Unlocking the Chains: Using Myofascial Decompression to Target Fascial Lines

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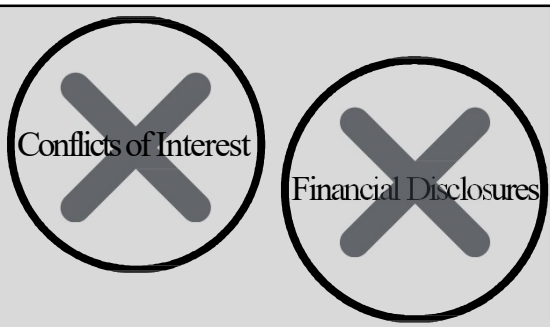

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Learning Objectives

1. Summarize the role of fascia as a pain generator and the link to biomechanical dysfunction
2. Describe the biomechanical model of the fascial network and how the kinetic chain is influenced by these connections
3. Demonstrate myofascial decompression techniques along functional, fascia lines based on specific tissue pathologies

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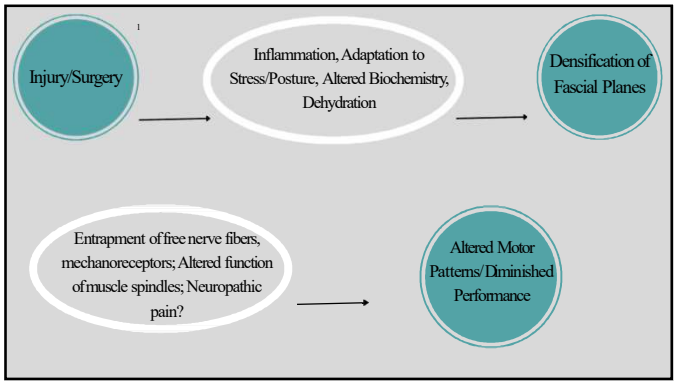

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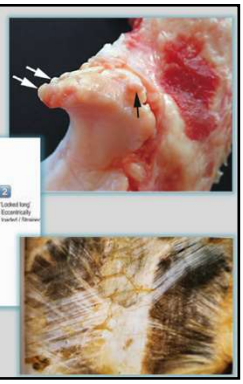
Connective Tissue Plasticicty

Connective tissue will respond to demand:

- Bone: osteocytes
- Muscles: eccentrically verse concentrically strained
- Fascia: densification of ECM

*Mechanotransduction (conversion of physical forces into intracellular biochemical responses) these forces may be transmitted at a cellular level altering gene expression of fibroblasts and changing the ECMcomposition. [12]



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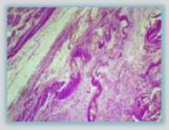
Fascial Alterations: [3]

Densification: or fascial stiffness refers to an increase in the density of fascia. This alters the mechanical properties of fascia (GAG;HA,cells) without changing the general structure which is why this is not illustrated on diagnostic imaging such as MRIs. This alteration in the loose connective tissue properties ***affects the sliding capabilities*** of the different layers of the fascia. Only when the connective tissue has a decrease in viscosity can the dense fibrous layers be stretched and transmit forces along different directions without interfering with each other.



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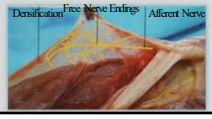
Fascia as a Pain Generator

Fascia's role in the sensory feedback loop is critical for nociception, proprioception, proper force transmission, and overall providing the brain with a three-dimensional construct of the body.

Stecco et.al has described that the neurovascular bundles and free nerve endings are closely connected with the surrounding collagen and connective tissue structures. The deep fascia is host to an abundance of free nerve endings which discharge their impulses as the fascia is stretched

- If the fascia densifies then the receptors are stretched beyond their physiological dimensions, acting as a nociceptor and leading to pain



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Clinical Manifestations of Tissue Dysfunction

As a result of injury, inactivity, inflammation or disease processes, fascia may lose its elasticity and become dehydrated. HA chains have the ability to self-associate under these adaptive processes and will increase their concentration and or size. When this happens the HA chains begin to entangle in a disorganized fashion which alters the viscoelastic properties.

Gatej et.al noted an increase in the viscosity of HA when lactic acid was present. The presence of LA at increased levels altered the pH of the fascial tissue. Increase in viscosity has been described as "fascial stiffness".

Fascia that becomes bound around the affected area causes pain, a decrease overall soft tissue extensibility, neuromuscular hypertonicity and prevents normal mechanics. Collectively this may lead to compensatory movement patterns and increase risk of further injury.

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Describe the biomechanical model of the fascial network and how the kinetic chain is influenced by these connections

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Isolated Mucle Theory[2]

Educated on muscles by isolating an individual muscle on the skeleton, divided from its connections above and below, shorn from its neurological and vascular connections and divorced from the regionally adjacent structures

What does this mean??

Muscles attach from bone to bone, and the two ends are meant to approximate together orresist being stretched apart

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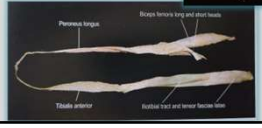
What's Missing Here?[2]

The complexity of human movement and stability cannot be derived by summing up the actions of these individual muscles

We need to consider a more three-dimensional feel for the musculoskeletal anatomy and appreciation of whole body patterns distributing compensation in daily and performance functioning

With this concept, we can consider how painful problems in one area of the body can be linked to a totally silent area removed from the problem.



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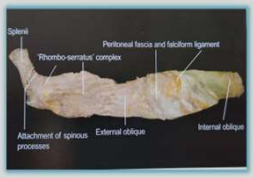
Myofascial Continuity [1]

Describes the connections between two longitudinally adjacent and aligned structures within the structural webbing

These lines transmit strain and rebound, facilitate movement and provide stability around the skeleton



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ATensegrity Model [2]

The tensegrity/biotensegrity model determines that a structure in is tensional equilibrium (constant mechanical tension and non-constant compression)

- Addresses that if we compress, pull, tighten or loosen one component of this three-dimensional continuous unit we will affect the whole structure.

The myofasaciae and the collagenous webbing provide a continuous network of restricting but adjustable tension around the bones and cartilage as well as the incompressible fluid balloons of organs and muscles

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Fascial Lines

Myers describes different "fascial lines" within the body that allow us to appreciate how segments of the body influence each other. The lines promote the ability of the tensile fascia to transmit strain/tension/energy from one link in the chain to the next

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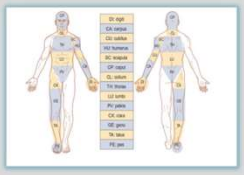
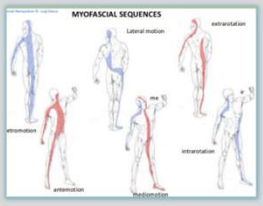
Stecco Myofascial Sequences



Are an organization framework of the myofiscial units that connect motion segments. As tension increases along these kinetic chains, this activates a specific pattern of receptors, contributing to the perception of a specific motor direction



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Comparing Schools of Thought

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Demonstrate myofascial decompression techniques along functional, fascia lines based on specific tissue pathologies

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Therapeutic Modifier: Myofascial Decompression

Clinical Findings of the Treatment Intervention:

- Raised tissue
- Increased porosity
- Craters

*These indicate a disruption in the gliding capabilities of the fascia and an increased viscosity of the ground substance/Hyaluronan



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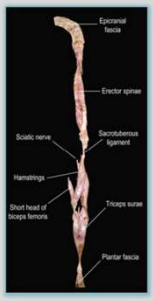
Exploring the Superficial Back Line

Common Postural Compensations:

Ankle dorsiflexion limitation, knee hyperextension, hamstring shortness, anterior pelvic shift, sacral nutation, lordosis, extensor widening in thoracic flexion, suboccipital limitation (UCS hyperextension, the anterior shift of occiput, and eye-spine movement disconnection

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Scenario : A45-year-old mountain biker reports to you with persistent "tightness" and intermittent "neural" symptoms throughout Rhamstring. Patient reports symptoms worsen throughout the day, especially as the day progresses. You evaluate the patient and note densifications throughout the superficial back line and posterior femoral cutaneous nerve.

Complete Objective Evaluation:
1.Forward Flexion Test
2. Modified Bent Knee Test
3. Dowel Hip Hinge

MDLoading Considerations:
Prone hip flexion with knee extension-->
with DF/PF--> Hip Hinge--> RDL

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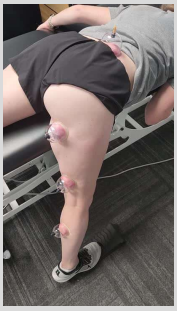

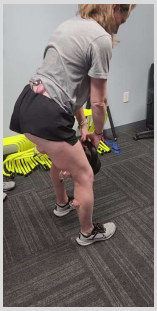

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Exploring the Back Functional Line

Common Compensation Patterns:
Because of the strong postural stabilizing functions in positions outside the resting standing posture, often times displayed one shoulder drawn down and into opposite hip

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Scenario : Patient reports to you with a chief complaint of L sided LBP the day following an 8-inning pitching performance during a baseball game. You complete a comprehensive evaluation on the lumbar spine, lumbar-pelvic hip complex (LPHC), and kinetic chain. You find fascial densifications along the L thoracolumbar fascia (TLF) and back functional line, as well as limitations with the shoulder flexion test secondary to shortening of the Latissimus Dorsi (LD).

Complete Objective Evaluation:
1. Quadruped Rotation Test (~T8)
2. Shoulder Flexion Test

MDLoading Considerations:
Child's Pose--> Lateral Reach--> Rotation--> Wag Tail--> DownRotation with Arm Pull--> Bench Thoracic Mobilization--> Standing Stick Rotation

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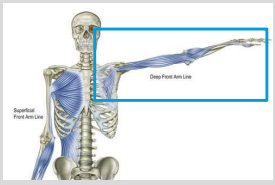
Exploring the Deep Front Arm Line



Common Compensation Patterns:
Downward pull of the clavicle & coracoid process, ribs, forward pull of the neck, limitations in breathing, angle of the hand/thumb

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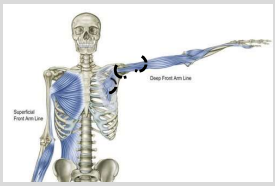
Scenario: A40-year old tennis player, is being seen for Rshoulder pain and thumb desensitization following a tennis tournament this weekend. The patient reports an increase in pain and desensitization over the course of three months. You note significant anterior tilt of the shoulder, densification over the clavicular-pectoral-deltoid fascia and short head of the biceps tendon



Complete Objective Evaluation:

1. Supine Pec Minor

MDLoading Considerations:

Supine T--> Seated Shoulder ER--> Supine Y's

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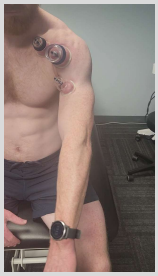

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Exploring The Lateral Line

Common Postural Compensations: Ankle pronation/supination, ankle dorsiflexion limitation, genu valgum or varus, adduction restriction, lumbar side bend, or lumbar compression, side shift of the ribcage on the pelvis, shortening of depth between sternum and sacrum, shoulder restriction due to over-involvement with head stability

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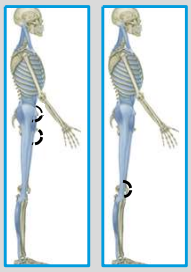
Scenario: You have a 60-year-old female hiker that has been experiencing sharp lateral knee pain for the past 2 weeks. The patient reports that she completed a large hike over the weekend which made her symptoms worse. Upon evaluation you note densification through the TFL, VLO with pain around the lateral femoral condyle.



Complete Objective Evaluation:

1. Thomas Test
2. SLS

MD Loading Considerations:

Supine hip extension-->
Banded Anterior Capsule Mobilization-->
Reverse Nordics

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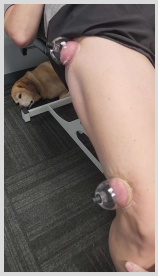
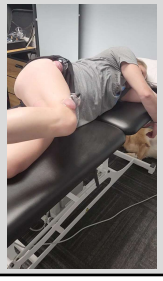
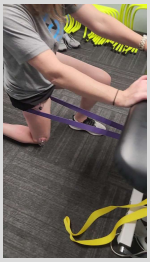
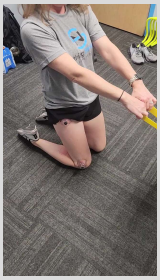

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Thank You!!!!

Questions??? Feel free to reach out to me at jenn@nothingstrongergym.com

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