2009, 59-87) distinguish seven retinaculae, which horizontally fasten and secure the contour of human body (Appendix 3).

## 3.3 Myofascial pathology

Fascia is being recognized in aetiology of pain and proprioception (Stecco C. et al. 2008, 225-230). Tightening of fascia may occur as a response to trauma, overuse syndrome, repetitive stress injuries, strain, stress, infection, poor posture, chronic non-physiological tension in the fascia or surgical scaring. Thickened fascia results in change of collagen fibres layout together with converting the extracellular matrix from sol to gel. Then the fascia is no longer able to slide and stretch, as a result it stiffens by adapting and creating fibrosis (Day et al. 2009, 128-135; LeBauer et al. 2008, 356-363; Stecco C et al. 2008, 225-230; Walton 2008, 274-280). This mechanical and tensional reaction affects transfer of in-and-out going signals, like electrical conductivity via extracellular matrix or cell-to-cell communication (Day et al. 2009, 128-135; Langevin 2006, 1074-1077). Sustained contraction of muscles restricts the blood flow, which results in poor supply of cells in nutrients, poor elimination of waste products and excitement of free nerve endings (James et al. 2009, 229-238). Compressed vascular structures can obstruct both local and distal blood flow (Walton 2008, 274-280). Restricted fascia may compress and put extra stress on the linked soft tissue structures, resulting in dysfunction and pain (LeBauer et al. 2008, 356-363). According to Schleip, when fascia increases its stiffness for a fairly short

time, this may help in fascial proprioception and increase muscular activation, whereas constantly raised tension may consequently have metabolic and physiological disadvantages leading to pathological contractures such as Duputryen disease, plantar fibromatosis, Peyronie disease, club foot or frozen shoulder. On the contrary, loss of fascial tone may result in hypermobility of a joint, as in the example of sacroiliac pain (Schleip et al. 2005, 273-277). There is an accepted concept that unresolved trauma and/or frozen emotions can be 'stored' within the connective tissue in the form of pathology (Minasny 2009, 14).

Myofascial pain syndrome is a chronic musculoskeletal pain disorder associated with local or referred pain, decreased range of motion, autonomic phenomena, local twitch response in the affected muscle and muscle weakness without an atrophy (LeMoon 2008, 204-212). The term "myofascial pain syndrome" is used synonymously with "regional myofascial pain" and "myofascial trigger point pain syndrome" (Cummings & Baldry 2007, 367-387). Myofascial Trigger Points (MTrPs) can be located in fascia, ligaments, muscles and tendons (Fernandez-de-las-Penas et al. 2005, 3-9). Trauma, stress, muscle wasting or ischaemia, visceral pain referral or climat may aggravate the development of MTrPs (Fernandez de las Penas et al. 2005, 3-9; Fryer & Hodgson 2005, 248-255; Grieve 2006, 99-104). Regional shortening of the sarcomeres of numerous muscle fibres in the taut band demonstrates as contraction knot in the region of motor endplate. (Simons 2002, 81-88). To diagnose and recognize them, clinician should identify a tender point with characteristic pattern of referred pain and a local twitch response (Cummings & Baldry 2007, 367-387; Fernandez de las Penas et al. 2006, 3-9; Fryer & Hodgson 2005, 248-255; Grieve 2006, 99-104). Myofascial Trigger Points are considered to be one of the most common cause of musculoskeletal pain and dysfunction (Cummings & Baldry 2007, 367-387; Fernandez-de-las-Penas et al. 2005, 3-9; Fryer & Hodgson 2005, 248-255; Simons 2002, 81-88). Trigger Points are recognized as main cause of headache and neck pain (Fernandez-de-las-Penas et al. 2005, 3-9). They can be a reason to conditions like frozen shoulder, epicondylitis, carpal tunnel syndrome, atypical angina pectoris or lower back pain (Simons 2002, 81-88).

# 4 SOFT TISSUE MOBILIZATION

Carnes et al. (2010, 355) defined manual therapy as ‘any techniques administered manually, using touch, by a trained practitioner for therapeutic purposes’. Mobilization is described as passive movement technique performed by the physical therapist in a manner and at a speed that are within the ability of the patient to control it (Myers 1995, 728). Soft tissues consist of connective tissues (fascia and its components), muscle tissue and nervous tissue (Kesson & Atkins 2005, 33). Soft Tissue Mobilization belongs to manual therapy methods, among joint mobilization and manipulation, and neural dynamics (Bialosky et al. 2009, 532).

Manual therapies commence a cascade of neurophysiological reactions from the peripheral and central nervous system, which are responsible for outcomes. The desired outcomes after applying soft tissue mobilization are re-aligned soft tissues, broken adhesions, increased range of motion, improved circulation, removed cellular exudates, decreased muscle spasm, relaxation and decreased pain. (Bialosky et al. 2009, 531-538)

There are patients’ situations that require particular attention. Some of them are known as general contraindications to the treatment, some relate only to the limited part of the body. All of them though, should never be neglected and discussed openly with the patient. General contraindications, may be proceeded sometimes with medical consent, include conditions such as acute inflammation, client’s use of anticoagulant medication, severe cellulitis, deep vein thrombosis, osteomyelitis, rheumatoid arthritis. Some of local contraindications include bone fractures, acute sprain, hematoma, varicose veins. (Grant & Riggs 2008, 164-165)

Adverse events after manual therapy sessions may occur, so it is important to inform the patient about this possibility. They can be divided into major, moderate and minor, and can range from cervical artery dissection, to bruising and muscle soreness. According to the study, minor and short-lived events, which appear after 24 hours and resolve within 72 hours, are experienced by almost half of patients. The risk of serious event remains very low. (Carnes et al. 2010, 361)

## 4.1 Deep Tissue Massage

Riggs (2008, 40-41) states that there is no sharp definition of Deep Tissue massage. Therapist may use elbows or knuckles to apply slow and deep strokes, while putting emphasis on releasing muscle restrictions and amending the structure (Riggs 2008, 40-41). The deep strokes and pressure may work across or along muscles and soft tissue (Bialosky et al. 2009, 523). This massage gives great relaxation and brings longer lasting effects. (Riggs 2008, 40-41)

Massage therapy is a broad name for touch therapies with the aim of mobilization of the soft tissue. There are two main approaches towards massage: medical massage and massage for wellness (Cowen et al. 2006, 267). Musculoskeletal pain is commonly treated by therapeutic massage, which effectiveness is in fact debatable (Lewis & Johnson 2006, 146-158). There are not many studies regarding massage treatments, and only few present positive outcomes (Mannerkorpi & Henriksson 2007, 513-534). Moreover, existing facts are inconclusive and do not provide therapists with ultimate dosage. They only give examples, which makes the treatment sessions determined by the therapist's personal experience (Lewis & Johnson 2006, 147).

Massage raises vagal activity or decreases activity of sympathetic nervous system, simultaneously raises the level of serotonin which reduces pain (Field et al. 2004,10). Positive studies of massage therapy confirm that symptoms of migraine, fibromyalgia, lower back pain or arthritis may be reduced (Bell 2008, 282; Field et al. 2004, 10). Field et al. (2004, 9-14) conducted study in which carpal tunnel syndrome symptoms were reduced after massage therapy sessions. Russell (2007, 146-150) reports decreased symptoms of restless legs syndrome after few massage sessions. The conclusion after Bell's (2010, 285) case study indicates that massage therapy may increase range of movement and assist in tissues healing process. Batavia's (2004, 52-55) review of contraindications for therapeutic massage demonstrates that there is no consistent policy concerning conditions considered as contraindicated.

## 4.2 Myofascial Release

Myofascial Release gathers various approaches and techniques which share the same aim to work with tissue-based restrictions, therefore any technique releasing the fascial limitation is a form of Myofascial Release (Grant & Riggs 2008, 149-150). Various myofascial unwinding/releasing techniques originated among osteopaths and were described for decades (Minasny 2009, 11). Practitioners believe that fascia is able to adapt to physical strain, however, changes caused by contractures do not have to be permanent (James et al. 2009, 229-238). Myofascial release techniques are believed that they restore the length of the fascia and decrease the tension in surrounding fascia, hence relieve the pressure on involved structures and reduce pain (James et al. 2009, 229-238; Walton 2008, 274-280).

Variety of techniques is used to awaken, lengthen and reposition the fascia and release its adhesions. The amount of pressure varies based of patient's feedback. Techniques involve deep and sustained touch, slow and deep stretching or constant pressure. (Myers 2004a, 134). Therapist's hand simultaneously stimulates and receives information from the patient's organism, as client's body contains all the information needed to help him (Schwind 2007, 27-29). With the first therapist's touch, the elastic elasto-collagen complex is lengthened till the barrier is felt, this is the beginning of collagen deformation. (Martin 2009, 320-327). Myofascial Release stretches the restricted fascia by slow, gentle and sustained pressure of 90-120 seconds (LeBauer et al. 2008, 356-363; Walton 2008, 274-280). Pressing too roughly may result in rupture of the fibers, so proportional pressure is required (Martin 2009, 320-327). When therapist feels the release, he can move further till the next blockade (Walton 2008, 274-280). The second release may be felt due to the ground substance realignment, it is not uncommon to experience a burning feeling (Grant & Riggs 2008, 160). Gradually patient should report relief in the distant point and raised tension under therapist's hand. Each such manoeuvre may last even few minutes (Martin 2009, 320-327). Density, tonus and organization of fascia may be restored by clinicians pressure due to the fact, that chemical alterations of the matrix can be rearranged and collagen fibres can move again (James et al. 2009, 229-238). Practitioners work with fingers, thumbs, open hands, clenched fists, forearms and elbows (James et al. 2009, 229-238; Prado 2008, 40-53). Slow, sliding contact has to be tailored to the tension

of the tissues, therefore the deeper and denser the fibres, the slower the stroke must be proceed. (Schwind 2007, 27-29)

Changes after Myofascial Release are similar to other soft tissue mobilization methods and embrace blood flow and circulatory changes, capillary dilatation, cutaneus temperature changes and alteration in metabolism (Kain et al. 2010, 1-5). Among the indications to the treatment, Barnes (1996, 53-57) brings up pain, movement restrictions, headaches, TM-joint pain, sport injuries, chronic fatigue. The benefits appear as pain alleviation, greater flexibility, athletic performance improvement, ease of movement, better posture (Grant & Riggs 2008, 149). Barnes (1996, 53-57) reports a significant improvement along the treatment of thoracic outlet syndrome.) Proper myofascial release techniques may bring positive effects in enhancing the symmetry in pelvic position (Barnes et al. 1997, 289-296). Walton (2008, 274-280) reports that MR techniques may alter and ease the severity and duration of primary Raynaud's syndrome episodes. LeBauer et al. (2008, 356-363) suggests myofascial release as an effective treatment for idiopathic scoliosis, as it may improve trunk rotation, posture, pulmonary function and quality of life. King (2002, 224-225) proposed a myofascial breastwork as a way to entirely enhance respiratory function, by releasing muscles of inhalation, opening the rib cage, improving breathing patterns and removing fascial restrictions. Martin (2009, 320-327) adds that Myofascial Release may be a helpful hand in diffuse systemic sclerosis, due to remodelling of collagen fibers it can increase range of motion in joints. In the recent research, Kain and others (2010, 1-5) compared the tri-planar MR technique and hot pack for the effect on the range of motion of glenohumeral joint. The results showed almost no difference, indicating that both methods are equally effective in increasing range of motion, in a favour of 3 minutes treatment of MR vs. 20 minutes time for hot pack. Whole body myofascial release session after high-intensity exercise assists in normalization of diastolic BP and HRV (Arroyo-Morales et al. 2008, 221). Hands-on therapies, like myofascial release can be found helpful in the treatment process of fibromyalgia, however therapist must be careful not to enhance further tissue damage only help in removing fascial restrictions and encourage tissue healing (Liptan 2010, 3-12).

Myofascial Release is considered by some as the by-product of Rolfing practice (Prado 2008, 40-53). Structural Integration, known also as 'Rolfing', is a systematic

program of postural repatterning organized in series of session to align and integrate the body in gravity by connective tissue manipulation (Myers 2004a, 131-142). The founder of Structural Integration, Dr. Ida Pauline Rolf formed this method by observation of the specific limitations of the body moving in gravity. Her work combines traces and shares goals with yoga, osteopathy and other methods like Alexander Technique, Feldenkrais, Korzybski or Reich. The basis of this approach follows sequential selective lengthening of myofascial tissues. (Myers 2004a, 132-137.) Ida Rolf established the 'recipe', series of 10-13 sessions covering the whole body, with the main aim of evoking the symmetry and somatic balance (James et al. 2009, 229-238; Myers 2004b, 189-198; Petersen 2009, 91-105). The sequence of sessions is framed and time limited, sessions are built on another with the cumulative effect in the end (Myers 2004b, 189-198). Interventions may concern structures and functions like freeing ribcage and breathing, restoring balance in the feet and leg muscle chain in standing, contra-laterality in walking, differentiating spinal and hip flexions (Petersen 2009, 91-105). Scope of Structural Integration is wide (Schwind 2007, 27-29). Nearly everybody, all types of bodies and persons can benefit from Rolfing, but not in he same way (Prado 2008, 40-53). Structural Integration concept applies best for chronic, rather than acute problems (Myers 1998, 14-20). Rolfing interventions include several principles, the main one, holism, states the body as a self-regulating entirety with each structure equally important (Prado 2008, 40-53). Rolf added emotional integration as essential ingredient and this places rolfing as an important psychological therapy (Prado 2008, 40-53; Dorsher & Fleckenstein 2009, 9-14; Oschman 1997, 306). Rolfers accept as true, that fascia together with muscles is able to "hold" past emotions and memories, and clients after treatment may experience a diversity of sensations ranging from pleasant to uncomfortable (Caspari & Zorn 2002). Recent fascia research reports that myofascial release has a complex psycho-neuro-myofascial relationship (Petersen 2009, 91-105).

Based on many dissections and extensive fascia studies, Luigi Stecco, Italian physiotherapist, developed another soft tissue mobilization method - Fascial Manipulation© (Fascial Manipulation). The concept concentrates on deep muscular fascia and aims to restore physiological gliding. Practitioner works at a distance from the pain, on precisely identified area/point of the fascia which may be the source of pain or restricted movement (Fascial Manipulation, Pedrelli et al. 2009, 73-80). During the

treatment therapist may use his elbow to initially create a static pressure, and subsequently performs deep friction or on the identified point (Pedrelli et al. 2009, 73-80). Fascial Manipulation© concept divides human body into 14 segments with 6 myofascial units each, and indentifies special points like Centre of Coordination, Centre of Fusion and Centre of Perception (Day et al. 2009, 128-135; Fascial Manipulation; Pedrelli et al. 2009,73-80). Only detailed and accurate examination can identify dysfunctional fascial point. Similarly to Trigger Points, altered Centre of Coordination or Centre of Fusion can refer pain in distal or proximal direction (Day et al. 2009, 128-135). It is hypothesized that fascial continuity is responsible for referral of pain along myofascial sequences which often does not follow nerve pathway or single muscle (Day et al. 2009, 128-135; Pedrelli et al. 2009, 73-80). In the case of Patellar tendinopathy, pain is felt in the patellar tendon but the problem is considered to lie in uncoordinated quadriceps contraction which results in abnormal fascial tension in the thigh. The pain decreased after treating fascia of the quadriceps femoris. (Pedrelli et al. 2009, 73-80). Day (2009, 128-135) presented a study which suggest that Fascial Manipulation© can be successful in reducing pain in chronic shoulder dysfunction.

Relatively recent branch of Myofascial Release, Muscle Repositioning, derives from Brazilian school of Rolfing (Bertolucci 2010, 26). Characteristic of this method is the way of working with fascia. Practitioner glides the skin in search of the most resistance, then the fascia is twisted around the harder structure, as bone, till the barrier is felt. While applying the pressure, the joint stiffens, and consequently a chain of reflexes links neighbouring body segments together into one block. Subsequently, oscillatory or to-and-from movements result in sudden soft-tissue release. Patient's feedback and firmness under therapist's hands are leading the treatment during the whole session. Client often reports an unique sensation during this integrative manoeuvre. Research and author's own therapeutic experience reveal presence of involuntary reactions coming from patient's body, such as isometric contraction of cervical erector, eyelids flickering, trembles, horizontal eye movements. (Bertolucci 2010, 26-33).

# 5 TEACHING AND MOTOR LEARNING

Teaching is a process of transferring information in a way that learner is able to handle the given piece of information. Good teacher must be thoroughly acquainted with the topic, must know what kind of students are in the group and be flexible enough to use different teaching tools depending on situation (Shepard & Jensen, xxii). Lectures efficiently transmit lots of information to group of students, they can stimulate interests and challenge the listeners by visuals, movement, variety in tone of voice, body language, pace and material clarity, discussion. Demonstration is the best way to teach motor skills. Teacher should perform a demonstration with verbal instruction, then make the students practice, meanwhile providing the feedback. (Shepard & Jensen 1997, 78-93)

Learning is the process of acquisition the information about the world, while motor learning is the acquisition or modification of movement leading to relatively permanent changes in producing skilled action. Both terms manifest as long-term memory. The movement is a multiple process and comes out from interaction between the individual, the task and the environment (Figure 2). Individual has to combine his action, perception and cognition skills. Cognitive skills help student to learn more effectively, as they increase motivation. Additionally, movement depends on the regulatory or nonregulatory environment, and nature of task, whether it is mobility, stability or manipulation. Open skill, such as massage, requires diversity of movement patterns in changing conditions and environments, whereas closed skill requires refinement of a single or limited number of movement patterns in a stable environment (Shumway-Cook & Woollacott 2007, 5-34).

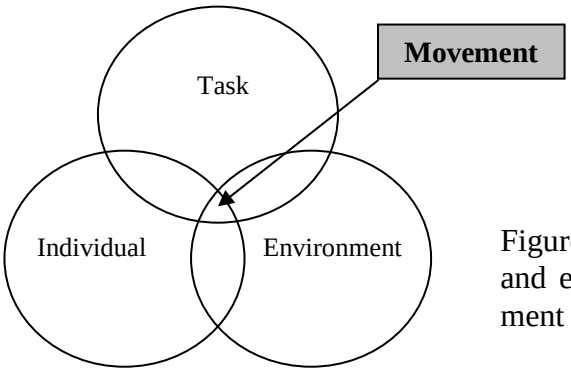



Figure 2. Interaction between task, individual and environment facilitates the learned movement (Shumway-Cook & Woollacott 2007, 5)

Learning motor skills results from experience or practice. To learn effectively, students should perform repetitive movements, however various conditions and parameters to the same task are advisable. Students may observe the task and later imagine the performance. It is better to lead the practice variably and practice random actions rather than grouped in one block. Feedback consists of all information that results from movement. Intrinsic feedback includes all sensory information sensed by the individual, whereas extrinsic feedback is given by a teacher and provides the student with the knowledge of results. Good and thorough guidance should be applied at the beginning of the session, then gradually decreased in frequency. (Shumway-Cook & Woollacott 2007, 35-39)

Teaching styles facilitate the process of learning. During one of them, practice, the student performs tasks prescribed by the teacher, there is enough the time for individual consultation and private feedback between teacher and student. In reciprocal style students work in pairs, when one performs the other gives the feedback, they switch after the first practice (Mosston & Ashworth 1986, 1-30).

# 6 IMPLEMENTATION

The Myofascial Release Techniques course was designed for SAMK second year and higher physiotherapy students, nevertheless, there was 1 first years student. The theoretical information was based on updated evidence-based knowledge obtained from broad literature review. Scientific articles found on ScienceDirect, Pubmed and Ebsco databases allowed for a thorough immersion in the concept of and around Fascia. Keywords for the search included notions such as fascia, myofascial release, deep tissue massage, massage, rolfing, structural integration, anatomy trains, myofascial continuity, bodyworking, connective tissue, soft tissue mobilization, myofascial trigger points. 150 articles were selected for further reading, out of which 70 were chosen as suitable and credible references. The inclusion criteria embraced the amount of concrete facts, evaluated subjectively by the author. Practical content of the course was based on Deep Tissue Massage course run by professional Structural Integrator

Art Riggs, personal working experience of the author of this thesis, two manuals (Myers 2009; Riggs 2008) and educational multimedia.

## 6.1 Implementation of the course

The Myofascial Release Techniques course lasted two days (two Saturdays, 23rd and 30th October 2010) and consisted of 16 contact hours. There were 21 participants on the first day and 16 participants on the second course day. Enrolled participants could obtain 1 credit (ECTS) after full attendance. Both days started at 8.30 and finished at 15.30.


Photograph 1. Sign (photo taken by Natalia Kopacz)

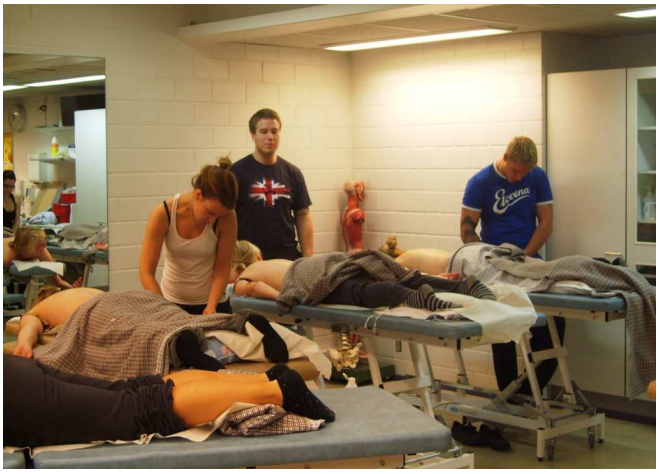

Photograph 2. Sign (photo taken by Natalia Kopacz)

Students were given in advance prepared handouts (Appendices 1-10) which included theoretical part, lectures, and practical hints, however, not whole content of the handouts was went through during the classes. On the first day students were introduced to the concept of Fascia and Myofascial Release, the practical part covered massage techniques on lower, middle and upper back in prone position, posterior neck muscles, shoulder, scapula and surrounding muscles, palm, gross arm pull, pectoralis major and pectoral fascia in supine position. The second day continued theory about Deep Tissue Massage & Myofascial Release, additionally students were familiarized with Anatomy Trains concept and Myofascial Release methods practised worldwide. The practical part consisted of techniques on the posterior and anterior lover limb in supine and prone position, lateral and medial upper lower limb in side lying position, trunk rotation in side lying position. Table 3 and 4 demonstrate the detailed timetable.

Table 3. Course Implementation: First day

| **Day I (23rd October 2010)** | |
|---|---|
| **Time** | **Activity** |
| 8.30-10.00 | - Short introduction of the teacher and participants<br>- General information about the course, aims, objectives and planned schedule (Appendix 1)<br>- Lecture about the Fascia, handout (Appendix 2 & 3)<br>- Lecture: Introduction to Deep Tissue Massage and Myofascia Release (Appendix 4)<br>  <br><br>Photograph 3. Lecture during the course day (photo taken by Natalia Kopacz) |
| 10.00-10.15 | - Coffee break |
| 10.15-11.45 | - Lecture: Therapeutic Session of Deep Tissue Massage & Myofascial Release (Appendix 5)<br>- Demonstration of techniques + Practice. |
| 11.45-12.15 | - Lunch break |
| 12.15-13.45 | - Demonstration of techniques + Practice<br>  <br>Photograph 4. Demonstration of subscapularis muscle stretch (photo taken by Natalia Kopacz) |
| 13.45-14.00 | - Coffee break |
| 14.00-15.30 | - Demonstration of techniques + Practice |

Table 4. Course Implementation: Second day

| Day II (30th October 2010) | |
|---|---|
| **Time** | **Activity** |
| 8.30-10.00 | - Lecture: Deep Tissue Massage and Myofascial Release part II (Appendix 6)<br>- Lecture: Anatomy Trains – myofascial continuity (Appendix 7)<br>- Handout and short explanation: Body reading, Contraindications to deep bodywork (Appendix 8 & 9) |
| 10.00-10.15 | - Coffee break |
| 10.15-11.45 | - Demonstration of techniques + Practice<br>  <br>Photograph 5. Practice of palm massage (photo taken by Natalia Kopacz) |
| 11.45-12.15 | - Lunch break |
| 12.15-13.45 | - Demonstration of techniques + Practice<br>  <br>Photograph 6. Practice after demonstration: anterior lower limb (photo taken by Natalia Kopacz) |
| 13.45-14.00 | - Coffee break |
| 14.00-15.30 | - Demonstration of techniques + Practice<br>- Questions and discussion<br>- Filling in the feedback form (Appendix 10)<br>- Farewell |

## 6.2 Feedback from students

At the end of the course, participants were asked to fill in the feedback form (Appendix 10). Feedback was taken from 16 students with various previous massage experiences ranging from none to practicing masseur. All of them attended 2 full course days. There were 1 first year, 6 second year, 6 fourth year students and 3 exchange students. The questionnaire contained of 13 closed questions and 2 open questions. Each closed question could be graded from 1 to 5, where 1 stands for 'strongly disagree' and 5 'strongly agree'. The mean was estimated for each closed question (Table 5). The closed questions were categorized into 3 subgroups. The subgroups were related to the teacher, the course, and skills developed after the course. Additionally, the mean was calculated for each subgroup (Figure 3, 4 & 5).

Table 5. The mean grade of closed questions in students' questionnaire

| Question number | Mean grade |
|---|---|
| 1 | 4 |
| 2 | 4.36 |
| 3 | 4.19 |
| 4 | 3.31 |
| 5 | 3.31 |
| 6 | 3.13 |
| 7 | 3.63 |
| 8 | 4.69 |
| 9 | 4.63 |
| 10 | 4.44 |
| 11 | 4.5 |
| 12 | 4 |
| 13 | 4.56 |

The mean grades range from 3,13 to 4,69. The average grade from the whole course is 4,06. The best mean grade received question number 8, 'The teaching staff worked hard to make the subjects interesting'. The last position belongs to question number 6, 'My course helped me to develop the ability to plan my own work'. Subgroup of questions related to the teacher evaluation received the mean 4,45 with the best question number 8 and worst question number 12 (Figure 3). Subgroup of questions related to the course received mean of 4,28, with the best question number 13 and

worst question number 1 (Figure 4). Subgroup of questions related to the skills developed after the course received mean of 3,34, with the best question number 7 and worst questions number 4 and 5 (Figure 5).

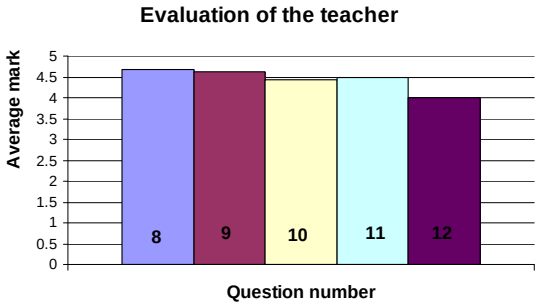



Figure 3. Students' evaluation of the teacher

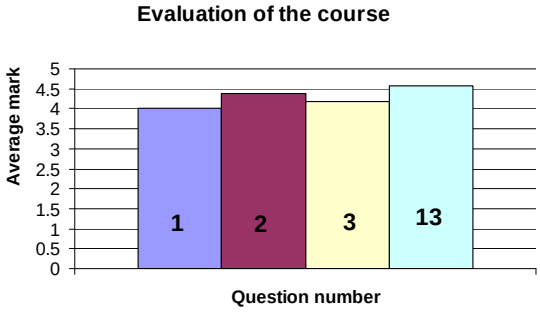



Figure 4. Students' evaluation of the course

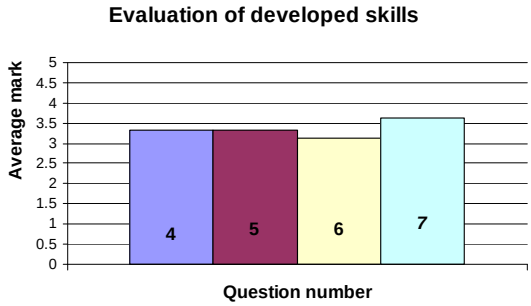



Figure 5. Students' evaluation of developed skills

The course participants were also asked to express their opinions in open questions about the best and the worst aspects of the course (Table 6). The great amount of practical part was the most appreciated, students found very beneficial getting new ideas and new working methods, teacher's positive attitude was also mentioned. Few students paid attention to the lack of list of practiced techniques and to small amount of clinical reasoning or client cases analysis. Also the theoretical part is in need to be corrected and improved with the amount of visuals used and quality of knowledge provided.

Table 6. Best and worst aspects of the course (students' feedback)

| **What were the best aspects of the course? (question no. 14)** | **No. of votes** |
|---|---|
| Good amount of hands-on practice | 13 |
| New ideas, new techniques | 8 |
| Teacher's motivation | 4 |
| Mixed students from various school groups | 1 |
| **What aspects of the course needs to be improved? (question no. 15)** | **No. of votes** |
| During practice - too many techniques at once to remember, lack of the list of techniques | 3 |
| Amount of client cases/clinical reasoning was not sufficient | 2 |
| Less theory, instead more detailed small amount of theory | 2 |
| More visuals during lectures | 1 |
| More supervision and control over students during practical part | 1 |
| More time | 1 |

## 6.3 Process of Bachelor's Thesis

The overall Bachelor's Thesis process, from the moment of creating the idea to the implementation of the course and thesis presentation took almost one year. The longest time was dedicated to carry out the literature review. The detailed timetable can be seen in Table 7.

Table 7. Timetable of thesis writing process and course creation

| **No.** | **Period** | **Action** |
|---|---|---|
| 1. | December 2009 | Creation of an idea and vast outline of the project |
| 2. | January 2010 | Formulation of aim and list of contents |
| 3. | December 2009-Ferbruary 2010 | Collecting articles and other evidence based literature |
| 4. | February – September 2010 | Agreement with SAMK<br>Thesis writing process:<br>- literature reading<br>- data analysis<br>- planning the course schedule\content<br>- supervision sessions with thesis tutor<br>Completing and ending the thesis writing process |
| 5. | October 2010 | Planning and preparation of course materials<br>Course implementation:<br>Day 1 - 23.10.2010<br>Day 2 - 30.10.2010 |
| 6 | November 2010 | Maturity test<br>Thesis presentation |

# 7 DISCUSSION

My personal adventure with physiotherapy started in Poland, where I come from. The studies took 4 years, but after graduating did not feel ready to start professional work. In search of further knowledge, practice and experiences I found myself in Finland at SAMK in Pori, as a physiotherapy student again. From the very beginning of my physiotherapy studies, manual and hands-on therapies were always my biggest interests. The gradual discovery of the power of touch has proved motivational for developing my path of soft tissue mobilization techniques. Classical massage was the first milestone, however it did not fulfil my expectations. Thai massage gave me a bigger scope of deep techniques, nevertheless I still felt unsatisfied. By coincidence I came across Deep Tissue Massage course, which was carried out by advanced Structural Integrator/Rolfer, and I realized straightaway that this is what I was looking for. Ever since, I perceive great beneficial outcomes coming after deep bodywork.

My thesis tutor suggested sharing Deep Tissue Massage techniques with other SAMK students as a part of thesis project, in the form of a course. I took liking to the idea straightaway. Firstly, I got fascinated by the Structural Integration/Rolfing as Deep Tissue Massage is one of their working methods, but those practitioners are highly specialised and additionally they pay a lot of attention to the psychological human aspect. It took me some time to understood that I should concentrate more on Fascia itself, and move towards Myofascial Release.

The theoretical part of the course was supposed to be strongly evidence-based. The search and review of the articles took some time, however actually finding them was reasonably uncomplicated. Few authors, whose names appear more often, such as Stecco family, Schleip, Langevin, Chaitow, Findley, LeMoon or Myers, seem to be the leader researchers in this field. Even though they all strongly support the Fascia and Myofascial Release, sometimes the same facts were presented in slightly different light depending on the author. Especially the terminology concerning the newest and most detailed information of the anatomy and physiology of fascia and connective tissues was being contradictory. Even the notion of ‘Myofascial Release’ was

hardly explained in understandable way. Therefore me, as not a specialist in the field, I did happen to feel lost of what is wrong, what is right. I decided to take a step back, and have more general outlook in order to avoid losing sight of the hub.

The process of preparing the course contents started before the summer and continued throughout till October. On one hand I exactly knew what my goals are, on the other hand for a long time my ideas could not take any reasonable form. I knew that as a teacher I have to be clear and objective and provide only necessary information, because the course was about to concentrate on the practical part. The most intensive time accumulated on the weeks just before course implementation, and the most helpful turned out to be - time. When we look at some thoughts from a distance, then we are able to select most appropriately.

The practical part of the course was supported by my working experience in the field of massage, which is based on the Deep Tissue Massage course I participated in myself 1,5 years prior to the implementation (teacher Art Riggs, advanced Structural Integrator). I found useful the manual full of techniques written by Art Riggs (Riggs 2008), the book written by Tom Myers (Myers 2009) in which he explains myofascial continuity giving the name of Anatomy Trains, and gives hints how to put it into practice. I didn't find Carol Manheim's (Manheim 2001) book 'Myofascial Release' as attention-grabbing though, however I do use sometimes some of the techniques and practical hints he proposes.

During the first day of the course I presented the main facts about the Fascia and Myofascial Release in a form of lecture. It was the very first time I did teach in this way, I found myself relatively confident and relaxed as I knew what I was talking about. I did not put references into the presentation, although I did refer students to the theoretical part of the this thesis for more detailed information. Practical part of the course focused on how to perform selected techniques of Deep Tissue Massage. The main principle is to work deeply and slowly by using elbows, forearms, fists or knuckles. For almost everybody it was a new style of massage and my most frequent feedback was '*slower, please'*.

The second day contained less theory than the first day. Students were introduced to the main idea of Tom Myers's Anatomy Trains concept (Myers 2009), clinical reasoning in posture assessment was only mentioned and, students received handouts for individual study. It was also important that students recognize the place of Myofascial Release in physiotherapy, and realize that it is only a part of patient's holistic treatment. In order to keep the head open for new ideas, I also briefly presented various Myofascial Release methods practised worldwide. Practical techniques covered the remaining parts of the body, so in total students should be able to massage every single body part. As during the first day, students practised in pairs, so they could hear feedbacks from the teacher and the person being massaged. Students swapped in pairs and circulated around other pairs, so they had chance to feel different types of bodies. There were 21 students present during the first session, and 16 on the second day. I found it definitely easier for the teacher and more profitable for students when there were less students practising. Teacher can have enough time to give an individual feedback to each student personally, so students obtain better knowledge of result.

The students feedback showed that the time spent on practicing the techniques was the best aspect of the course, which means that one of the intended aim worked out. At the same time students complained about lack of time for clinical reasoning process, case description, posture reading, problem solving. Therefore the 'Skills developed on the course' were assessed relatively low in the feedback questionnaire.

The overall course feedback from students was positive, graded the course around 4, which is 'good'. Students mainly satisfied with teaching methods and teaching staff. Moreover, constructive hints were given for future development. Participants gave the idea that the theoretical part being sometimes too complicated and maybe I could have used simpler vocabulary. I think this perception depended on the knowledge and the year of study. The more advanced students probably did not have problems, therefore it is maybe advisable to stick to the assumption that in this type of courses should participate more advanced students.

As there is always room for improvement, I would cut down on theory lectured for students. Maybe, for example, the Anatomy Trains were not so important, and the

fact that they fascinate me does not mean that others would want to hear about them. Then, the list of practised techniques requires some changes. There was a good hint in the questionnaire, to make a power point presentation of those techniques being carried out at the single session, so that everybody can see it and not forget what she/he actually should do. Consequently it would create a consistent manual for students. The presentations should consist of more visualisations and pictures, it could allow for better understanding. If it was possible, I would not choose Saturday as a course day, some people couldn't participate due to the timing.

Some future plans for developing the course. First, and for me the most essential is time, to extend the time of the course up to 3 full days (24 contact hours) or providing students with part II of Myofascial Release Techniques. I reckon, that practice can be done in 2 days, but then the whole clinical reasoning, case study, posture assessment are left aside. Question is whether this is a role of this course or the educational curriculum to spent time on clinical reasoning. Because I was always missing this when being course participant myself, I opt for including it within the course. However this rises up an extra query, would I be professional enough to teach others about it? It is a challenge and responsible task, to coach about clinical reasoning and imprint in others the way of thinking they should follow. I consider that I am not ready at the moment, I need more hands-on working practice myself. Time shall be the best teacher in this case.

To sum up the thesis writing process, it has been a great experience. Despite the theoretical knowledge I gained, course preparation forced me to change the way of thinking and somehow higher up the level together with leaving the student's label behind. Writing the theoretical part taught me to concentrate on the assigned topic, but remain open-minded. My personal aim during the teaching, was to inspire other students not to get framed up, that the physiotherapy world is constantly open and rich in novelties. It is very often personal responsibility to make an effort, find information independently or be inquisitive and question more experienced therapists or colleagues.

I truly believe that hands-on therapies play important role in the physiotherapy process, however, they cannot be treated as the only resources. They have to be imple-

mented together with other physiotherapy areas like therapeutic exercises, posture correction, work ergonomics, health promotion, enhancing physical activity. Hands-on therapies are perfect at fulfilling clients'\patients' expectations. Clients feel that something is really being done for them, even though there might be few occasions that it remains only as placebo effect. Positive feedback from patients '*Yes, now I feel so much better'*, '*I was massaged before, but this one was exceptional*', '*Hmm, it was painful… but it was a good pain!*' brings satisfaction to the therapist. Fact that there are no strict guidelines about dosage or timing of therapeutic sessions of Myofascial Release, makes it even more challenging and appealing as patients present different body-build, everybody has different problems, functional limitations, societal background. The scope of conditions suitable for working with the body is wide, therefore almost everybody can gain benefits from therapeutic session.

The concept of Fascia and Myofascial Release techniques has gained respect on the international level during recent years. In March 2012, Vancouver in Canada will hold the Third International Fascia Research Congress. The previous two congresses took place in years 2007 and 2009, they brought up and unearthed many interesting issues linked with the topic. Passionate researches help in understanding the intricate fascia anatomy and physiology. Moreover, hands-on specialists are able to directly implement this knowledge into their practice.

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LIST OF FIGURES, PHOTOGRAPHS AND TABLES:

APPENDICES

Appendix 1. General information of the course

Appendix 2. Fascia – Power Point presentation

Appendix 3. Fasciae - illustrations

Appendix 4. Introduction to Deep Tissue Massage and Myofascia Release - Power Point presentation

Appendix 5. Therapeutic Session of Deep Tissue Massage combined with Myofascial Release - Power Point presentation

Appendix 6. Deep Tissue Massage and Myofascial Release part II – Power Point Presentation

Appendix 7. Anatomy Trains - myofascial continuity – Power Point Presentation

Appendix 8. Body Reading

Appendix 9. Contraindications to deep bodywork

Appendix 10. Feedback form

# Myofascial Release

Educational course for SAMK physiotherapy students

October 23rd and October 30th, 2010

**Bachelor's Thesis Project**

**Course Description**

This course is designed to provide SAMK physiotherapy students with evidence-based knowledge concerning the concept of Fascia and Myofascial Release and develop the manual interventions of Soft Tissue Mobilization techniques. The course will be followed by power-point presentations, demonstrations and practice of relevant techniques. The methodology will give the students hands-on skills they may use immediately in their clinical practice.

**Course Objectives**

Know the physiology and pathology of Fascia
Understand the principles of Deep Tissue Massage and Myofascial Release Concept
Apply the appropriate and relevant soft tissue mobilization techniques
Develop palpation skills
Get acquainted with the current Soft Tissue Mobilization methods practised worldwide

**General information**

**Date**: 23rd and 30th October 2010
**Location**: class F111, SOTEPO Faculty of Health care and Social Services, Pori
**Duration**: 16 contact hours and 10 self-study hours (1ECTS)
**Limited vacancies**: 24
**Attendance:** The course programme requires full participation in the practical classes where manual skills and treatment manoeuvres are presented
**Modification Disclaimer:** The instructor reserves the necessary changes to maximize the learning outcomes and retain the more relevant concepts and skills during the course.

**Instructor: Natalia Kopacz**

Physiotherapist titled by the University of Physical Education in Krakow (Poland) in July 2009. Currently, physiotherapy student at SAMK, Faculty of Social Services and Health Care in Pori, Finland. This course is a part of her Bachelor's Degree project. Natalia has a strong interest in hands-on therapies including body-working, deep tissue massage, soft tissue mobilization and manual therapy. As young physiotherapist, she is enthusiastic about professional development and open to world novelties.

**Summary of topics**

| **Theory** | **Practice** |
|---|---|
| Concept of Fascia | Therapist's Body Mechanics |
| Introduction to Deep Tissue Massage and Myofascial Release | Deep tissue massage & Myofascial Release Techniques |
| Contraindications to deep bodywork | Body reading & Clinical reasoning |
| Brief introduction to current Soft Tissue Mobilization concepts and methods | Short demonstration of Trigger points techniques (if time allows) |

**Complete detailed programme**

| **DAY 1/2** | **Hour** | **Activity** |
|---|---|---|
| 23.10.2010 (Saturday) | 8.30-10.00 (90 min) | Introduction to the course.<br>The concept of Fascia (presentation).<br>Introduction to Deep Tissue Massage and Myofascial Release (presentation). |
| | *10.00-10.15* | *Coffee break* |
| | 10.15-11.45 (90 min) | Myofascial Release Session (presentation).<br>Therapist's Body Mechanics (presentation + practice).<br>Gross stretch technique (practice). |
| | *11.45-12.15* | *Lunch break* |
| | 12.15-13.45 (90 min) | Body reading (presentation + practice).<br>Practice of techniques:<br>lower/middle/upper back in prone position. |
| | *13.45-14.00* | *Coffee break* |
| | 14.00-15.30 (90 min) | Practice of techniques:<br>lower limb in prone position<br>upper limb in prone position. |
| **DAY 2/2** | **Hour** | **Activity** |
| 30.10.2010 (Saturday) | 8.30-10.00 (90 min) | Contraindications to deep body work (presentation).<br>The concept of Anatomy Trains.<br>Practice of techniques:<br>- upper body in supine position (1/2). |
| | *10.00-10.15* | *Coffee break* |
| | 10.15-11.45 (90 min) | Practice of techniques:<br>- upper body in supine position (2/2). |
| | *11.45-12.15* | *Lunch break* |
| | 12.15-13.45 (90 min) | Practice of techniques:<br>lower limb in supine position<br>techniques in side-lying position. |
| | *13.45-14.00* | *Coffee break* |
| | 14.00-15.30 (90 min) | Other soft tissue mobilization concepts (presentation).<br>Questions & discussion. |

# List of Techniques:

GROSS STRETCH

- Arm Pull & Leg Pull

The gross stretch comes as the first in the treatment session, before more specific muscle work. It releases the superficial tightness. The proper amount of anchoring pressure should be applied.

BACK

Lower back

- Erector spinae
- Quadratum lumborum
- Latisimus dorsi
- Spine extension
- Spine flexion
- Spine rotation

Middle and upper back

- Pelvis distraction
- Ribs mobilization
- Rotation
- Paravertebral muscles
- Serratus Anterior
- Scapula & surrounding muscles

PELVIS

- Iliac crest and waist
- Hip external rotators
- Gluteus maximus
- Sacrum

NECK + SCALP

- Trapezius
- Splenius Capitis
- Scalenes
- Sternocleidomastoideus (SCM)
- Suboccipitals

UPPER LIMB

Thorax & Shoulder

- Pectoralis Major
- Pectoralis Minor
- Rib cage
- Clavicopectoral fascia
- Pectoral fascia
- Rotator cuff
- Deltoid

Abdominal

- Iliopsoas muscle (iliacus & psoas)
- Balancing the psoas
- Rectus Abdominis
- Obliques

Arm

- Triceps Brachii
- Biceps Brachii
- Brachialis
- Spiral assessment
- Forearm + Hand

LOWER LIMB

Foot

- high/low arch
- Plantar Fascia

Ankle

- Retinaculum extensorium
- Lower limb traction

Tibia

- Anterior Tibia

Calf

- Achilles tendon
- Gastrocnemius
- Soleus

Knee

- patella

Thigh

- Adductors
- Abductors [Illiotibial tract with Tensor Fascia Lata]
- Quadriceps
- Hamstring

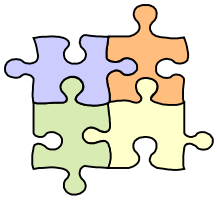
The fascinating world of

# Fascia

Natalia Kopacz
Fascia & Myofascial Release
Pori
23/30.10.2010

Gathering information about fascia is like playing puzzle!

Please, be patient.



## Fascia…

'Fascia is a soft tissue component of connective tissue system. It's uninterrupted, three-dimensional web of tissue that extends from head to toe, from front to back, from interior to exterior, and interpenetrates and surrounds muscles, bones, organs, nerves, blood vessels and other structures. Fascia takes responsibility for maintaining structural integrity, for providing support and protection, and acts as shock absorber. Fascia has an essential role in hemodynamic and biochemical process and provides the matrix that allows for intercellular communication.'

LeMoon 2008c

## Fascia…No Beginning & No End

"Fascia interpenetrates and surrounds all organs muscles, and unsheathes all bones. Extends to all dense fibrous connective tissues, including aponeuroses, ligaments, tendons, retinaculae, joint capsules, organ and vessel tunics, the epineurium, the meninges, the periostea, and all the endomysial and intermuscular fibers of the myofasciae."

Chaitow (2006)

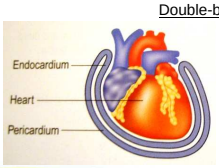
## Embryology

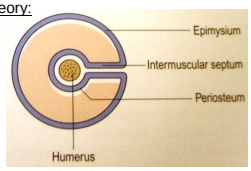
Ectoderm > Nerve Tissue, Connective Tissue, Epithelial Tissue

Mesoderm > Muscle Tissue, Connective Tissue, Epithelial Tissue

Endoderm > Epithelial Tissue

Double-bag theory:




## Fascia…

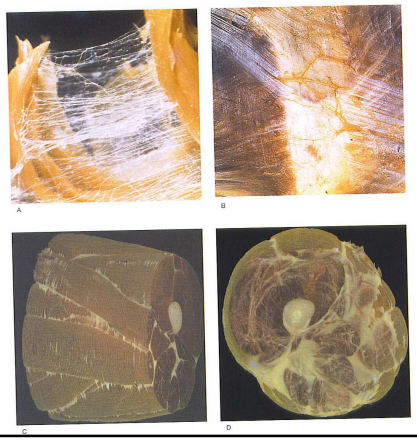
1. Superficial fascia (pannicular fascia)
   – areolar layer lying directly beneath the skin

2. Deep fascia (axial fascia, fascia profunda) - creates a continuous sheet of dense fibrous connective tissue that interpenetrates and surrounds the muscles, bones, nerves and blood vessels:

periosteum – lines the outer surface of all bones
endomysium – ensheathes single muscle fibers
perimysium – groups individual muscle fibers into bundles
epimysium – envelops entire muscle
endoneurium – forms a layer around each individual fiber of nerve
perineurium – surrounds each bundle of nerves
epineurium – surrounds the entire nerve
epitenon – covers a tendon
interosseal membrane
neurovascular tract

# Colagen

- protein
- main component of fascia
- localized in various tissues
- provides strength and flexibility for the system

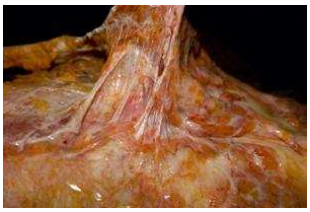


# Extra-cellular matrix [ECM]

- any material produced by cells and excreted to the extra-cellular space within the tissues
- consists of ground substance, fibers, proteins and glycosaminoglycans
  [physiological sol (fluid fascia) or pathological gel (dense fascia)]
- integrate functions of various cell types
- plays a vital role in mechanotransduction, process of perceiving and interpreting mechanical forces

Think of your own **hands** during the massage:
-How is the gliding with/without **oil**?

# Fascia

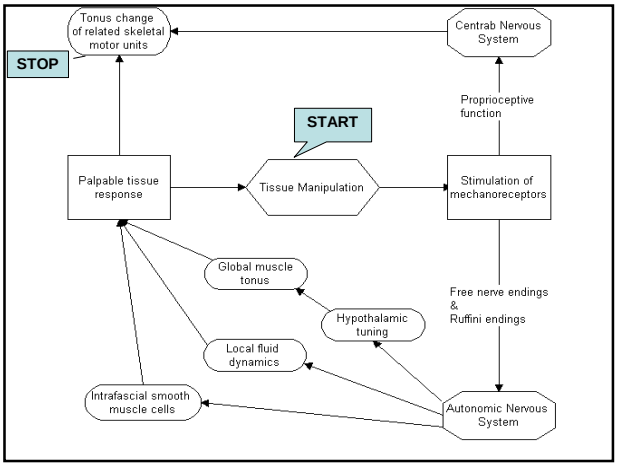


# Myofascial continuity - Anatomy Trains

# Innervation

- well innervated with mechanoreceptors and nociceptors
- mechanoreceptors maintain muscular coordination via the constant feedback from ligaments

| Receptor type | Preferred location | Responsive to | Known result |
|---|---|---|---|
| **Pacini corpucles** | Myotendinous junctions,<br>Deep capsular layers,<br>Spinal ligaments,<br>Enveloping muscular tissues (fascia) | Rapid pressure changes ,<br>Vibration<br>(high-velocity manipulation) | Increased proprioceptive feedback (sense of kinaesthesia) |
| **Ruffini receptors** | Ligaments of peripheral joints,<br>Dura mater,<br>Outer capsular layers,<br>Tissues associated with regular stretching | Like Pacini, plus:<br>Sustained pressure,<br>Especially responsive to lateral stretch<br>(slow and deep soft disuse techniques) | Inhibition of sympthathetic activity<br>(changes in local vasolidation) |
| **Free nerve endings (interstitial receptors)** | Found almost everywhere,<br>Highes density in periosteus | Both rapid and sustained mechanical pressure<br>(50% responsive to high threshold pressure, other 50% to low pressure) | Changes in vasolidation (altered local pressure in fascial arterioles and capillaries, changed local tissue viscosity)<br>Increase in vagal tone (global relaxation) |



# Response to touch

deep, steady touch > activation of receptors > activation of CNS and ANS > relaxation

sudden deep pinching > strong reaction from skeletal muscles, result of spinal reflex arc

# Pathology of Fascia

- Pathological contracture
- Trigger Points

  Regional shortening of the sarcomeres of numerous muscle fibres in the taut band demonstrates as contraction knot in the region of motor endplate

  Characteristics:
  - Tender point
  - Referred pain
- Fibromyalgia

  Common, chronic, rheumatic syndrome indicating widespread pain in fibrous tissues, muscles, tendons and other connective tissues resulting in painful muscles without weakness

# Remodelling (from good to bad... ☹ )

Pathological contracture:

overuse syndrome, strain
repetitive stress injuries
chronic non-physiological tension
> ECM (sol to gel) > FIBROSIS

- Change in posture or activity may be a consequence over the time of days to weeks. This process involve the remodelling of collagenous matrix with amendment in collagen fiber density and orientation, which is followed by changes in tissue viscoelastic properties. So far this process is proven in tendons, ligaments and joint capsules

- Overuse syndrome, trauma or surgery may change the layout of collagen fibres which allow gliding one layer on the other

- Unresolved trauma and/or frozen emotions can be 'stored' within the connective tissues in the form of pathology

# Remodelling (from bad to good... ☺ )

manual pressure raises the local temperature (as heat itself, passive or active movement)

↓

transformation from a pathological gel (dense fascia) into physiological sol (fluid fascia)

↓

gradual releasing:

- free up strangled nerve endings (this may result in sudden pain relieve)
- let the repositioning of collagen and elastic fibres in accordance with the lines of applied force (this helps restoring sliding properties, tensional balance and information transmission)

# Some facts

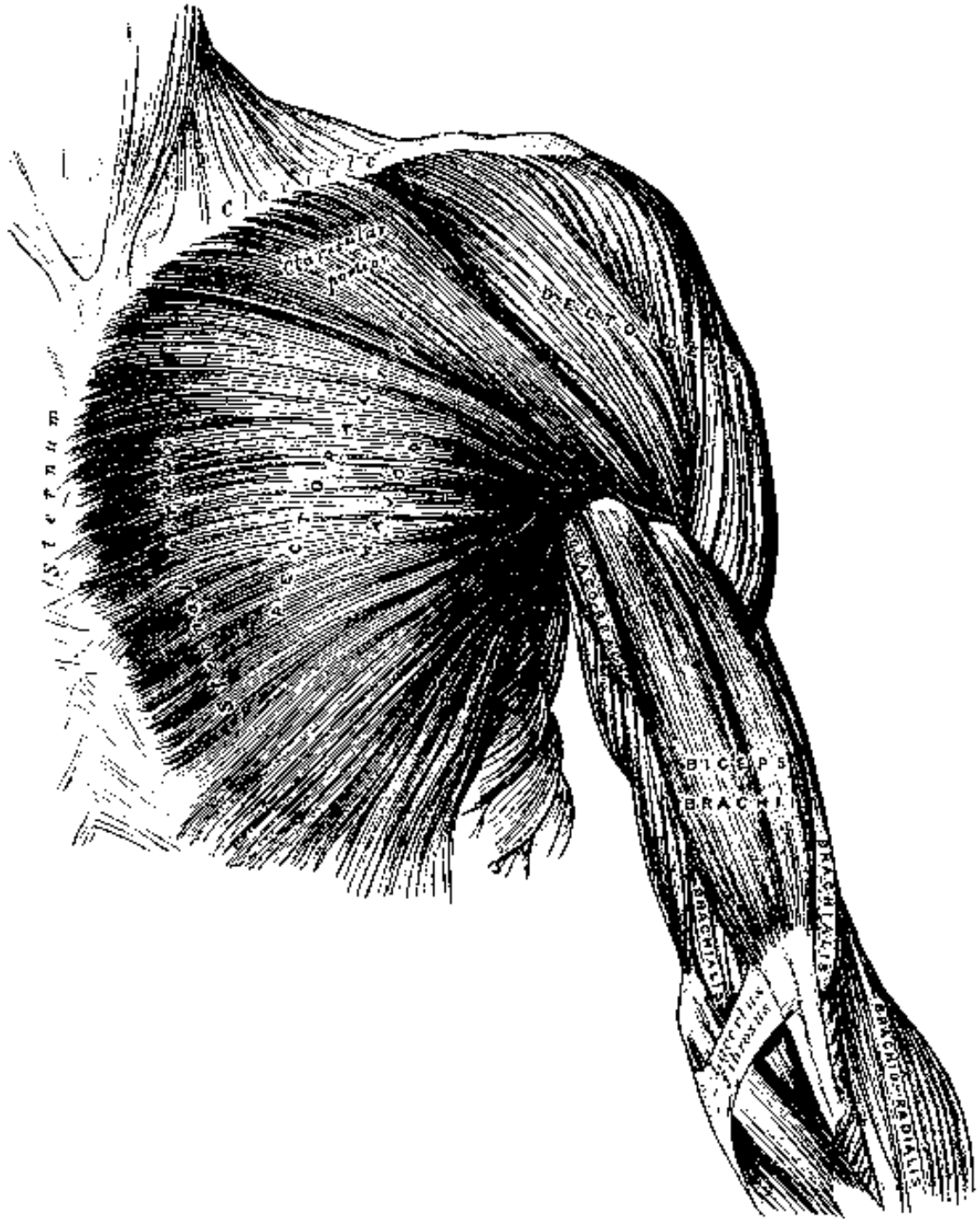
- recinaculum plays more perceptive function, while tendinous expansions are responsible for mechanical transmission of tension
- deep fascia of the limbs is capable of resisting high pressure and traction without break, which is visible in compartment syndrome,
- fascia can be stretched by the contraction of muscles lying underneath and is able to pass on the tension at a distance, so distant muscles remain informed about the current local situation

Schleip:
- Fascia is alive
- Smooth muscle cells, may be responsible for intrafascial pre-tension and may influence musculoskeletal dynamics. Those muscle contract and increase fascial tension
- Ligament contraction, in this process fascia stretched under isometric contracture is followed by increasing resistance.

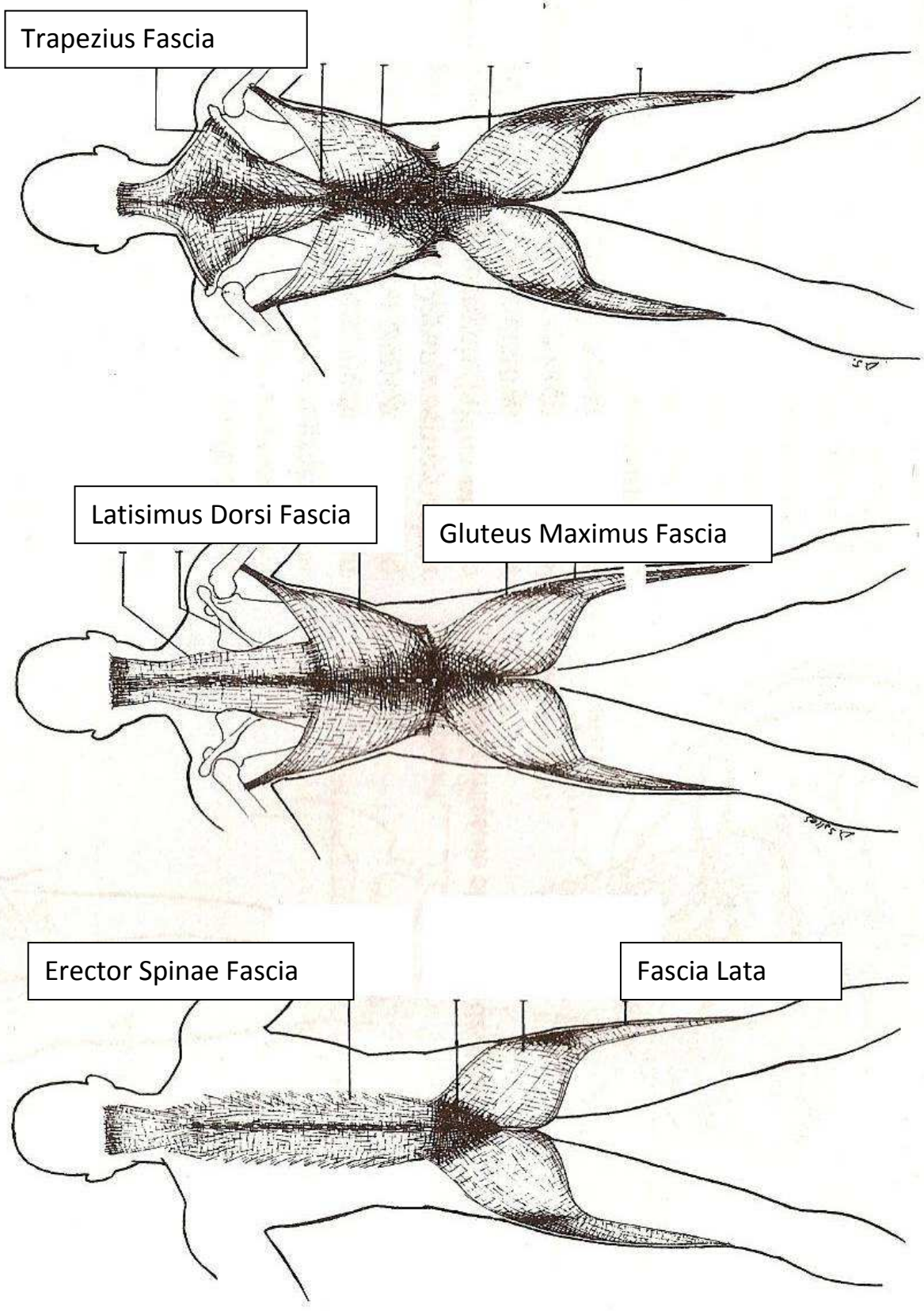
# Fasciae

| Fascia/muscle | Description |
|---|---|
| **Pectoral fascia** | - thin lamina, many elastic fibres, linked together with pectoralis major muscle.<br>- acts as a myofascial unit in conjunction with pectoralis major muscles and activated according to the glenohumeral rhythm<br>- continues towards brachial fascia (clavicular part of pectoralis major goes into anterior brachial fascia, whereas costal part spreads into axillary fascia and then medial brachial fascia and medial intermuscular septum.<br>- deep layer origin on clavicle (covers pectoralis minor and serratus anterior), superficial layer continues as deep cervical fascia (covers pectoralis major, over serratus anterior, envelops latissimus dorsi, trapezius, spreads to gluteus maximus)<br>- laterally continues as deltoid fascia and expands into the brachial fascia, coming over serratus anterior continues with latisimus dorsi.<br>-medially – deep layer attaches to sternum, superficial joins with the pectoral fascia on the other side.<br>- the deepest layer of fascia covers intercostal muscles.<br>- all those muscles have many intersecting untramuscular septa which bond them with their fasciae.<br>- distally, fascia is stronger and more visible as rectus abdominis reinforces fascia with fibrous expansions. |
| **Deltoid fascia** | - adheres firmly to deltoid muscle |
| **Palmaris longus muscle** | - gives some expansions to the flexor retinaculum and fascia over the thenar eminence muscles |
| **Latisimus dorsi muscle** | - expands fibrous lamina to triceps brachial fascia |
| **Biceps brachii muscle** | - expand to the deep fascia of forearm (lacertus fibrosus or bicipital aponeurosis) – proximal antebrachial fascia |
| **Triceps brachii muscle** | - it’s tendon inserts to some extent into the antebrachial fascia |
| **Extensor carpi ulnaris muscle** | - connects by fibrous expansions with the hypothenar eminence |
| **Fascia lata** | - thick autonomous fascia from underlying muscles structures<br>- fascia lata continues with crural fascia, crural fascial envelops the tibialis anterior muscle (Pedrelli et al. 2009) |
| **Deep fascia of thigh** | - thinner in proximal part, thicker near the knee where is reinforced by iliotibial tract<br>- deep fascia of iliopsoas continues of the fascia with rectus femoris (Pedrelli et al. 2009) |
| **Brachial fascia** | - thinner in anterior region, thicker in posterior.<br>- easy to separate from biceps brachii<br>- connected via expansions with pectoralis major, biceps brachii, palmaris longus |
| **Lumbodorsal fascia** | - healthy lumbodorsal fascia, controlled by Lordosis, minimises the stress within the spine (Gracovetsky, S. 2008.) |
| **Antebrachial fascia** | - reinforced by lacertus fibrous and retinacula of the wrist<br>- connected via expansions with pectoralis major, biceps brachii, palmaris longus |

# Pectoral Fascia

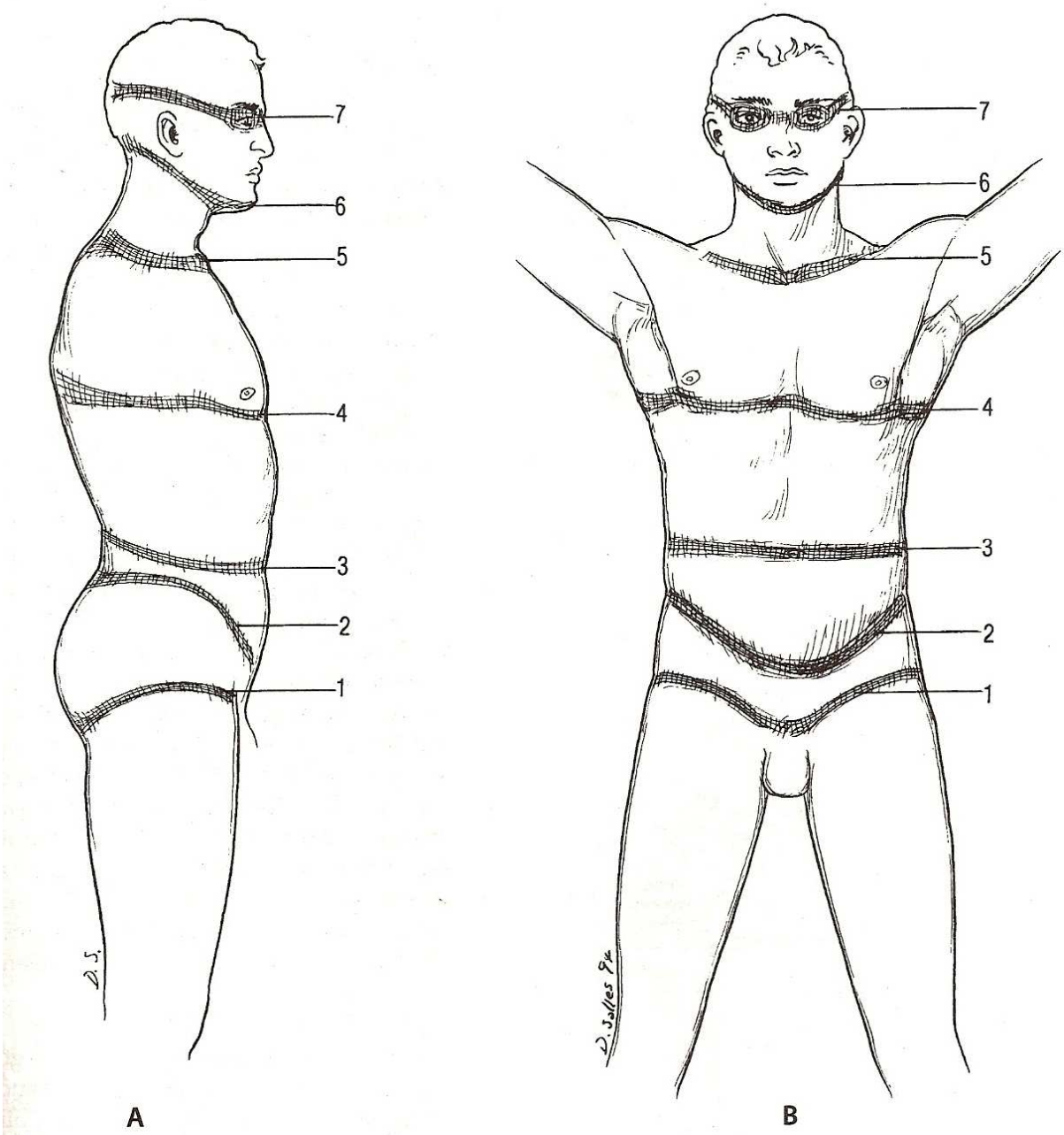


# Fascia of the posterior part of the body



# Retinaculum (strips) of the trunk

- horizontal hollows




1. pubic

- restricted may limit coccyx bone

2. groin

- restricted may limit iliosacral joint

3. abdominal/ navel

- restricted may limit diaphragma

4. pectoral

-restricted may limit scapular movemet

5. clavicular

- restricted may limit upper extremity mobility and breathing

6. submental

- restricted may limit temporomandibular joint (TMJ)

7. ocular

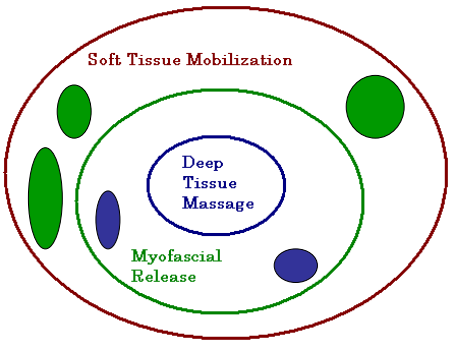
- restricted may cause sight problem

(adapted from Schultz & Rosemary 2009, 59-87)

Introduction to

# Deep Tissue Massage & Myofascial Release

Natalia Kopacz
Fascia & Myofascial Release
Pori
23/30.10.2010




## Indications

- tightening of fascia as a response to trauma, infection, stress, repetitive use, poor posture, surgical scarring
- traditional physical therapy is not effective
- pain is global, complex or specific, which doesn't follow dermatomes
- postural asymmetries
- asymmetrical muscle weakness
- impaired respiration, inflexible rib cage
- frequent intense headaches
  (possible reason: Trigger Points, posterior cerviacal musculature, TMJ dysfunction)
- vertigo, dizziness secondary to TP
- subtle stretching is all an athlete needs to improve performance

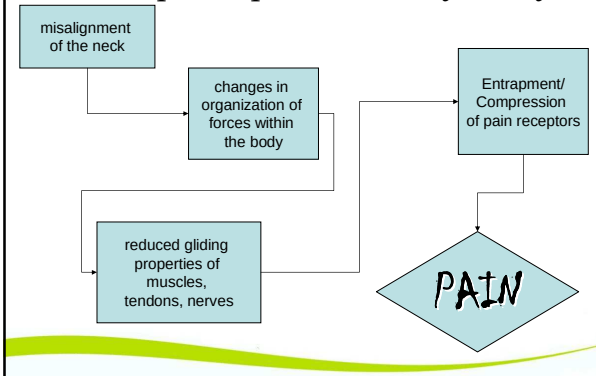
## Deep Tissue Massage

- no sharp definition!
- therapist may use elbows/knuckles/fists to apply slow and deep strokes
- therapist puts emphasis on releasing muscle restrictions and amending the structure
- this massage gives great relaxation and brings longer lasting effects

## Myofascial Release

- Various myofascial unwinding/releasing techniques originated among osteopaths and were described for decades
- To restore the length of fascia!
  (thus relieve the pressure on structures sensitive to pain, as blood vessels and nerves)

## Example of postural assymetry



## Myofascial Release

(viscoelastic and piezoelectric properties of fascia)

- With the first therapist's touch, the elastic elasto-collagen complex is lengthened till the barrier is felt, this is the beginning of collagen deformation
- Myofascial release and stretches the restricted fascia by slow, gentle and sustained pressure (90-120s)
  (pressing too toughly may result in rupture of the fibers)
- When therapist feels the release, he can move further till next blockade
- Gradually patient should report relief, release in the distant point and raised tension under therapist's hand. Each manoeuvre may last even few minutes

## Basic steps of myofascial release

- feedback
- stretch
- hold
- release
- end-feel

## Sensation of release

- Feeling that tightness under the therapist's hand melts away.
- First stretch may spontaneously initiate additional releases.
- Increase of muscle tension may be felt prior to the release.
- Patient may react in different ways, everything individually.
- End feel is a sensation that no unnecessary tension is present in the target tissue.

## Process of change

After release of tightness posture becomes more symmetrical, thus patient may feel a bit uncomfortable due to the fact that muscles start working in unfamiliar alignment.

Even bursae may become irritated and inflamed from unfamiliar forces applied on them.

It takes time for the nervous system to recognize the new posture as more energy efficient and comfortable.

# Therapeutic Session of Deep Tissue Massage combined with Myofascial Release

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## Body Mechanics

Why?

- it's the basis of MR
- simple and effortless for therapist
  (gravity does all the work and allows therapist to remain relaxed even in demanding positions)
- provides oblique entry, which makes the MR comfortable and effective for the client

Latz 2001 & Latz 2003

## Body Mechanics - Principles

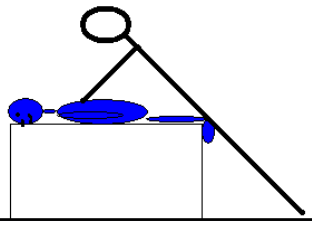
1. Leaning a controlled amount of body weight onto the client
2. Alignment of the therapist body should remain in one straight line
3. Elongation along the alignment
4. Oblique angles of contact
5. Relaxed in body and hands

Apply all of them simultaneously!

Latz 2003

## Body Mechanics - Positions

1. Front position: Lean through the front of the body
2. Side position: Lean through the side of the body



## Working tools

- Elbow
- Forearm
- Fist
- Knuckles
- Fingers
- Little finger hypothernar

NO/VERY LITTLE of THUMBS!!!

## Strokes 1/2

Direction: any direction

Types:

- lenghtening the muscle
(the best in the position of enlenghtened muscle)

- towards the direction of stretch

- across the muscle fiber
  (to release the fibrous tissue & stimulate the creation of collagen, may be uncomfortable for patient, pain may be present for 24 hours after treatment)

## Strokes 2/2

- hook and stretch
  (when single adhesion within muscle)

- separating muscle compartments
(lack of sliding and gliding between muscles)

- releasing strangled muscles
(numerous adhesions)

- fascilitation of muscle shortening

## Positioning the patient

- Supine
- Prone
- Side lying
- Sitting
- Patient moves

## Principles 1/2

**Slowly !!!**

## Principles 2/2

- Goal: to lenghten the contracted fascia
- Fascia is the guide
- Be patient, let the muscle relax on its own
- Never exceed pain tolerance of the patient.
- Work with the patient, not on the patient.
- Therapist has to accept patients state of being as normal for him.

## Practical guidelines from Schleip:

- he encourages the interaction between client and therapist (e.g. ask client about some micromovent during soft tissue manipulation).
- first attention to the improperly shortened muscles
  (the primary principle of MR is to soften tight tissues)
- pay attention to the antagonist muscles of affected joint
  (agonists and antagonists of specific joint are linked by spinal and supraspial reflexes and feedback loops)
- dedicate more time to denser tissues like plantar fascia
- give high attention to face and hands
  (they hold 2/3 of the image of the body: if it's possible to relax them first, it is more likely that it will spread on the rest of the body)
- abdomen and pelvis
  (deep pressure on visceral nerves and pelvis is proved to increase vagal tonus, thus general relaxation)

## Pain during the session

Make the patient inform you, when the pain is more then 7 out of 10
(7 on the VAS scale tends to be the border)

Effect of too rapid movements/strokes
- Slow down!

Piercing pain or going numb mean that some nerve got irritated
- Stop deep work on that area

## Precautions

- Patients should remain lying for 10-15min after treatment (MR may lower blood pressure)
- MR may lower blood sugar level
- MR can be applied to uninvolved areas of compromised circulation
- Some patients bruise easily
- Responsible adult should be present when treating child or mentally incompetent

## Adverse effects

Adverse events after therapeutic sessions may occur, so it is important to inform the patient about this possibility. They can be divided into major, moderate and minor, and can range from cervical artery dissection, to bruising and muscle soreness.

According to the studies, minor and short-lived events, which appear after 24hour and resolve within 72 hours, are experienced by almost half of patients

The risk of serious event remains very low

## Therapeutic Environment

- Massage table hight
- Therapist's clothing (comfortable)
- Patient's clothing (minimal)
- Amount of oil - not too much
- Quiet room
- Appropriate lighting
- No irrelevant objects

## Non-verbal communication

- continuous (lasts even when stop speaking)
- out of awareness (subconscious, it says what don't want to be said)
- mistakes are more powerful
- no training is given, to be learned indirectly by observation

Spatial zones:

| | | |
|---|---|---|
| public space | >3.7m | |
| social space | 1.2-3.7m | |
| personal space | 0.5-1.2m | |
| intimate | <0.5m | important relationship communication |

Touch – powerful means of communication
Females touch and are touched more frequently than males.

## How to practice your 'touch'?

- Take a treatment from reliable specialists
- Educate yourself (be open to other disciplines)
- Take private lessons
- Practice palpation
- selt-palpation

# Deep Tissue Massage

# &

# Myofascial Release

**part 2**

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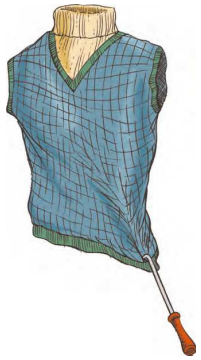
## The fascial sweater



Myofascial Release gathers various approaches and techniques which share the same aim to work with tissue-based restrictions, therefore any technique releasing the fascial limitation is a form of Myofascial Release.

(Grant & Riggs 2009 )

The aim:

TO RESTORE THE LENGHT OF FASCIA!

## Desired outcomes

- Decreased pain
- Re-aligned soft tissue
- Broken adhesions
- Increased range of motion, greater flexibility
- Improved circulation
- Improved athletic performance
- Removed cellular exudates
- Decreased muscle spasm
- Relaxation

## Is it fascia, or what?

- Working on muscles – you affect the fascia. Working on fascia – you affect muscles.
- When addressing a certain muscle, it should be understood as referral to the muscle and all fasciae connected to it.
- Think locally, act globally!

## Place of Myofascial Release in physiotherapy

- Combine it with other treatment methods
- Maybe manual therapy will be needed
- Therapeutic exercises (homework!)
- Health Promotion
- Physical activity

## Body Reading

- A part of clinical reasoning process
- Musculoskeletal assessment
- Look for shortened muscles

  [Little can be done to strenghten the weak muscles before the shorter ones are not normalized]

## Body Reading: Upper-crossed syndrome

**Result:**
Shoulders and head forward
Shortened posterior neck musculature

**Short and tight:**
- Pectoralis major and minor
- Upper trapezius
- Levator scapulae
- sternocleidomastoideus

vs.

**Weak and long:**
- lower and middle trapezius
- serratus anterior
- rhomboids

## Body Reading: Lower-crossed syndrome

**Result:**
Lordosis
Anterior pelvic tilt

**Short and tight:**
- Iliopsoas
- Rectus femoris
- Tensor fascia latae
- Short hip adductors
- Erector spinae

**Weak and long:**
- abdominal
- gluteal muscles

- **Postural muscles tend to shorten into dysfucntion**:
  - Gastrocnemius
  - Soleus
  - Hamstrings
  - Short hip adductors
  - Psoas
  - Piriformis
  - Tensor fascia latae
  - Quadratus lumborum
  - Erector spinae
  - Latissimus dorsi
  - Upper trapezius
  - Sternocleidomastoideus
  - Levator scapulae
  - Pectoralis major
  - Arm flexors

- **Phasic muscles (fast-twich fibers) tend to get weaken**
  - serratus anterior
  - rhomboids
  - middle and lower trapeziuz
  - triceps
  - gluteus maximus and medius
  - transverse abdominis
  - rectus abdominis
  - external and internal oblique
  - vastus medialis

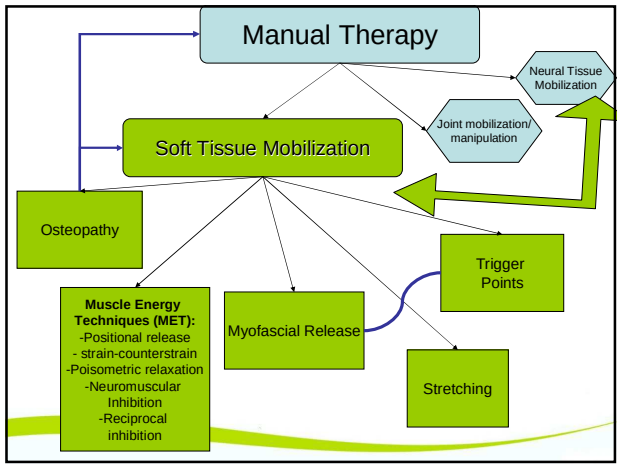
## Contraindications or great care

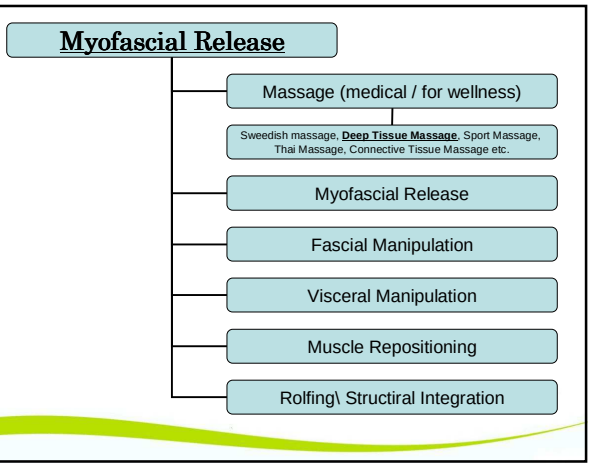
- Acute inflammation
- Client use of anticoagulant medications (medication increases susceptibility to bruising)
- Cellulitis (immediate medical referral) – it is a potentially serious bacterial infection of the skin
- Deep vein thrombosis
- Fractures of bones (local)
- Heart attack symptoms
- Hematoma (local)
- History of an aneurism (medical consent)
- History of arterial dissection (medical consent)

## Contraindications or great care

- Hypermobility of joints (local)
- Malignancy (local, medical consent)
- Osteomyelitis (infection)
- Osteoporosis, especially in ribs and vertebrae
- Rheumatoid arthritis
- Severe edema (cautionary, medical consent).
- Skin sensitivity (cautionary)
- Acute strain or sprain (local)
- Stroke indications (dizziness, unexplained sharp headache, visual distortions)
- Varicose veins (local)

# Variety of techniques and methods of Soft Tissue Mobilization practised worldwide




## Reliable sources

- **Deep Tissue Massage**
  www.deeptissuemassagemanual.com
  book: Art Riggs. The Manual: A Visual Guide to ´Therapy Techniques
- **Anatomy Trains**
  http://www.anatomytrains.com
  book: Tom Myers. Anatomy Trains
- **Myofascial Release**
  http://www.myofascial-release.com
  book: Carol Manheim. The Myofascial Release Manual.
- Rolf Institute
- IASI Internationan Association of Structural Integrators
- myofascialresource.com

# T. Myers: 'Anatomy Trains'

## - Myofascial continuity

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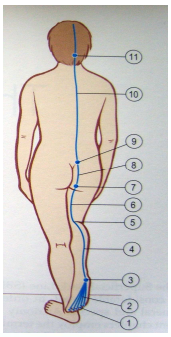
## Anatomy Trains

1. Superficial Back Line
2. Superficial Front Line
3. Lateral Line (both sides)
4. Spiral Line (front/back)
5. Arm Lines (deep front/superficial front/ deep back/ superficial back)
6. Deep Front Line
7. Functional Line

## 1. SBL: Superficial Back Line



| Bony Stations | | Myofascial track |
|---|---|---|
| Frontal bone, supraorbital bone | 13 | |
| | 12 | Galea aponeurotica/ epicranial spinae |
| Occipital ridge | 11 | |
| | 10 | Sacrolumbar fascia/ erector spinae |
| Sacrum | 9 | |
| | 8 | Sacrotuberous ligement |
| Ischial tuberosity | 7 | |
| | 6 | Hamstrings |
| Condyles of femur | 5 | |
| | 4 | Gastrocnemius/ Achilles tendon |
| Calcaneus | 3 | |
| | 2 | Plantar fascia and short toe flexors |
| Plantar surface of toe phalanges | 1 | |

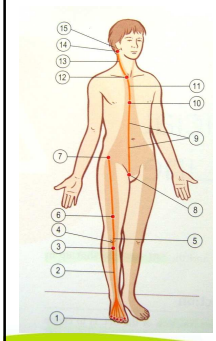
## SBL : Superficial Back Line

Two lines: right and left

What is it for?
- Support the body in extension (endurance oriented)
- Prevent from flexion

Postural compensations:
- Ankle dorsiflexion limitation
- Knee hyperextension
- Hamstring shortness
- Anterior pelvic shift
- Sacral nutation
- Extensor widening in thoracic flexion
- Suboccipital limitaion leading to upper cervical hyperextension
- Anterior shift/rotation of the occiput on the atlas
- Eye-spine movement disconection

# 2. SFL: Superficial Front Line



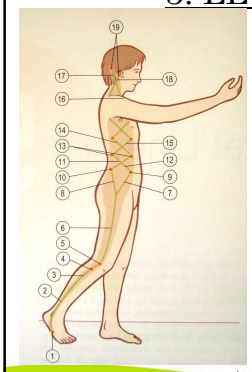
| Bony Stations | | Myofascial track |
|---|---|---|
| | 15 | Scalp fascia |
| Mastoid process | 14 | |
| | 13 | Sternocleidomastoid |
| Sternal manubrium | 12 | |
| | 11 | Sternalis/ sternochondral fascia |
| 5th rib | 10 | |
| | 9 | Rectus abdominis |
| Pubic tubercle | 8 | |
| Anterior Inferior Iliac Spine | 7 | |
| | 6 | Rectus femoris/ quadriceps |
| Patella | 5 | |
| | 4 | Subpatellar tendon |
| Tibial tuberosity | 3 | |
| | 2 | Short and long toe extensors, Tibialis anterior, Anterior crural compartment |
| Dorsal Surface of toe phalanges | 1 | |

# SFL: Superficial Front Line

What if it for?
- Flexion of the trunk, hips
- Extension of the knee
- Dorsiflexion of the foot
- Sudden and strong flexion movements (fast-twitch muscle fibres)

Postural Compensations:
- Ankle plantar flexion limitation
- Knee hyperextension
- Anterior pelvic tilt
- Anterior pelvic shoft
- Anterior rib and breathing restriction
- Forward head posture

# 3. LL: Lateral Line



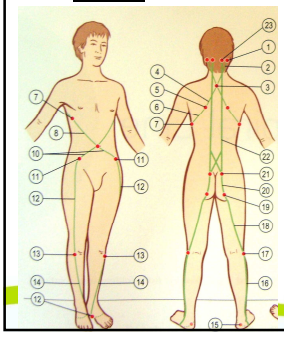
| Bony Stations | | Myofascial track |
|---|---|---|
| Occipital rigde | 19 | |
| | 17, 18 | Splenius capitis, Sternocleidomastoid |
| 1st and 2nd ribs | 16 | |
| | 14, 15 | External and internal intercostals |
| Ribs | 13 | |
| | 11, 12 | Lateral abdominal obliques |
| Iliac crest, ASIS, PSIS | 9, 10 | |
| | 8 | Gluteus maximus |
| | 7 | Tensor fascia latae |
| | 6 | Iliotibial tract/ abductor muscles |
| Lateral tibial condyle | 5 | |
| | 4 | Anterior ligament of head of fibula |
| Fibular head | 3 | |
| | 2 | Peroneal muscles, Lateral crural compartment |
| 1st and 5th metatarsal bases | 1 | |

# LL: Lateral Line

What is it for?
- Lateral flexion of the trung
- Abduction of the hip
- Eversion of the foot

Postural compensations:
- Ankle pronation/ supination
- Ankle dorsiflexion limitation
- Genu varus/valgus
- Adduction restriction/ chronic abducor contraction
- Lumbar side-bend or lumbar compression (bilateral LL contraction)
- Rib cage shift on pelvis
- Shortening of depth between sternum and sacrum
- Shoulder restriction (over-involvment with head stability)

# 4. SL: Spiral Line



| Bony Stations | | Myofascial track |
|---|---|---|
| Occipital ridge/ Mastoid process atlas/axis TPs | 1 | |
| | 2 | Splenius capitis and cervicis |
| Lower cervical/upper thoracic SPs | 3 | |
| | 4 | Rhomboids major and minor |
| Medial border of scapula | 5 | |
| | 6 | Serratus anterior |
| Lateral ribs | 7 | |
| | 8 | External oblique |
| | 9 | Abdominal aponeurosis, Iliotibial tract |
| | 10 | Internal oblique |
| Iliac crest/ ASIS | 11 | |
| | 12 | Tensor fascia latae, Iliotibial tract |
| Lateral tibial condyle | 13 | |
| | 14 | Tibialis anterior |
| 1st metatarsal base | 15 | |
| | 16 | Peroneus longus |
| Fibular head | 17 | |
| | 18 | Biceps femoris |
| Ischial tuberosity | 19 | |
| | 20 | Sacrotuberous ligament |
| Sacrum | 21 | |
| | 22 | Sacrolumbar fascia, Erector spinae |
| Occipital ridge | 23 | |

# SL: Spiral Line

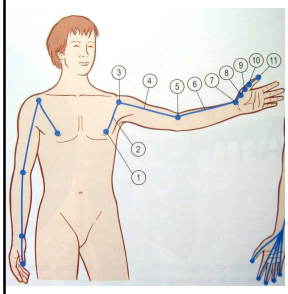
What is it for?
- Rotation of the body

Postural compensations:
- Ankle pronation/ supination
- Pelvic rotation on feet
- Rib rotation on pelvis
- One shoulder lifted
- Shoulder anteriorly shifted
- Head tilt, shift or rotation

# 5. Arm Lines

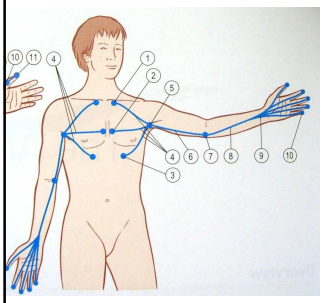
- Deep Front Arm Line
- Superficial Front Arm Line
- Deep Back Arm Line
- Superficial Back Arm Line

# DFAL: Deep Front Arm Line



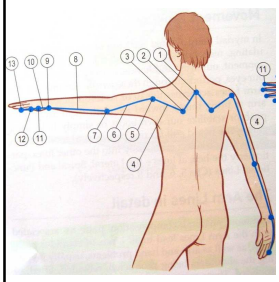
| Bony Stations | | Myofascial track |
|---|---|---|
| 3rd, 4th, 5th ribs | 1 | |
| | 2 | Pectoralis minor, Clavicopectoral fascia |
| Coracoid process | 3 | |
| | 4 | Biceps brachii |
| Radial tuberosity | 5 | |
| | 6 | Radial periosteum, Anterior border |
| Styloid process of radius | 7 | |
| | 8 | Radial collateral ligaments, Thenar muscles |
| Scaphoid, trapezium | 9 | |
| Outside of thumb | 10 | |

# SFAL: Superficial front arm line



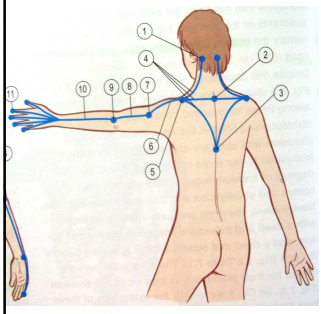
| Bony Stations | | Myofascial track |
|---|---|---|
| Medial third of clavicle, Costal cartilages, Thoracolumbar fascia, Iliac crest | 1, 2, 3 | |
| | 4 | Pectoralis major, Lattisimus dorsi |
| Medial humeral line | 5 | |
| | 6 | Medial intermuscular septum |
| Medial humeral epicondyle | 7 | |
| | 8 | Flexor group |
| | 9 | Carpal tunnel |
| Palmar surface of fingers | 10 | |

# DBAL: Deep Back Arm Line



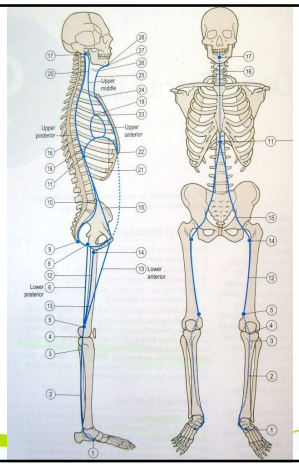
| Bony Stations | | Myofascial track |
|---|---|---|
| Spinosus process of lower cervicals and upper thoracic, C1-C4 TPs | 1 | |
| | 2 | Rhomboids Levator scapulae |
| Medial border of scapula | 3 | |
| | 4 | Rotator cuff muscles |
| Head of humerus | 5 | |
| | 6 | Triceps brachii |
| Oleacron of ulna | 7 | |
| | 8 | Ulnar periosteum |
| Styloid process of unla | 9 | |
| | 10 | Ulnar collateral ligaments |
| Triquetrum, hamate | 11 | |
| | 12 | Hypothenar muscles |
| Outisde of little finger | 13 | |

# SBAR: Superficial Back Arm Line



| Bony Stations | | Myofascial track |
|---|---|---|
| Occipital ridge, nuchal ligament, thoracic spinosus processes | 1, 2, 3 | |
| | 4 | Trapezius |
| Spine of scapula, acromiom, lateral third of clavicle | 5 | |
| | 6 | Deltoid |
| Deltoid tubercle of humerus | 7 | |
| | 8 | Lateral intermuscular septum |
| Lateral epicondyle of humerus | 9 | |
| | 10 | Extensor group |
| Dorsal surface of fingers | 11 | |

# Deep Front Line



## 6. DFL: Deep Front Line I

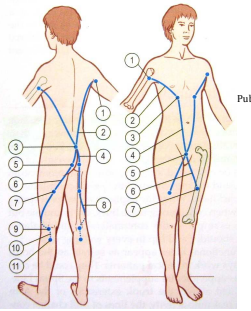
| Bony Stations | | Myofascial track |
|---|---|---|
| Plantar tarsal bones, Plantar surface of toes | 1 | |
| | 2 | Tibialis posterior, long toe flexors |
| Superior/posterior tibia/fibula | 3 | |
| | 4 | Fascia of popliteus, knee capsule |
| Medial femoral epicondyle | 5 | |
| *Lower posterior* | | |
| Medial femoral epicondyle | 5 | |
| | 6 | Posterior intermuscular septum, Adductor magnus and minimus |
| Ischial ramus | 7 | |
| | 8 | Pelvic floor fascia, levator ani, Obturator internus fascia |
| Coccyx | 9 | |
| | 10 | Anterior sacral fascia, Anterior longitudinal ligament |
| Lumbar vertebral bodies | 11 | |
| *Lower anterior* | | |
| Medial femoral epicondyle | 5 | |
| Linea aspera of femur | 12 | |
| | 13 | Anterior intermuscular septum, adductor brevis, longus |
| Lesser trocheanter of femur | 14 | |
| | 15 | Psoas, iliacus, pectineus, femoral triangle |
| Lumbar vertebral bodies and TPs | 11 | |

## DFL: Deep Front Line II

| | | |
|---|---|---|
| *Upper posterior* | | |
| Lumbar vertebral bodies | 11 | |
| | 16 | Anterior longitudinal ligament, longus colli and capitis |
| Basilar portion of occiput | 17 | |
| *Upper middle* | | |
| Lumbar vertebral bodies | 11 | |
| | 18 | Posterior diaphragm, crura of diaphragm, central tendon |
| | 19 | Pericardium, mediastinum, parietal pleura |
| | 20 | Fascia prevertebralis, pharyngeal raphe, Scalene muscles, medial scalene fascia |
| Basilar portion of occiput, cervical Ps | 17 | |
| *Upper anterior* | | |
| Lumbar vertebral bodies | 11 | |
| | 18 | Posterior diaphragm, crura of diaphragm, central tendon |
| | 21 | Anterior diaphragm |
| Posterior surface of subcostal, cartilages, xiphoid process | 22 | |
| | 23 | Fascia endothoracica, transversus thoracis |
| Posterior manubrin | 24 | |
| | 25 | Infrahyoid muscles, fascia pretrachialis |
| Hyoid bone | 26 | |
| | 27 | Suprahyoid bone |
| Mandible | 28 | |

## 7. Functional Lines

- Front Functional Line
- Back Functional Line



### Front Functional Line

| Bony Stations | | Myofascial track |
|---|---|---|
| Shaft of humerus | 1 | |
| | 2 | Lower edge of pectoralis major |
| 5th rib and 6th rib cartilage | 3 | |
| | 4 | Lateral sheath of rectus abdominis |
| Pubic tubercle and symphysis | 5 | |
| | 6 | Adductor longus |
| Lines aspera of femur | 7 | |

### Back Funcional Line

| | | |
|---|---|---|
| Shaft of humerus | 1 | |
| | 2 | Lattisimus dorsi |
| | 3 | Lumbodorsal fascia |
| | 4 | Sacral fascia |
| Sacrum | 5 | |
| | 6 | Gluteus maximus |
| Shaft of femur | 7 | |
| | 8 | Vastus lateralis |
| Patella | 9 | |
| | 10 | Subpatellar tendon |
| Tuberosity of tibia | 11 | |

# Body-reading

APPENDIX 8

'It's not there, where you think it is'
dr Ida Rolf

| **Diagnose** | **Possible problem** | **Work on:** |
|---|---|---|
| **FOOT + ANKLE** | | |
| High arch | - shortened perounei muscles, iliotibial tract, lateral side of hip | inner longitudinal arch of foot |
| Low arch | - shortened adductors | outer longitudinal arch of foot |
| Pronated foot (eversion) | - tiabialis anterior long + peroneus longus short | |
| Supinated foot (inversion) | - tiabialis anterior short + peroneus longus long | |
| Limited Plantar fascia | - limited dorsiflexion, tight hamstrings, lumbar lordosis, resistant hyperextension in upper cervicals | SBL |
| Ankle plantar flexion limitation | - restriced extensor retinaculum<br>- tight anterior crural compartment | SFL |
| heel spur/ plantar fascitis | - plantar fascia | |
| **KNEE + THIGH** | | |
| Chronicly flexed knees | - biceps femoris short head | |
| Tibia medially rotated | - tight medial hamstrings (semitendinosus, semimebranosus) | SBL |
| Laterally rotated fibia | - biceps femoris short head | SCL |
| Knee hyperextension | - tight quadriceps | SBL/SFL |
| Hamstring shortness | | SBL |
| Abductor contraction | - adduction restriction | ITT<br>work distally, to decompress hip joint |
| Short adductors | - rotational tension in the whole leg | |
| **PELVIS** | | |
| Posteriorly tilted pelvis | - adductor magnus | |
| Inablity for hip to flex properly | - adductor magnus | |
| Aterior shift of pelvis | - tight SBL | |
| Sciatica | - tensed piriform | |
| **LOW & MIDDLE BACK** | | |
| Problems with side flexion and rotation | - unilateral contraction of quadratum lumborum | |
| Rotation of spine and pelvis | - unilateral contraction of iliacus | |
| Hyper lordosis | - bilateral contraction of iliacus | |
| Problem with sacrum | - uni/bilateral contraction os psoas | |
| Extensor widening in thoracic flexion | SBL | |

| | | |
|---|---|---|
| **SHOULDER & SCAPULA** | | |
| Anterior tilt of scapula | - pectoralis minor short + lower trapezius long | |
| Scapula anteriorly tilted, shoulders protracted | - pectoralis minor | DFAL |
| Shoulder problems (protracted/retracted/lifted/rounded) | - arm lines | |
| Kyphotic spine, scapula away from spine | - rhomboids long + serratus short (SL) | |
| Flat back, scapula high | - serraus long + rhomboids long (SL) | |
| Compressed shoulder joint (painful/restricted range of movement) | - rotator cuff | |
| **CHEST** | | |
| Anterior ribs and breathing restriction | - rectus abdominis pulls down the ribs instead of puling up the pelvis | (SFL) |
| Affected breathing, neck, head posture | - pectoralis minor | |
| **NECK & HEAD** | | |
| Forward head posture/ hyperextended upper cervical | - tensed upper DFAL | DFAL |
| Hyperextension of neck (upper cervical hyperextension) | - suboccipitals (SBL)<br>- sternocleidomastoid (SFL) | |
| Imbalance in support of head | - splenius capitis vs. SCM | (LL) |
| Head forward | - shoulder girdle with the stability of the head on the trunk | (LL) |
| Lower cervicals into flexion | - anterior scalene | (LL) |

*Based on Myers T. 'Anatomy Trains', Riggs A. 'Deep Tissue Massage'*

| **Problem** | **Possible compensation** |
|---|---|
| Carpal tunnel syndrome | Neck and shoulders |
| Twisted ankle | 12th rib |
| sciatica | Lumbar vertebraes<br>Thoracic crossing<br>TMJ joint<br>Shorter leg<br>Lumbar muscle |
| Knee pain | Hip, Ankle (sometimes) |
| Shoulder bursitis | Ribs and diaphragma<br>Little finger |
| Tennis elbow | wrist |

*(Compensations based on* Schultz & Rosemary 2009)

# CONTRAINDICATIONS AND CAUTIONS FOR DEEP BODYWORK

Robert Schleip
in collaboration with Til Luchau and John Schewe
9th edition, May 2008

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**Atherosclerosis** - a build-up of plaque in artery walls. Care needs to be taken so that any thrombi are not dislodged (See under 'Embolism and Thrombi')

**Arteriosclerosis** - hardening of the arteries. Care is needed because there is usually some atherosclerosis and high blood pressure associated with this. No bodywork in advanced stages. Get medical clearance for your work if the client takes medication for circulatory problems.

**Autoimmune diseases**
The immune system produces antibodies against the body's own tissues. Don't work on acutely inflamed tissues.
a) Lupus - attacks the connective tissue mainly in the skin, kidneys, joints and heart. Contraindicated during acute flares.
b) Rheumatoid arthritis - immune system attacks the joints, and its associated muscles, tendons, ligaments and blood vessels;
contraindicated during inflammatory stage. (Note: With "osteoarthritis" deep bodywork tends to be more successful).
c) Scleroderma ("hardened skin") - a buildup of collagen fibers around organs (problems with absorption when around the small intestines) and
in the dermis of the skin; increasing stiffness at joints along with muscle weakness. Contraindicated during inflammatory phase.
d) Ankylosing spondylitis - inflammation of tissues around the spine causing the connective tissues of the sacrum and spine to solidify. Don't work on areas of pain and inflammation in acute episodes.

**Bipolar Disorder** (manic –depressive): during manic phase, deep bodywork could be contraindicated, since it could then increase the amplitude of the extreme mood-swings.

**Borderline** (as psychological diagnosis, originally understood as diagnosis for clients on the border between neurosis and full psychosis): Be careful. There have been (very) few reports about deep work triggering a psychotic episode. Full psychosis is in most cases a contraindication, and of course should be performed with supervision by a psychiatrist.

**Cerebral Palsy:** Result of Cerebral Palsy & Rolfing® study: in mild and moderate cases Rolfing® helpful; serious cases might get worse. Most recent science info: connective tissue restrictions more important factor in CP patients than was thought before (e.g. tissue shortness in the triceps surae often limits walking ability in terms of very limited dorsiflexion mobility of the feet).

**Cancer**: Connective tissue can often act as a barrier to the spread of cancer by encapsulating the cancerous cells. The problem is that deep work could theoretically cause the cancerous cells to metastasize (move through circulatory or lymphatic system to other places in the body). Usually okay if the person has a clean bill of health for 5 years. Pay special attention to lumps in abdomen, or lymph nodes in groin or armpit. (Lumps in abdomen could be hard feces. Let client monitor it: if no change after 3 days, perhaps have it examined). After mastectomy: check with doctor whether massage in the area (incl. the arm) is indicated. Sometimes it is not advisable to increase the lymphatic flow in that area.

**Connective tissue disease**: E.g. osteomyelitis, lupus, scleroderma: no deep work.

**Diabetes:** Be careful about tissue condition and loss of sensation. Don't do deep work on area of recent insulin injection: could accelerate Insulin uptake.

**Embolism or Thrombus:** a) Venous emboli - usually land in the lungs causing pulmonary embolism. b) Arterial emboli - can lodge themselves in the coronary arteries (heart attack); the brain (stroke), the kidneys, or the legs (phlebitis). Deep bodywork is usually contraindicated because of the risk of dislodging a thrombus. If the client takes blood thinners as a medical precaution against clotting, ask for a medical clearance for any kind of deep tissue work affecting the circulatory system. This precaution is even more strongly advocated in clients who have had a pulmonary embolus, or have had a Greenfield filter installed (a filter in the vena cava to prevent blood clots from reaching the lungs).

**Epileptics**: avoid hyperventilation

**Headaches:** Some types of headaches get worse with any kind of massage around the head/neck/shoulder area. This is quite common for migraines in the acute stage, probably due to infection and/or CNS over-stimulation. If the client has previous experience with receiving massage as a remedial treatment, they can often tell whether it is helpful or not to work on their upper body. Tension headaches (which are usually more bilateral) tend to respond more positively.

**Heart conditions:** OK. if not restricted from exercise (if fingernails get purple or blue, stay off)

**Hemangioma:** These are congenital benign tumors, made up of newly formed blood vessels. Different types, usually on the skin, yet sometimes also in brain and viscera. Specially in cases of known visceral type (e.g. hepatic hemangioma) no deep work in this area because of the severe danger of internal bleeding.

**Herpes** (and other potentially infectious skin conditions, including warts): Don't touch infected areas.

**High blood pressure (extreme):** Don't work in way that makes clients hold breath. Deep work on uncontrolled high blood pressure patients should be with medical supervision (deep bodywork often RAISES blood pressure).

**Impaired elimination systems:** Use caution with colostomies, Candida, kidney, and liver issues; careful. More spacing between sessions

**Intervertebral disc problems:** With non-acute cases, avoid shearing motions and extreme bending. Don't decompensate a stable system.
With acute cases: although bodywork can help creating space for the retreat of the tissue and to resolve some of the secondary compensations, be very careful and don’t work on the affected segment alone since local muscle spasms may have developed there as an important protection for the slipped disk. Releasing this muscular bracing too soon may put the client in danger. .

**I.U.D.:** Be careful with any deep abdominal work in female clients which use an intra-uterine device for birth control. It is possible that an I.U.D may become displaced, possibly leading to complications.

**Menstruation (if strong):** If the client tends to have very strong menstruation symptoms with high amount of blood loss, any kind of deep tissue work or even massage in the area of pelvis, abdomen and thighs - if done around the days of the client's period - can sometimes increase circulation and therefore the severity of the menstruation. Conclusion: either give the client the option to cancel a session for that reason if the date collides with a strong period at the same time; or give only a very gentle movement awareness session which does not tend to increase circulation in the pelvic region.

**Nose work, special conditions:** For any intranasal work be especially careful with regular cocaine users, nasal polyps, and nose surgery including cosmetic surgery.

**Pain medication:** Use caution regarding reduced sensation and greater possibility of tissue or nerve damage. (Same with paresthesia)

**Pregnancy:** Rule of thumb: no deep work. Be aware: danger of triggering a miscarriage by strong myofascial work is greatest during first 3 months (specially through work around the pelvis, abdomen, adductors, medial legs, or feet). Later in pregnancy this gets less likely. If you work with somebody who is pregnant, you may want to have them sign a form that they are aware of the increased risks and still want to get deep work from you, etc.

**Varicose veins:** Don't work veins.

**Whiplash:** If inflamed, it might get worse.

**No deep work with:**
* **Abscess teeth** (mouth work)
* **Aneurysm**
* **Bone fractures or acute soft tissue injuries**: wait for full healing (6 weeks - 3 months)
* **Clients on Cortisone** (wait 2-3 months)
* **Feverish clients**
* **Hemophiliacs**
* **Hodgkin's disease** (cancer of lymph system)
* **Inflammatory conditions** (includes such things as tendonitis and bursitis; contraindicated during acute stages; work peripheral to site possible when inflammation has subsided)
* **Infectious conditions** (with some exceptions, like HIV: get medical supervision)
* **Leukemia**
* **Osteoporosis** (usually post-menopausal women)
*** Phlebitis:** same risk as for 'embolism or thrombus'
* **Recent scar tissue** (including regular or plastic surgeries): no work on this area until scarring process is complete (usually at least 6 weeks)

**Cautions**
Unless you are legally licensed to practice healing:
1. Don't prescribe, not even vitamin C.
2. Never label or name any condition, don't diagnose (yet you can refer to a previous diagnosis of a medical doctor)
3. Be careful with people who are in psychotherapy or are seeing a doctor. (Their psychotherapist or physician should know they are getting bodywork).

**In General**
Ask about medical history (including medications) before work begins. If ever in doubt, get medical supervision.
**Be careful if:**
- Patient doesn't tolerate close contact
- Patient doesn't respect boundaries
- Patient doesn't understand the "good hurt" concept
- Patient is under influence of drugs/alcohol
- Patient doesn't trust the therapist
- Therapist doesn't feel comfortable to treat the Patient
- mental status of Patient doesn't allow him to give clear consent

**Literature recommendation:**
Best book: Ruth Werner & Ben E. Benjamin; **A Massage Therapist's Guide to Pathology**, Williams & Wilkins 1998, US $37. (Discusses more than a 100 common medical conditions and what a bodywork practitioner should know when dealing with them. Includes clear guidelines if or how massage is indicated or contraindicated. Extremely useful and worth the price!). Click here for the 'Quick Reference Chart' of this book.

Best journal paper: Keith Eric Grant; Massage safety: injuries reported in Medline relating to the practice of therapeutic massage—1965–2003. Journal of Bodywork and Movement Therapies 7(4).207-212; 2003.
To quote from the conclusions of this excellent paper:
*"1. Practitioners should inquire if clients are being treated with anticoagulants, to avoid using pressure or friction likely to lead to excessive bruising or hematomas.*
*2. Practitioners should inquire if clients have medical appliances or implants such as stents, to avoid the risk of displacement or damage.*
*3. Work done over a contusion or hematoma should be limited to lymphatic drainage, to avoid further tissue damage.*
*4. Caution should be used not to impinge superficial nerves against underlying bone with excessive pressure or friction.*
*5. Care should be taken with the vertebral artery as it runs through the transverse foramina of C5/C6 to C2, and particularly with the posteriolateral loop of the artery superior to C2. Although massage therapists do not use high velocity-low amplitude techniques, sudden or extreme cervical hyperextension with rotation that could lead to vertebral artery compression should be avoided. Immediate attention should be paid to symptoms of sudden headache, dizziness, vertigo, slurred speech, or loss of consciousness. Excessively deep or repetitive friction over the posteriolateral loop should be avoided.*
*6. Training programs should insure that training in anatomical knowledge and technique is interspersed with practical experience sufficient to develop good kinesthetic/palpatory skills, awareness of client response, and clinical humility."*

**Closing Remark**:
Previous editions of this paper contained some suggestions on HOW to best work with some of the above and other medical conditions. Later several other practitioners added their personal suggestions on this aspect. Soon it became apparent that there are almost as many different treatment suggestions to each of those conditions as there are different adjunct therapies represented within our community (craniosacral, herbology, visceral manipulation, psycho-emotional, atlas-chiropractic, etc.). Therefore this article is now limited only to where and how NOT to work.
All of the above is the private opinion of the authors based on their knowledge and clinical experience as advanced Rolfing® practitioners. It is published here in order to stimulate further discussion and development. It will be updated and improved from time to time; i.e. this paper is a continuous work in process. For any additions and suggestions please contact the authors.
No legal liability on the information of this article is intended or accepted by the authors. If you are not a licensed medical practitioner you are legally obliged to consult an M.D. for any medical diagnosis.
In describing contraindications for deep tissue work it is NOT assumed that Structural Integration or any other modality is a medically oriented healing modality. Whether it is depends on other factors like the qualification and intention of the practitioner and the working contract or agreement with the client. Deep tissue practices like Structural Integration or Myofascial Release are very often used not as a medical healing modality but as a holistic method for increasing the sense of aliveness and embodiment (i.e. "being more at home in your body"). Even in those non-medical treatment situations it is possible to list medical contraindications, as this can be done for jogging, walking, dancing or other non-medical activities.

# Students' feedback questionnaire.

| Question<br>*Please tell us about your course experience. Your feedback will be helpful in future development of the course contents. Thank You.* | Strongly disagree | | | | Strongly agree |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 1. The sheer volume of work to be got through in this course meant it could be thoroughly comprehended. | | | | | |
| 2. I was generally given enough time to understand the things I had to learn. | | | | | |
| 3. I usually had a clear idea of where I was going and what was expected of me in this course. | | | | | |
| 4. The course sharpened my analytic skills. | | | | | |
| 5. The course developed my problem-solving skills. | | | | | |
| 6. My course helped me to develop the ability to plan my own work. | | | | | |
| 7. As a result of my course, I feel confident about tackling unfamiliar problems. | | | | | |
| 8. The teaching staff worked hard to make the subjects interesting. | | | | | |
| 9. My lecturers were good at explaining things. | | | | | |
| 10. The teaching staff of this course motivated me to do my best work. | | | | | |
| 11. The teaching staff normally gave me helpful feedback on how I was going. | | | | | |
| 12. The staff made a real effort to understand difficulties I might be having with my work. | | | | | |
| 13. I am satisfied with the learning outcomes and the quality of this course. | | | | | |
| 14. What were the best aspects of the course? | | | | | |
| 15. What aspects of the course were most in need of improvement? | | | | | |