COURSE READER FOR FASCIA Technieken level I & appendix

UNDERSTANDING OUR CONNECTIVE TISSUE SYSTEM

An integrated approach to problem joints and conditions, emphasizing the role of Connective Tissue

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de Berekuyl academy

Inhoud

Introduction

Dear Course Participant,
I am excited by your curiosity in exploring the Connective Tissue and Fascial systems with me. This is a fast growing area of research and clinical application. We will only be scraping the surface of this vast subject. To some of you, the material may be new and overwhelming, while others may have been to courses covering the fascial and connective tissue systems before.
I attempt to present a course in such a way that there is a good mix of theory and practice. In the past 12 years connective tissue and fascial understanding has steadily grown to a level where the needed theoretical background outstrips the available time for practical sessions. This often leads to *"too much talk with too little time left to do."*
To create more time for practical work, a couple of basic concepts are presented for you to study before the course. The course presentation does not follow these notes, and should be viewed as a reference for more in depth reading. Added below are suggestions about further reading in preparation for the course.

The **introduction and movement concept** upon which my understanding is based is new to many and therefore needs good understanding for use in therapy. It is important and I would like you all to study and understand the concepts I use as background before the course in your own time.

A time consuming part of the first day theory is the basic **histology of connective tissue**. I would like you all to study some of this before the course. This is important so we can concentrate more on the architectural design of the connective tissue system and its practical implications for what we have to master in three days.

The third major component of the course is **applied anatomy.** I concentrate on integrated anatomy of largely the soft tissue components and how it influences biomechanics and movement, ending in dysfunction. Could you please revise the anatomy of the bony and ligamentous components of the body part we cover in this course? Please also familiarise yourselves with the associated muscular structures.

Hands on practical work are important parts of the course. Understanding basic principles course will enable you to use what you have learnt in almost any musculoskeletal problem. This will equip you for the exciting new world you will be entering on the first day back at work after the course.
Come curious, well prepared and appropriately dressed for practical work.
I am looking forward to meeting you all for an exciting three days of learning and lots of fun!!

Willie Fourie

Johannesburg, South Africa.

"You cannot cure anybody by divine intervention. To help someone, you need to use the miracle of wisdom. Your wisdom increases with knowledge" (Willie Fourie)

Lay-out of this course:

We are first going to spend time on revising & understanding “normal” better:

- Revise connective tissue & fascia.
- Evaluate the movement & fascial systems.
- Revise functional anatomy.
- Introduce fascia treatment principles.

Day two and three will introduce you to:

- Problems within the fascial system
- Assessment of the fascial structures and implications on shoulder AROM, using a fascia assessment scheme related to the breast cancer population. Clinical reasoning and case studies will be based on the KNGF guideline: ‘Evidence statement of breast cancer” as well as the CBO guideline for lymphoedema management.
- Complaints after surgery, injury or disease.
- Treatment.
- A real life patient presentation will take you to through the whole sequence of assessment and treatment. During this session you will be asked to participate in the clinical reasoning. The patient characterisations assessed during day 2, will be used as a case study for day 3; implementing the clinical into practical skills.

General preparation:

Read this course reader carefully

Read the preparations as mentioned per day in this course reader

Read the following guideline:
Evidence statement Borstkanker (2011):
http://www.kngfrichtlijnen.nl/images/pdfs/evidence_statements/borstkanker_2011/es_borstkanker.pdf
Specifically look into the advised questionnaires mentioned to assess shoulder problems as well as the shoulder AROM assessment in Chapter 2: klinimetrie.

Prepare a case study using the format and lay-out of Appendix 4 as a preparation for the peer assessment and self-evaluation at day 3

Introduction Day One:

Our therapeutic choices are only going to be as good as our understanding of the basic sciences. Functional and clinical anatomy will be the starting point of this weekend. Your knowledge of anatomy will determine your treatment approach. Muscles contract and relax to exert a force on a bony lever that then cause movement at a joint, controlled by its bony configurations and supporting ligament structures, and guided by a well-organized neural system. Traditionally, treatment is directed at either the contractile element (the muscles), the mobile elements (the joints) or the neural elements involved in the pathology. Simultaneously, most of the biomechanical and mathematical models presented to explain human movement also seem to be over-simplifications of the complexity of biologic movement – regardless of how complex the mathematical formula may seem.
This entire muscle, bone, ligament and neural tissue model, as well as the conventional biomechanical models are inadequate to explain the complexity of normal and pathological movement and function of the human body. A new model for explaining biologic movement had to develop. This is slowly taking form as our understanding of the role played by the connective tissue in movement is better understood.

> Connective tissue does not move bones or initiate movements, it merely controls the quality of the movement taking place while keeping the bony levers and spacers within a specific functional configuration.

The concept of Anatomy Architecture.

Like muscle and bone, fascia is an adaptation of structure and function. In maintaining an upright posture, Man has to alternate between a rigid column for stability and passive support, and a mobile unit for locomotion and movement. Muscles adapt to this dual role by gaining insertions to unsheathing membranes and fasciae, as well as its deeper septa and partitions (Wood Jones 1944; Hollinshead 1969; Stecco *et al.* 2006). This is particularly true in the human lower limb (Wood Jones 1944).
By muscles gaining widespread and imprecise, but powerful attachments to large areas of a limb as a whole rather than to its individual moving parts, the extensive fascial sheets provide a functional homologue of an ecto-skeleton for the limb (Wood Jones 1944). This concept is further refined by Stecco *et al.* (2007b) describing fascia as a flexible skeleton onto which muscle fibres are anchored with the purpose of distributing and directing muscular forces within the locomotor system. It has also been demonstrated that the fascia is maintained at a basal tension by muscular insertions into it, and that when these muscles contract, they transmit part of their traction forces to the fascia (Stecco *et al.* 2007a), sometimes influencing body-wide responses (Myers 2009). This wider view of the integrating fascial system adds human design to the dynamic engineering model known as **tensegrity** (Ingber 1998; Levin 1997, 2005). Tensegrity by definition refers to a system that stabilizes itself mechanically because of the way in which continuous tensional and local compressive forces are distributed and balanced within the structure (Chen and Ingber 1999). Ingber (1998) uses the concept of this common form of architecture for describing the nature of

living systems from the molecular design of carbon atoms, water molecules, proteins, and viruses to the macroscopic design of humans and other living creatures. This broadens our general view of the locomotor system to where **all** structures, including our often overlooked complex, continuous fascial system are involved in movement and movement quality (Dye 1996, 2005; Myers 2009; Stecco 2004). With growing awareness of its possible roles, recent studies are proposing that fascia may be of wider importance in muscular biomechanics, peripheral motor coordination, proprioception and regulation of posture (Schleip *et al.* 2005; Langevin 2006; Stecco *et al.* 2006, 2007a).

Tensegrity.

Life is the ultimate example of complexity at work. An organism develops through an incredibly complex series of interactions involving a vast number of different components that combine into some larger functional unit (Ingber 1998). However, understanding what the parts of a complex machine are made of does little to explain how the whole system works. As we do in anatomy, identifying and describing the individual pieces of the puzzle from cellular to macroscopic systems will do little if we do not understand the rules of their assembly – as in any complex machine.

Nature uses common assembly rules. This is seen in the recurrence of certain patterns such as spirals, pentagons and triangulated forms – from molecular to macroscopic scales. Components join together to form larger, stable structures having new properties that could not have been predicted from the characteristics of their individual parts. This phenomenon is known as self-assembly (Ingber 1998). The result of self- assembly from large molecules that forms cells through to the formation of organs creates a body organized hierarchically as tiers of systems within systems.

A very wide variety of natural systems, including carbon atoms, water molecules, proteins, viruses, cells, tissues, living creatures and humans are constructed using a common form of architecture known as **tensegrity**. The term refers to a system that stabilizes itself. Tensegrity structures are mechanically stable not because of the strength of the individual members, but because of the way the **entire structure distributes and balances mechanical stresses.** These structures have one critical feature: tension is continuously transmitted across all structural members. An increase in tension in one of the members results in increased tension in members throughout the structure – even ones on the opposite side. Tensional forces naturally transmit themselves over the shortest distance between two points, so the members of a tensegrity structure are precisely positioned to best withstand stress. The principles of tensegrity apply at essentially every detectable size scale in the human body. Macroscopically the 206 bones that constitute our skeleton are pulled up against the pull of tensile muscles, tendons and ligaments. Bones are the compression struts, and muscles, tendons and ligaments (myofascia) are the tension-bearing members (Ingber, 1998). Tensegrity has also been used to describe how whole organisms, including mammals, insects and plants stabilise themselves at larger scales in the hierarchy of life:

1. In humans, the bones that constitute our skeleton are pulled up against the force of gravity and stabilized by the pull of tensed muscles, ligaments and fascia. The shape of our bodies depends on the tone (tensile pre-stress) within our muscles and myofascia.
2. Insect muscles stabilize the form of their bodies in a similar manner. The difference is, the muscles pull on their insertions on a stiffened ecto-skeleton, rather than on internal compression-resistant bones.

3. Plants must similarly tensionally pre-stress their cell walls to maintain their stiffness and shape stability. Their compression elements push outwards by swelling their compression-resistant cell bodies against surrounding non-extensible cell walls. Their compression elements push outward tensing the surrounding network, rather than having the tensed network actively pull in against rigid compression elements as in a mammalian system (Ingber, 2008).

All three the above principles are active in human tensegrity structures, not only the first method of a pre-stressed myofascial system over a compressive strut skeleton. The second principle above is active in the architecture of the lower limb where the deep fascia is described as constituting an ecto-skeleton (Wood-Jones, 1944). The third principle is evident in the 'splinting' of for example joints in the presence of swelling and in compartment syndromes.
For a more complete background on ***bio-tensegrity*** please spend some time looking at the following websites:
www.biotensegrity.com for a number of interesting articles written by orthopaedic surgeon, Dr Stevin Levin.
Also worth reading is the article at http://saveyourself.ca/articles/biological-literacy/tentrillion-cells.php taking a light-hearted look at a very complex problem.
You may also like to look at some of the work done by Donald Ingber at http://www.intensiondesigns.com/resources.html

The concept of movement planes.

The concept of grouping anatomic structures into layers is not new in surgery or anatomy. This aids the surgeon and the anatomist to identify safe tissue planes that allows atraumatic dissection or surgical approaches to deeper structures. It seems a natural step to also recognize these tissue planes functionally within their role during movement.
Muscles do not just hang from the bones haphazardly, but have very specific functional arrangements around the skeleton. Every single muscle unit becomes an integral part of the whole to create the mobile, flexible-hinged, low energy consuming, omni-directional biological structure - the human body. The unifying tissue within the body is the extensive fascial web that surrounds every single muscle, organ or structure right down to the tiniest muscle fibril.
Fascia plays an important role in the body's musculoskeletal dynamics (Stecco and Stecco 2009):

- This includes tension transfer across the epimysium (the fibrous envelope surrounding a muscle), and between muscles (Huijing, 2001).
- It further contributes to the development of muscle force (Aspden, 1990) and functions as a responsive, dynamic and complex mechanosensitive system for coordinated movement (Schleip et al, 2006).
- Fascia controls the ***quality*** of movement while keeping the bony levers and spacers within a specific functional configuration.

> A full understanding of fascial arrangements and its behaviour under load are needed to understand how fascial restrictions can contribute to pain and dysfunction.

Anatomy of tissue layers.

The body is arranged in several layers from superficial to deep (from Stecco and Stecco 2009):

- The skin formed by the epidermis and dermis (dense irregular connective tissue).
- The superficial fascia consisting of two or more adipose, loose connective tissue layers separated by a membranous layer(s) of collagen and elastic fibres.
- The deep fascia that envelops the large muscles of the trunk and forms fascial sleeves in the limbs (dense regular connective tissue).
    - In the trunk, the deep fascia is subdivided into three laminae. Each lamina is in turn bi-laminated to accommodate superficial, intermediate or deep muscles in the trunk and neck. Thin layers of loose adipose tissue separate the various fascial laminae, allowing gliding between layers.
    - Deep fascia in the limbs mostly glides over the muscles.
- The epimysial fascia beneath the deep fascia of the limbs. This interface consists of three distinct layers: the deep fascia, the fibrous envelope of the muscle (epimysium) and a loose areolar tissue layer between the deep fascia and epimysium (McCombe et al 2001). The deep fascia of the trunk is often fused with and becomes the epimysial fascia for the muscles.

> The superficial fascia allows muscles to slide beneath the skin as they contract, while the deep fascia synchronises motor activity in order to produce smooth, resistance-free economical movements (Stecco and Stecco 2009).

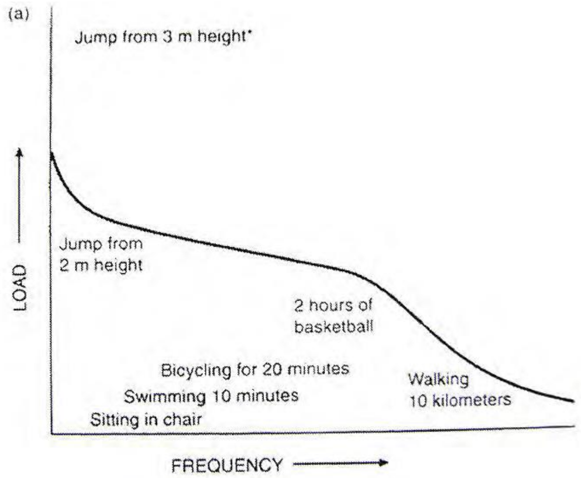
Anything interfering with the freedom of these layers to glide on each other – be it adhesions, thickening, or shortening of the CT during movement, will compromise the quality of joint movement. This in turn contributes to the development of pathology and pain within the movement apparatus.

Tissue homeostasis – the concept of joints having an envelope of function.

The function of a joint or a joint system is to accept and transfer loads between and among the bony and mechanical components, thus forming a movement complex designed to dissipate loads generated at the ends of mechanical lever arms.

Scott Dye, MD, in the Clinical Orthopaedics and Related Research Journal number 323 of 1996 described joints as having an envelope of function. This is a summary of his article. Although Dr. Dye uses the knee joint as basis for explanation, the concept is important for all joints in general. His concept of joint function has gone a long way towards integrating all parts of a given joint into a functional unit. This leads to a better prospect of a more satisfactory treatment and rehabilitation outcome after injury or disease.

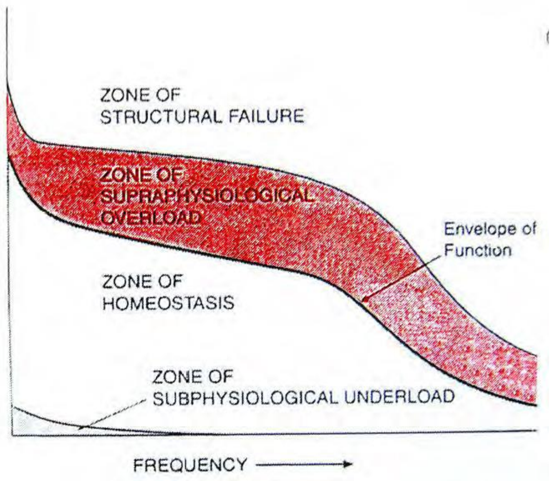
The **envelope of function** of a joint can be defined as "the functional capacity of joints to accept, transfer, and dissipate loads" (Dye 1996). A simple graph with increasing applied **loads** on the vertical axis and increasing **frequency** of loading in the horizontal axis can be used to graphically illustrate such an envelope – in this example for the knee joint.



The range of loads that can be accepted, transferred, and dissipated by an individual joint in a given period - without either macrostructural or supra-physiologic failure - is represented by the area below the line in the graph. This can be termed the ***"zone of homeostasis."*** An envelope of function describes a range of loading/energy absorption that is compatible with tissue homeostasis of an entire joint system.

Should a joint be asked or forced to function above the envelope of function, (above the line of our graph) structural failure of the joint system may result. Failure could be due to:

- A single high load incident as on the left of the graph, or
- Due to a repetitive overload of the system. The load may be less, but the frequency exceed the physiologic ability of the tissue to withstand excessive repetitive loading. (Towards the right of the graph).



The upper limit of any given joint's envelope of function represents a threshold between homeostatic loading and excessive loading that may initiate the complex biologic cascade of trauma-induced inflammation and repair. Joint overload manifests clinically as discomfort, tenderness, swelling, and warmth. The range of loads sufficient to trigger an inflammatory response, but not enough to produce structural failure, can be called the ***"zone of supra-physiologic overload."***

With further overload, a second threshold may be reached resulting in actual failure of one or more joint components. Such forces may be in the ***"zone of structural failure."***

After injury – whether due to one traumatic incident, or multiple smaller insults – the envelope of function for any given joint may vary with the "***zone of homeostasis"*** significantly shifted to the left on the graph and smaller.

The challenge of treating a musculoskeletal injury is to return the injured joint complex to as close to a pre-injury envelope of function as possible. Dangers of pushing the healing tissue above the safe envelope of function line are:

- Too vigorous rehabilitation,
- A too early return to full activity or
- Poor selection of treatment modalities

> Extended time in the zone of supra-physiologic overload may result in prolonged inflammation, chronic pain, tissue fibrosis and dysfunction with premature degeneration of the joint complex.

Homeostasis, balance and normal function of a joint depend on:

1. **Anatomic factors**. This includes all morphological, structural and biomechanical characteristics of the joint or limb (ligaments, retinaculae, tendons, meniscal and articular cartilage, muscle, bone, limb alignment, height and weight of the individual).
2. **Kinematic factors**. These factors determine the actual movement of a given joint as determined by the surrounding soft tissues. It includes proprioception, central control, coordination of motor units, spinal reflex mechanisms, muscle strength and the integrity of the myofascial units and sequences.

3. **Physiologic factors.** Factors in this category include the effectiveness of the genetically determined mechanisms and the ability of the body to repair damaged tissues. All people are born with their own unique set of molecular and cellular mechanisms to restore themselves to optimal functioning.
4. **Treatment factors.** Treatment factors take into consideration both nonoperative (rehabilitation, bracing, medication, other treatment modalities), and operative factors.

Warning signs of tissue overload include pain, discomfort, and functional instability, the presence of an effusion, warmth, and tenderness. The presence or aggravation of any of these signs could be an indication of inappropriate treatment selection or the too vigorous application of treatment modalities. Indicators that loading is within the envelope of function would be the absence of the above signs and symptoms, along with a normal technetium scan, and normal long term X-rays.

> Once we understand the body as a unit, the rest of the first day is taken up by understanding connective tissue and fascia.

Connective tissue - introduction.

Connective tissue is the term applied to a basic type of tissue of *mesodermal* origin.

- It provides structural and metabolic support for other tissues and organs throughout the body.
- It makes up a large proportion of the total body mass, is highly specialized, and has a diversity of roles.
- The several types of connective tissues are responsible for:
  - Maintaining form in the body,
  - Providing mechanical support,
  - Movement quality,
  - Tissue fluid transport,
  - Cell migration, o Wound healing, and as is becoming increasingly evident-
  - Control of metabolic processes in other tissues.
  - Functioning in a mechanical role, they provide a matrix that connects and binds the cells and organs and ultimately gives support to the body.
- Connective tissue varies in terms of the physical nature of its intercellular matrix and in the number and density of its fibres.
- In descriptive terms, this means that some is harder or softer, some more elastic or more rigid.
- Connective tissue is not just an inert structure within the body with a lesser function than other tissues, it is alive in the sense that it responds to stimulus.
- It has certain physical laws that it lives by. Directional pull and the stresses on the system as a whole determine its fibre content and direction as well as its ultimate function.
- It is capable of changing its structure in response to changing environmental or functional demands.

- It requires nourishment to survive and is subject to disease processes, injury and the effect of aging.
- Connective tissue is found throughout the body and is continuous from head to toe with no beginning and no end, but is never exposed to the environment outside the body.

> Connective tissue plays several essential roles in the body, both structural (because of the special mechanical properties of the extra-cellular elements) and defensive (because of its cellular basis e.g. the macrophage or reticulo-endothelial system), and stores energy reserves, especially in the form of lipids.

In fact, our connective tissues differ so greatly in form and function that at first glance they sometimes appear to be unrelated to one another. **Fibrous connective tissue** underlies the epithelium of the skin and oral mucosa and makes up tendons and ligaments. **Areolar connective tissue** attaches skin to muscle, **fat connective tissue** stores energy, **haemopoietin connective tissue** forms blood, while **cartilage connective tissue** provides support, shock absorption and permits skeletal growth, and **bone connective tissue** supports the body. Connective tissue is conventionally divided into "ordinary" types (connective tissue proper), which are distributed widely through the body, and special types, namely cartilage and bone (supporting connective tissue), and blood and lymph (fluid connective tissue). (Warwick and Williams 1973). All connective tissue have three basic components: specialized cells, extra-cellular protein fibres (matrix), and a fluid known as the ground substance. The matrix is composed of fibres and an amorphous viscous ground substance that is the product of the cells in whose neighbourhood it is found. It is of considerable importance, and when abundant, gives a specific character to the tissue possessing it.

Preparation for day one:

Please revise connective tissue and more specifically the following headings from any good Histology textbook

- The structure of connective tissue
- The cells of connective tissue
- The matrix of connective tissue
- The ground substance
- The classification of connective tissue

I will further discuss the architecture and design of connective tissue and fascia, and we will get to know it better practically.

The rest of day one is used to introduce treatment principles, functional anatomy and evaluating fascia.

Please read the articles included in the email for preparation

Please revise your basic anatomy of the region presented in the course:

- Musculature involving head and neck, shouldergirdle, thorax and upper extremity
    - Divide them in antagonist, synergist and agonists, stabilisers, coordinators and activators
- GH, AC, SC, Cervical and thoracic spine, rib cage
    - Describe the type of joint, ligaments, capsules, movement planes, AROM
- Humerus, clavicle, vertebrae, ribs, scapula

DAY's TWO and THREE

This is where we look at the complaining body starting with **Physiological changes in tissue during injury, immobilization, and remobilization.**
Studies of tissue repair, immobility, and re-mobilization all demonstrate the importance of movement for normal repair processes and tissue health.
Movement:

- Provides direction to the deposition of collagen.
- Maintains a balance between the connective tissue constituents.
- Encourages normal vascular regeneration.
- Reduces the formation of excessive cross-links and adhesions.

Movement is the blueprint for normal structural and functional properties of muscle and connective tissue. Tissues that have healed under movement and mechanical stress will have mechanical properties matching the mechanical requirements of daily physical activity.

> Tissues that have healed while immobile, or under reduced or abnormal movement may fail to meet the imposed structural and functional demands of daily activities.

Preparation day two and three

For this session while we are all fresh after a good night's rest:
Please revise wound healing by taking a good look at the two attachments at the end of this document which summarises the healing process and responses of the tissues to trauma.

Please watch the video Strolling under the Skin directed by Jean Claude Guimberteau made available via YouTube through Basic Science; Jean Claude Guimberteau august 2014: https://www.youtube.com/watch?v=eW0lvOVKDxE

After the patient demonstration at the end of day 2, formulate a strategic plan of action for the treatment sequence based on the provided case study from your peer, this will be used in day 3 peer assessment and self-evaluation.
Describe the differences in approach of the patient's problems in retrospective to the gained knowledge in this course up to day two.

APPENDIX 1: STAGES IN THE REPAIR PROCESS

PHASE	ONSET	PEAK	DURATION	PATHOPHYSIOLOGY	RESPONSE TO MECHANICAL STRESS
Traumatic Inflammation	0	12 hours	24-48 hours	Vascular response: bleeding, blood clot, oedema Cellular response: leucocytes, macrophages – predominantly immune cells to clean up the wound site. Very little collagen --+--	No tensile strength and poor response to mechanical stress Manage with rest, ice and elevation --+--
Proliferation of Fibroblasts	12 hours	2-5 days	10 days	Fibroblasts and myofibro-blasts proliferate, migrate and bridge wound edges by 5 days --+--	Still negligible wound strength with poor response to mechanical stress. --+--
Collagen (fibroplasia)	5 days	3 months	6 months	Increase in collagen deposition and removal Collagen fibrils: initially weak random fibrils, later strong flexible depending on the stress placed upon them Scar contraction --+--	Rapid increase in tensile strength Fibroblasts and collagen align along lines of stress Improved formation of blood vessels along lines of stress Normal turnover of collagen --+--
Remodeling	1 month	→	2 years or more	Collagenase removes excess collagen, fibroblasts contract, and there is vascular and wound shrinkage Fibroblasts remain active Turnover of collagen still high Myofibroblasts disappear; contraction of the scar ceases After 60 days cellular content of scar decreases, with reduction in collagen turnover	Continued gradual rise in wound strength Improved mechanical behaviour of the scar under increased stress of manual techniques and exercise Return to function

TABLE 2: Adapted from: **Fundamentals of Manual Therapy.** Lederman E; Churchill Livingstone, 1997, p13, and **Therapeutic Massage.** Holey E A, Cook E M; W.B Saunders Company Ltd. 1998, p 55.

APPENDIX 2: TISSUE RESPONSE TO MANUAL THERAPY

	Motion	***Immobility***
Connective Tissue	Synthesis and lyses of collagen and glucosaminoglycans (GAGs) by fibroblasts and chondrocytes	Increase in collagen turnover but small changes in collagen volume
Muscle	Satellite cells to form myotubes (develop into muscle fibres)	Shortening and reduction in the number of sarcomeres
Connective tissue matrix	Normal chemical cross-linking of collagen fibres Normal alignment of collagen in the direction of stress Normal ratio of proteoglycan and water complexes in the matrix Normal inter-fibril distance	Reduced water content, GAG and interfibril distance Abnormal deposition of collagen Abnormal cross-links
Muscle matrix	Normal alignment of myotubes Normal development of fasciculi and skeletal attachments via tendons Parallel formation of muscle tissue to connective tissue elements	Abnormal alignment of myotubes Abnormal development of fasciculi and skeletal attachments Abnormal orientation of connective tissue elements Proliferation of connective tissue constituents
Functional and structural changes	Mechanical strength, flexibility and rigidity Normal sliding of structures on one another Normal alignment of vascular elements within the tissue ***Normal range of movement, function and structure***	Loss of stiffness and strength in connective tissue Adhesion formation Random vascularization Contracture formation Functional changes in muscle ***Reduced range of movement and mechanical properties***

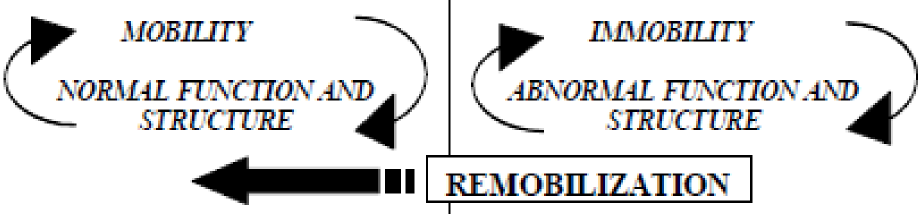


TABLE 1. *Effect of motion, immobilization and remobilization on connective tissue and muscle homeostasis function and structure.* FROM: Lederman E, **Fundamentals of Manual Therapy.** Physiology, Neurology and Psychology. Churchill Livingstone. 1997 Page 17.

Appendix 3: Format Skills lab.

Indications: Signs of dysfunction where we find

- Decreased fascial glide
- Compromised connective tissue or fascial mobility
- Soft tissue tension patterns
- Dynamic and passive limitations in ranges of tissue movement
- Joint hypo-mobility in primary as well as accessory movement patterns.

Aims of treatment:

- Correcting patho-anatomy, pathophysiology and patho-mechanics.
- Increasing reduced tissue mobility and flexibility.
- Restoring tissue glide.

Planes of tissue glide:

- Skin and superficial fascia (hypodermis or subcutaneous fat layer and its structures).
- Deep fascia and the myofascial interfaces.
- Deep muscle and soft tissue on bone interfaces.

Assessment of tissue glide:

- Using gentle but firm hand on body contact (limbs and trunk)
- Glide the soft tissue longitudinally superiorly and then inferiorly.
- Glide the soft tissue transversely medially and laterally.
- Glide the tissue clockwise and counter clockwise.

Treatment techniques:

With therapist's hand and patient's tissue moving as a unit, modified massage techniques are used, not allowing hand-on-skin sliding.

- Modified effleurage, gliding skin and superficial fascia to restore superficial tissue glide and mobility.
- Modified kneading and tissue wringing to restore tissue mobility in the deep fascia and myofascial interfaces.
- Modified skin rolling for restoration of tissue mobility in deep muscle and myofascia-on-bone interfaces.

Techniques are applied longitudinally, transversely and rotationally, and done at inner-, mid- and end range of available tissue movement.

Grading of techniques and depth of touch:

Use a numerical grading with grade1 as very mild and grade10 as severe discomfort.

- Grades 1-3:- mild and superficial touch with no discomfort.
- Grades 4-6:- moderate to firm touch with mild discomfort.
- Grades 7-8:- deep, firm pressure with discomfort but tolerable.
- Grades 9-10:- Deep, painful and potentially damaging pressure.

Appendix 4 Case descriptive format (for your peer)

Brief description of the patient's history/ beschrijf in het kort en puntsgewijs de voorgeschiedenis van de patiënt:

-
-
-
-
-

Highlights for therapy/ Geef aan wat de behandelbare grootheden zijn

-
-
-
-
-

Currently used techniques and approaches/ welke technieken heeft u tot op heden toegepast

-
-
-
-
-

Peer assessment and self-evaluation / Intervisie en zelf-evaluatie

Read the case of your peer, you will receive at the end of day 2 and answer the questions as a preparation for day 3

U leest de casus van uw collega, geef deze mee naar huis aan het einde van dag 2 ter voorbereiding op dag 3

Please answer the following questions / U Beantwoord de volgende vragen

Describe the gained new practical insights and skills during this course/ welke praktische nieuwe inzichten heeft u gaandeweg deze cursus gekregen:

-
-
-
-
-

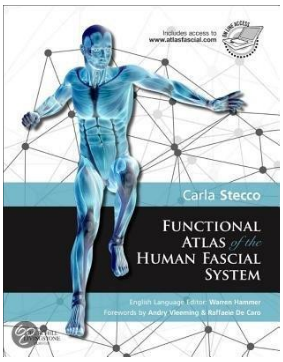
How did it change your treatment options accordingly / Heeft dit geleid tot aanpassingen in uw klinisch redeneren en het opzetten van behandeldoelen?

-
-
-
-

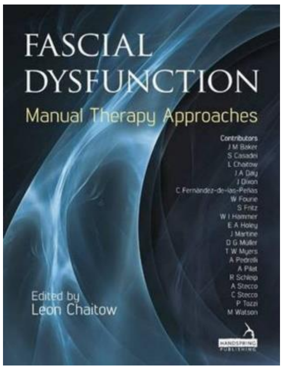
At the end of day 3 there will be a brief peer assessment on clinical reasoning and practical skills using the information presented in this case.

Aan het einde van dag 3 bij de evaluatie zal er een kort intervisie moment zijn met je medestudent op klinische redenatie en praktijkvaardigheden aan de hand van de casus van je mede student.

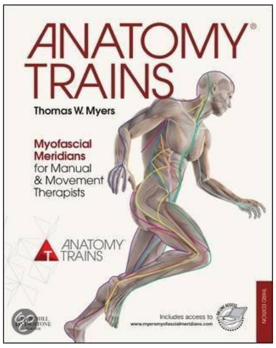
Advised literature



Auteur	Carla Stecco, Warren I Hammer
Co-auteur	Carla, Md, Orthopedic Surgeon, Dr. Stecco, Carla Stecco
Taal	Engels
ISBN10	070204430X
ISBN13	9780702044304



Verkrijgbaar tijdens de cursus



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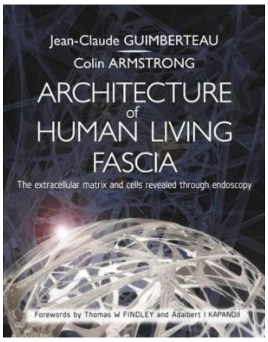

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