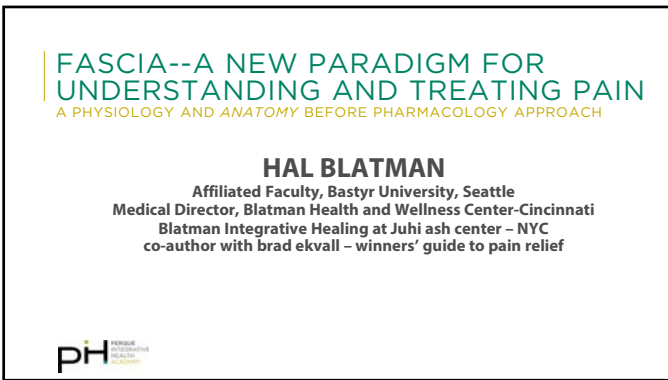




1



2



3

OBJECTIVES

- Identify and diagnose myofascial pain
- To do this .. Apply new knowledge about the anatomy of fascia
- Allow us to .. Utilize new strategies to manage care of acute and chronic pain patients
- Learn to .. Integrate non-pharmaceutical 'hands-on' options for pain patients
- Also - an appreciation for the concept.. everything eat, think, touch, and do, every drug, food, or remedy you prescribe... all affects your fascia.. and thereby also your genetic structure



4

WHAT WOULD YOU DO IF YOUR FINGER WAS BLEEDING-PAPER CUT?

- Hold it up in the air and watch it for a while?
- Take some ibuprofen and see how it is in the morning?
- Or couldn't you put some pressure on it and stop the bleeding....



5

WHAT IF IT WAS YOUR LOWER BACK?

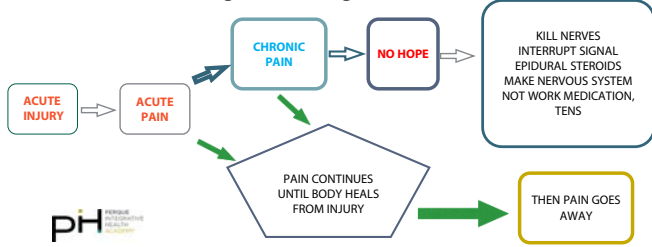
- Run to the ER, can't walk, feels like an emergency?
- Take some ibuprofen and see how it is in the morning?
- What if you could put some pressure on the origin of the bloody pain, and stop it like the bleeding from the finger?
- And you can.... Most of the time.



6

WHAT IS CHRONIC PAIN?

Two schools of thought across the globe:



7

PATIENT AFTER FIRST VISIT



8

WHERE DOES PAIN COME FROM?

- IT DOES NOT FALL DOWN FROM THE SKY
- IT WAS NOT THE PILLOW – IT MIGHT BE THE MATTRESS
- YOU DON'T SLEEP THAT WRONG – UNLESS ERHLERS DANLOS
- IT WASN'T THE OPEN WINDOW
- MANY PEOPLE AT LEAST 40% OF PAIN FROM INTERACTION OF:
IMMUNE SYSTEM – FASCIA – SEQUELLAE OF INJURY – INFLAMMATORY FOOD - TO YOUR BODY



9

BLATMAN 5 RULES OF CSI FOR PAIN

1. You can't believe your pain comes from where you feel it .. your headache does not come from your head
2. You can't believe what you think the pain feels like.. Brain can't tell the difference between...
3. You CAN ONLY BELIEVE that where you are specifically tender is where fascia is kinked (TrP), or enthesis is injured
4. The most tender areas represent the fascia injuries and consequences of those injuries through your lifetime that generate most of the pain of which you are conscious



10

5—THE RULE OF TREATMENT

- As soon as we unkink the fascia cords and strengthen (if needed) where fascia anchors and holds us together, the pain we thought we had will go away
- These riffs in the fascia continuum cannot be seen on x-ray, not always seen on ultrasound, best diagnosed by palpation



11

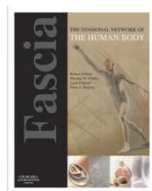
WELCOME TO THE WORLD OF FASCIA - AND - ANATOMY SPARING DISSECTION

First comprehensive text in this new field

Published 2012

Increased indexed papers on fascia

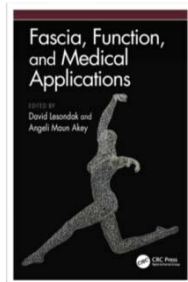
- 200/yr in 1970's
- almost 1000 in 2010



12

MORE RECENT FASCIA TEXTBOOK

- Fascia Text book
- 299 pages
- Fully illustrated in color
- Latest scientific knowledge of fascia



13

Fascia – The Organ of Posture



14

FASCIA ANATOMY



Illustrations by Tom Myers



15

FORMS OF FASCIA



PH
PERQUE
INTEGRATIVE
HEALTH
RESEARCH

16

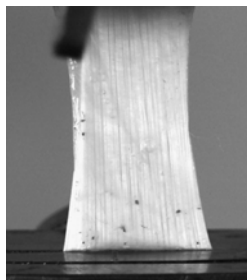
THE MANY PICTURES OF FASCIA



PH
PERQUE
INTEGRATIVE
HEALTH
RESEARCH

17

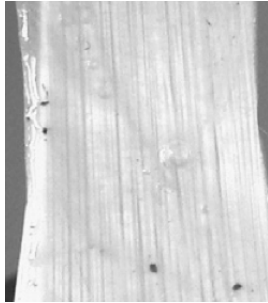
Miglena Kirilova et al.,
Experimental study of the
mechanical properties of
human abdominal fascia,
Medical Engineering &
Physics, 2011.



PH
PERQUE
INTEGRATIVE
HEALTH
RESEARCH

18

GREAT TENSILE STRENGTH



19

FASCIA

- Ubiquitous throughout the body
- Likely to be discarded during surgery
- “Cleaned off” in anatomy dissection to “see something”
- Most under appreciated tissue in body
- More important in more ways than classically taught



Schleip Findley Chaitow Huijing, Fascia: The Tensional Network of the Human Body, 1st Edition, 2012.
Van der Wal, International Journal of Therapeutic Massage & Bodywork, Vol 2, No 4, 9-23, 2009.

20

CONNECTIVE TISSUE

With regard to personal injury:

- Also termed: “soft” tissue
- Historically difficult to assess damage
- Historically difficult to prove damage
- Historically not considered significant in contributing to disability
- Many times this is most significant injury
- Important for traumatically induced FMS (Fibromyalgia Syndrome)



21

FASCIA

- Forms a biological container and connector for every organ and muscle
- Fascia ensheathes all bones (periosteum)
- Fascia is all one net, with no separation from head to toe
- Every cell responds and is hooked into the tensional environment of the fascia.



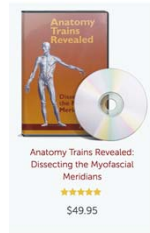
INGBUR, J BODYW MOV THER, JUL; 12(3): 198-200, 2008.
INGBUR, THE ARCHITECTURE OF LIFE, SCI AM, JAN ;278(1):48-57, 1998.
CHAITOW, L, FASCIA 2007 CONGRESS, JOURNAL OF BODYWORK AND MOVEMENT THERAPIES, 10, 249-50, 2006.

22

TOM MEYERS - ANATOMY TRAINS

WWW.ANATOMYTRAINS.COM

Order and view videos of fascia anatomy



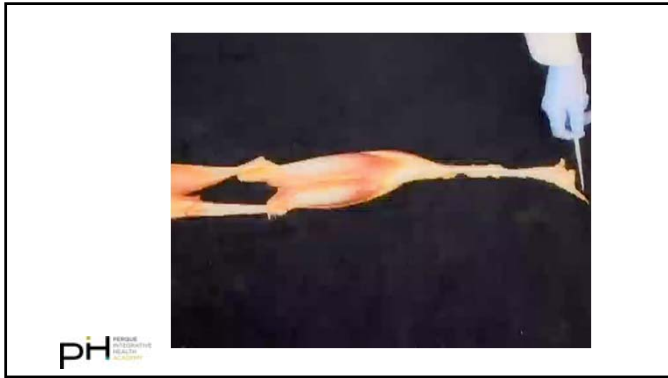
23

SUPERFICIAL BACK LINE - HUMAN FASCIA

David Lesondak
Tom Meyers
Anatomy Trains



24



25



26

FASCIA TERMINOLOGY

- Superficial fascia-subcutaneous loose connective tissue, web of collagen, elastin fibers, fat, absent in soles, palms, face¹
- Deep fascia-connective membrane that sheaths all muscles, nerves, vessels, organs, glands; devoid of fat¹
- Muscle related layers-Epi (entire muscle), Peri (groups muscle fibers into bundles), Endo-mysium (muscle fiber)
 - Epimysium-encloses each single muscle, continuous with perimysium and endomysium
 - Directly involved in play of tension between muscle spindles and Golgi tendon organs²

1. Findley et al, Fascia research narrative review, Journal of Bodywork & Movement Therapies 16, 67675, 2012.

2. Stecco, L., Fascial Manipulation for Musculoskeletal Pain. PICCIN, Italy, ISBN 88-299-1697-8, 2004.

27

FASCIA

- Extra-cellular matrix (ECM)
 - Fibers: strong pliable weave
 - Collagen (28 types), elastin, reticulin
 - Glue
 - Colloidal gels-heparin, fibronectin, hyaluronic acid
 - Water



28

COLLAGEN

- Most abundant protein
- I, II, III, IV, V, VI, and X are most important to human health
- I is most abundant
- II most common in supplement form
- III found in structure of muscle
- IV and V found in layers of skin
- Consume collagen with Vit C and hyaluronic acid
- Also need copper and zinc to make collagen



29

Published Video Blog
Baltimore Sun

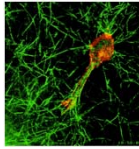
Electron micrograph
Colored by Anne Weston
Individual fibers of collagen
Removed from human knee



30

BODYWORK CHANGES FIBROBLASTS

Human Fibroblast
Freidl, 2004



- Fibroblasts make collagen
- When fibroblasts within muscle fascia are stressed, they secrete soluble mediators as part of repair process (IL-6, IGFs, FGFs, NO)¹
 - IL-6 is up-regulated 24 h after repetitive strain
 - specific biophysical strain patterns (ie. myofascial release) modify the outcome of myoblast differentiation-necessary for muscle repair
- 90 seconds of Osteopathic stretch/compression will undo inflammatory changes caused by 8 hr of strain from repetitive motion²



1. Hicks et al, J Appl Physiol, August 1; 113(3): 465-472, 2012.
2. Standley, Meltzer, J Bodyw Mov Ther, July; 12(3): 201-3, 2008.

31

MANUAL THERAPY VARIATIONS MAY AFFECT PHYSIOLOGICAL RESPONSE TO TREATMENT

- Cao et al, dosed myofascial release (MFR) in bioengineered tendons (1)
- MFR
 - increased tendon weight**, implying up-regulation of extracellular matrix protein
 - longer duration increased** angiogenin, interleukin (IL)-3, IL-8, growth colony-stimulating factor, and thymus activation-regulated chemokine
 - increasing strain magnitude increased** IL-1 β , monocyte chemoattractant cytokine, and regulated and normal T cell expressed and secreted chemotactic cytokine
- Suggests variations in manual therapies may differentially affect physiological responses in vivo



1. Cao et al, J Manipulative Physiol Therapy, 36: 513-521, 2013.

32

DEEP FASCIA OF THE LIMBS DIFFERENT STRUCTURE, DIFFERENT FUNCTION

- Upper limbs more elastic-facilitate movement
- Stronger layers transmit tension at distance, connecting the body for coordination



Stecco et al., 2008

33

CONTINUITY OF FASCIA

- Three deep layers of fascia in the trunk
 - superficial, intermediate, deep
- Layers merge at well defined points, guaranteeing coordination among muscle groups¹
 - coupling between gluteus maximus and contralateral latissimus dorsi by posterior layer of thoracolumbar fascia
- Gluteus maximus inserts into iliotibial band, fascia lata, lateral intermuscular septum (divides quadriceps and hamstring), and femur²
 - Could explain transmission of forces from thoracolumbar fascia to the knee
 - Could also explain radiating sciatica pain



1. Stecco C, 8th Interdisciplinary World Congress on Low Back and Pelvic Pain, Dubai Conference Proceedings, 2013
2. Stecco A et al, 8th Interdisciplinary World Congress on Low Back and Pelvic Pain, Dubai Conference Proceedings, 2013.

34

ACTIVE FASCIAL CONTRACTILITY

- Suggested by Schlei¹
 - Increase in fascial stiffness-improves proprioception and increases muscular activation and coordination
- Spector and others have shown connective tissue cells with muscle properties² (alpha smooth muscle actin)
 - Fibroblasts, chondrocytes, osteoblasts
 - Thought to help with wound repair
 - Myofibroblast cells in fascia



1. Schlei¹ et al, Medical Hypotheses, 2005;65, 273-277.
2. Spector M, Wound Repair Regen, 2002;9(1):11-8.

35

FASCIA

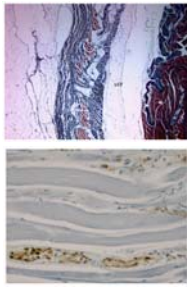
- Can alter mechanics of the body, cells can change their function (Horwitz 1997)
- Individual structures are just labels for areas within the singular fascial web:
 - Plantar fascia, Achilles tendon, iliotibial band, thoracolumbar aponeurosis, nuchal ligament, etc.
- No such thing as MCL, LCL



36

MUSCLE AND NERVE IN FASCIA

- There are muscle fibers inside fascia lata
- There are nerve fibers in the fascia of the arm



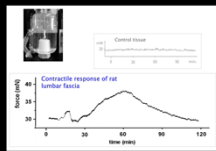
PH

Stecco et al, Journal of Bodywork and Movement Therapies, 2008; 12, 225-230.

37

Fascia is able to contract in a smooth musclelike manner and thereby influence musculoskeletal mechanics

R. Schiepp, W. Klinger, F. Lehmann-Horn



Lippich D. Proceedings of the 5th World Congress of Biomechanics, Munich, Germany 2006, pp 51-54.

- Myofibroblasts contain smooth muscle actin fibers
- Can actively contract--slow process

PH

38

FASCIA CAN CONTRACT PATHOLOGICALLY

- Contains contractile cells¹
- Pathology in fascia contraction -Dupuytren's contracture²

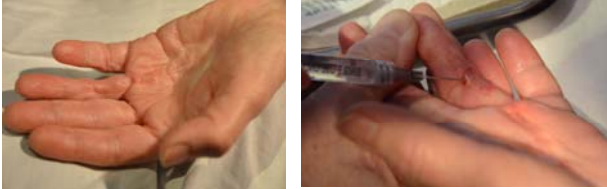


PH

1. Hinz, Gabbiani, Curr Opin Biotechnol, Oct 2003; 14(5): 538-46.
2. Schiepp R, et al., Medical Hypotheses 2005, 65, 273-277.

39

FASCIA CORD RELEASED BY NEEDLE



PH
PERQUE
POSTURAL
HEALTH
ACUPUNCTURE

40

EXPLORE FASCIA AS A CAUSE OF SCOLIOSIS

Idiopathic scoliosis is caused by fascia - provides clues as to diagnosis and treatment

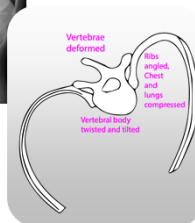
Original data

PH
PERQUE
POSTURAL
HEALTH
ACUPUNCTURE

41

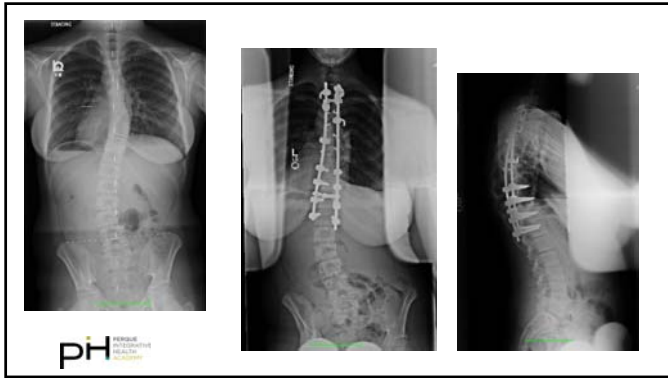
SCOLIOSIS

Issues include posture
Self image
Respiratory function



PH
PERQUE
POSTURAL
HEALTH
ACUPUNCTURE

42



43

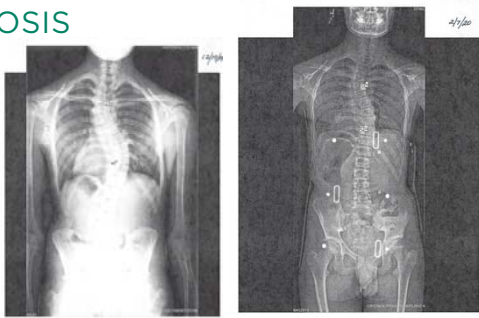


44



45

SCOLIOSIS



46

FASCIA AND SCOLIOSIS

- Muscles do not attach to bone, but to other muscles through fascia
 - Muscles do not attach to bone through tendons
- Fascia forms a true continuity through the entire body
- Scoliosis may be caused by pathologic tightening or failure to relax/grow fascia strings/sheets that traverse longitudinally and spirally through the trunk as the child grows
- Spine cannot grow vertically, so grows in path of least resistance—explains spiral deformity and variability of presentation (age, location, progression with time)



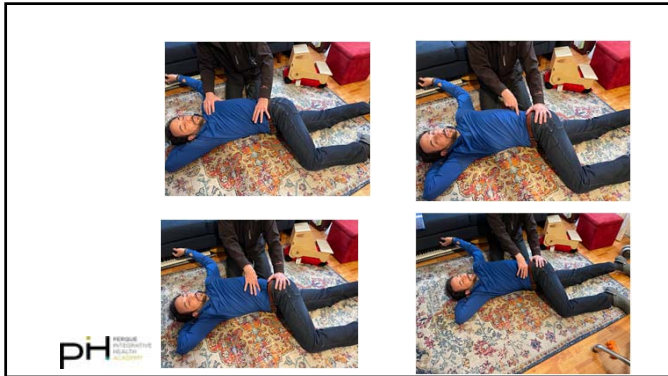
47

FASCIA AND SCOLIOSIS

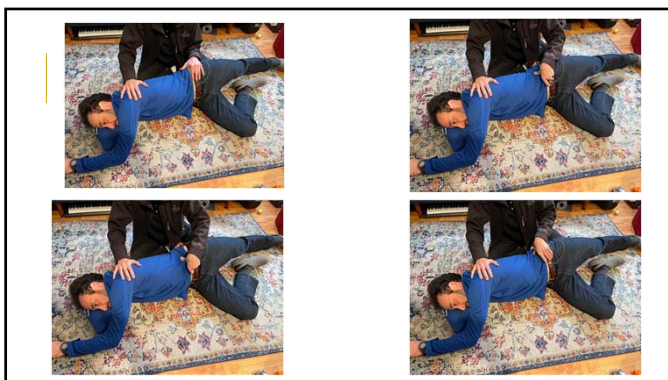
- We can feel abnormally tight cords of fascia under twisting positional stress
 - We can release the tightest of the cords/sheets of fascia percutaneously with needle
- Where cords/sheets are accessible, and not releasable by hand, treatment has shown some preliminary success



48



49



50

FASCIA AND THE NERVOUS SYSTEM

- Illustrate the association between fascia injury and radiating pain
- Explore the connection between fascia and stress
- Explore the connection between fascia and emotion

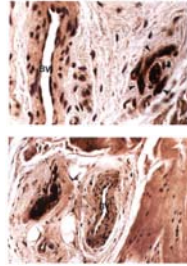
PH

51

SENSORY INNERVATION OF HUMAN THORACOLUMBAR FASCIA

(YAHIA ET AL 1992)

- Immunohisto-chemical study demonstrated Pacinian corpuscles and Ruffini nerve endings in the thoracolumbar fascia



52

SENSORY INNERVATION OF CONNECTIVE TISSUE LOW BACK OF RAT

- Demonstrated nerve fibers containing calcitonin gene-related peptide (CGRP)
- Identified nociceptive nerve endings in lumbar fascia
- Cells also associated with neurogenic inflammation
- Theorized fascia plays a role in chronic low back pain



Corey et al, 2011; Cells Tissues Organs, 2011; 194(6):521-30.

53

FASCIA AND THE NERVOUS SYSTEM

- Mechanoreceptors in fascia
 - **Golgi tendon organs**-measure stretch
 - 90% are in myotendinous junctions, joint ligaments, joint capsules, fascia attachment to aponeuroses¹
 - **Paciniform endings**-measure pressure & vibration
 - myotendinous junctions, spinal ligaments
 - **Ruffini endings**-inform CNS about shear forces
 - ligaments of joints, dura mater



1. Burke, Gandevia, 1990 Peripheral motor system, In: Paxinos G (ed). The Human Nervous System Vol. 1: Academic Press, San Diego, p 133.

54

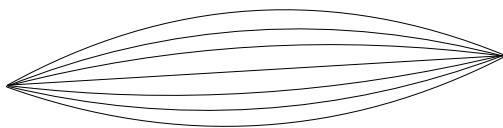
SENSORY NERVES IN MYOFASCIAL TISSUE

- Tibial nerve
 - 3x more sensory fibers than motor fibers
 - 20% originate in mechanoreceptors—Golgi organs, Pacini corpuscles, Ruffini endings
 - 80% small diameter interstitial muscle/fascia receptors
 - 90% unmyelinated free nerve endings
 - some for pain, thermo/chemoception
 - majority for mechanical tension/pressure



Mitchell & Schmitt, In: Shepherd JT et al. (eds). Handbook of Physiology, Sect. 2, Vol. III, 1977.

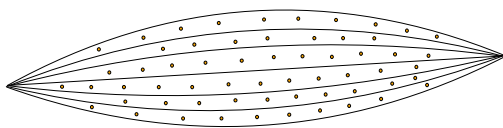
55



Strings of Fascia
Through a Muscle



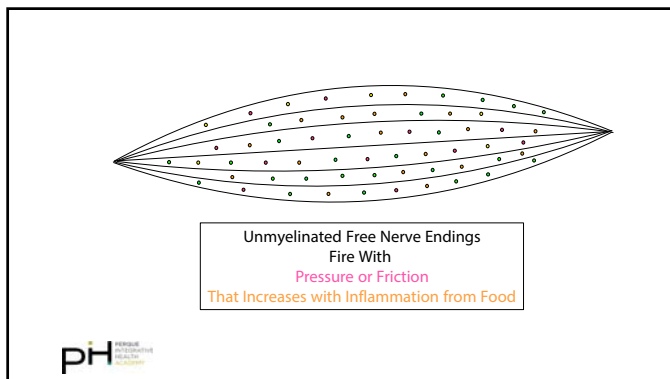
56



Unmyelinated Free Nerve Endings



57



58

LIGAMENTS

- Mostly arranged in series with muscles, not parallel
 - Tense a muscle, ligaments automatically tense to stabilize the joint
- Function through the full range of motion of the joint, not just at full extension

PH

Van der Wal, International Journal of Therapeutic Massage & Bodywork: Research, Education, & Practice, Vol 2, No 4, 2009.

59

NERVE ENDINGS

- Arranged according to the forces that commonly apply in that location in that individual
 - Not according to genetic plan
 - Not according to anatomical division we call a muscle
- No representation of a "deltoid" muscle inside your movement brain
- Sensors in and near skin are more active in detecting and regulating movement than the joint ligament receptors

PH

60

FASCIA

- More innervated than muscle
- Proprioception and kinesthesia are primarily fascial, not muscular
- Fascia is the **antenna** for the brain



61

PROPRIOCEPTION



62

FASCIA AND PAIN!

- Chiropractic/Osteopathic/Adjustment
- Acupuncture/Biopuncture
- Massage
- Myofascial release
- Trigger point injection
- Prolotherapy

Fascia is Common
Denominator for Body Work



63

MYOFASCIAL PAIN

Much of This Pain is Caused by:

- Myofascial Trigger Points In Muscle and Fascia



64

MYOFASCIAL TRIGGER POINTS

- Generate TWO Pain Patterns
 - Localized and Referred
- Quality of Pain
 - Pain
 - Numbness
 - Tingling
 - Burning
 - No sensation of pain that cannot come from muscle and fascia



Travell and Simons, Myofascial Pain and Dysfunction: The Trigger Point Manual 1983 vol 1, 1999 vol 2.

65

TREASURE MAP



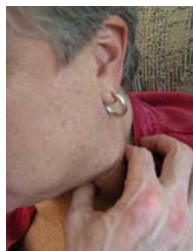
66

HEAD AND NECK PAIN



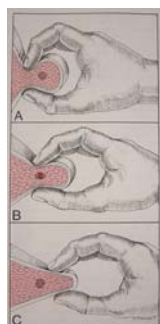
67

PALPATING STERNOCLEIDOMASTOID MUSCLE TRIGGER POINTS



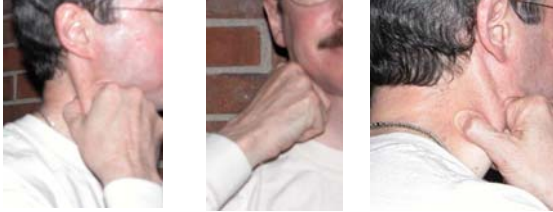
68

PINCH GRASP AND PALPATE



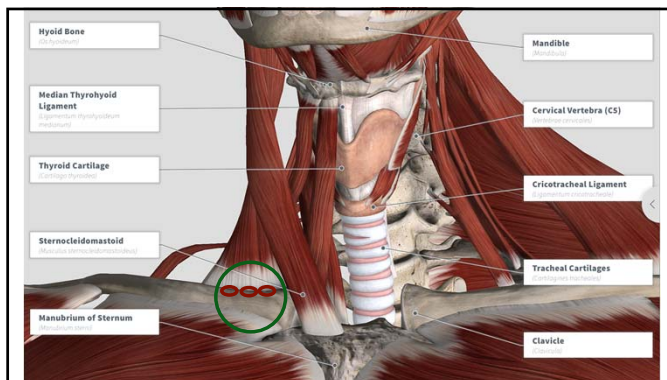
69

PALPATING STERNOCLEIDOMASTOID MUSCLE TRIGGER POINTS



PH

70



71

PALPATE SCM ENTHESIS ON CLAVICLE



PH

72

TIPS IN SCM — CAUSE?

- Injuries from childhood?
- Pushed forward
- Many injuries during lifetime
- Adequately healed?
- Tenderness is residual of 'healed' injury
- AND... how many are under your radar?



73

You have many tender places getting no attention or energy...

SO.....

To Get Out of Pain
Don't Need to be 100% Healed
Anywhere — You Need To Be
99% Ignorable Everywhere



74

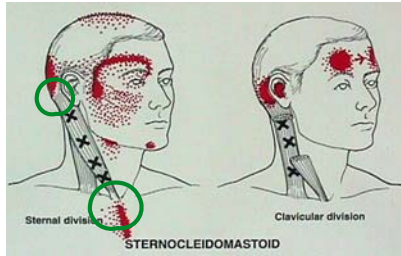
PAIN PATTERNS FOR HEADACHE

- Tension
- Migraine
- Cluster
- TMJ



75

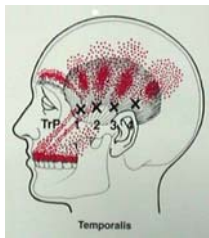
STERNOCLEIDOMASTOID



PH

76

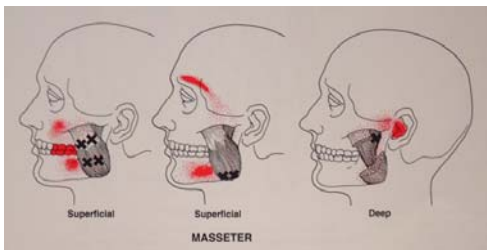
TEMPORALIS



PH

77

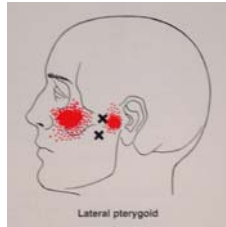
MASSETER



PH

78

LATERAL PTERYGOID

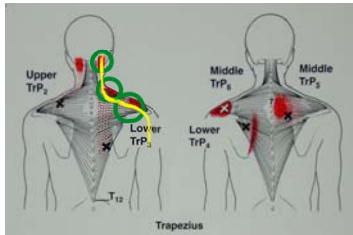


PH

79

UPPER TRAPS

- Where are the injuries that lead to upper trap TrPs?
- Where specifically are you tender—kinks and injuries
- You can only believe where you are tender

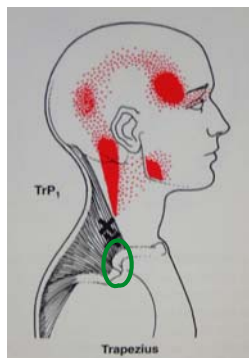


PH

80

TRAPEZIUS

- Can you feel the injured areas of fascia anchoring to hold you together?
- Feel the ropey bands?

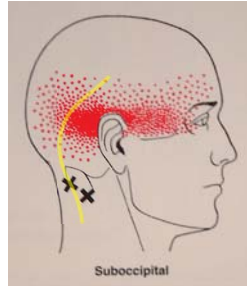


PH

81

SUBOCCIPITAL

Feel these injuries?
Ropey bands?

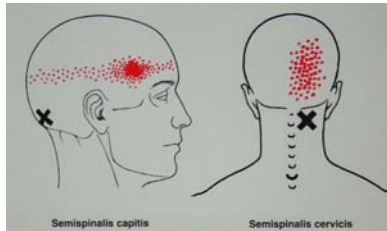


PH

82

SEMISPINALIS

- Tender here also?
- Old injuries?
- Under your radar?



PH

83

UPPER EXTREMITY PAIN

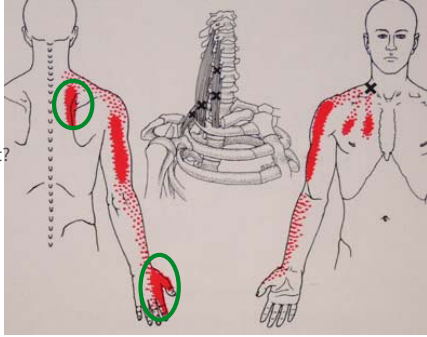
Starts in the neck with cervical fascia injuries?

PH

84

SCALENE

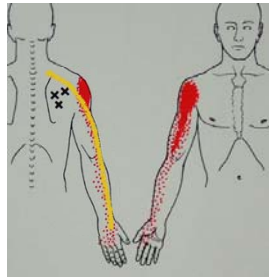
- CTS symptoms?
- Cervical adjustment?
- Radiating pain



85

INFRASPINATUS

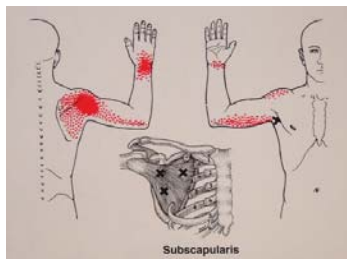
Corner stone for all pain above the bra strap, head, neck, and to the fingers



86

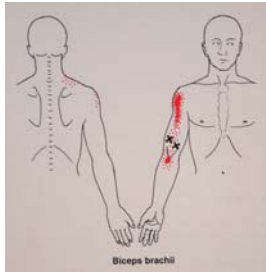
SUBSCAPULARIS

Throwing injury—football with no warm up



87

BICEPS



PH
PHYSIQUE
HUMAN
HEALTH
RESEARCH

88

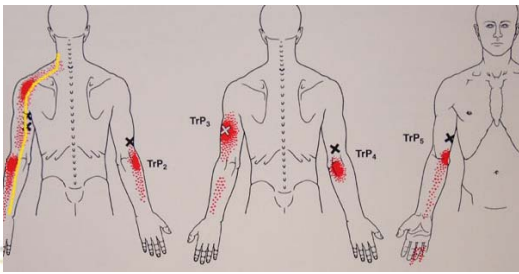
BICEPS



PH
PHYSIQUE
HUMAN
HEALTH
RESEARCH

89

TRICEPS

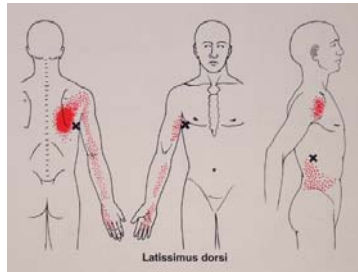


PH
PHYSIQUE
HUMAN
HEALTH
RESEARCH

90

LATISSIMUS

- Pleurisy
- Pleuritic chest pain
- Not about inflammation

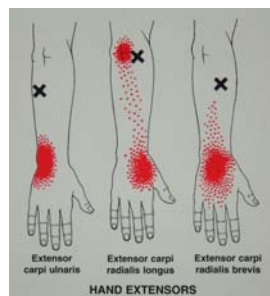


PH

91

TENNIS ELBOW

Not about inflammation..



PH

92

TENNIS ELBOW TOPS



PH

93

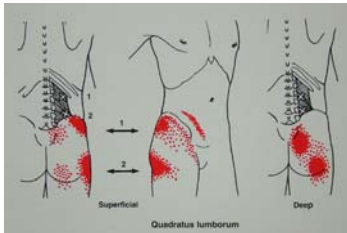
LOW BACK PAIN-WHERE ARE YOU TENDER?

- Lower back paraspinal lumbar muscles?
- Supraspinous ligament between spinous processes?
- Paraspinal muscles?
- Quadratus lumborum?
- GLUTEALS?
- Gluteal tendons and iliac fossa origin?
- Sacral origin?

PH

94

LUMBAR MUSCLES TENDER?



PH

95

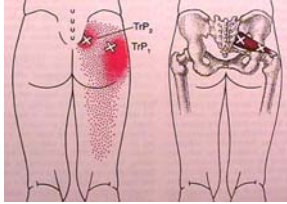
GLUTEAL MUSCLES TENDER?



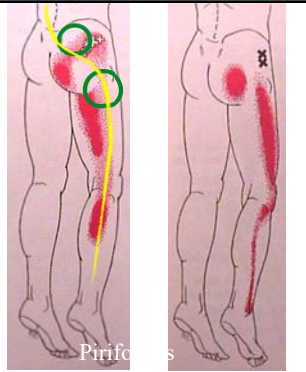
PH

96

SCIATICA?



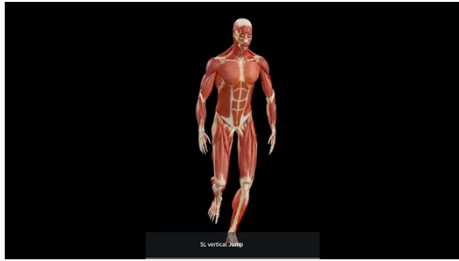
PH



Piriformis

97

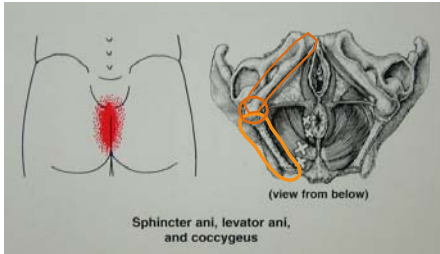
FORCES ON FASCIA FROM JUMPING



PH

98

PELVIC PAIN

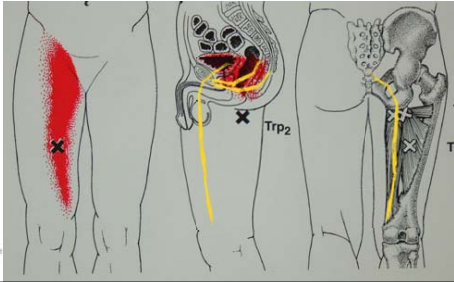


PH

Sphincter ani, levator ani,
and coccygeus

99

CORNER STONE - PELVIC PAIN



PH

100

PELVIC PAIN

- Touch adductors
- Touch enthesis
- Ischial tuberosity (sit bone)
 - Where? Medial, lateral, superior, inferior
- Gluteals?
- Touch tendons—not a bursitis

PH

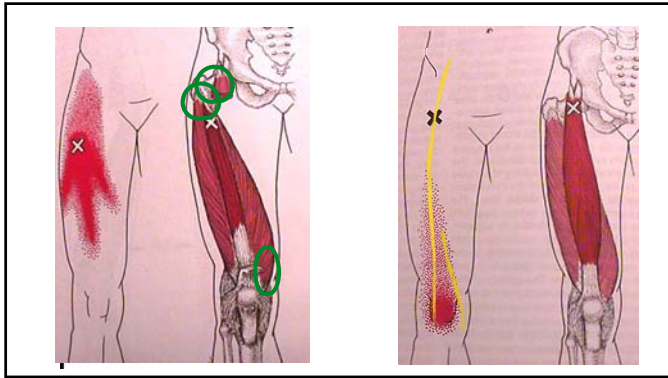
101

LOWER EXTREMITY PAIN— WHY DOES THE LEG GIVE OUT?

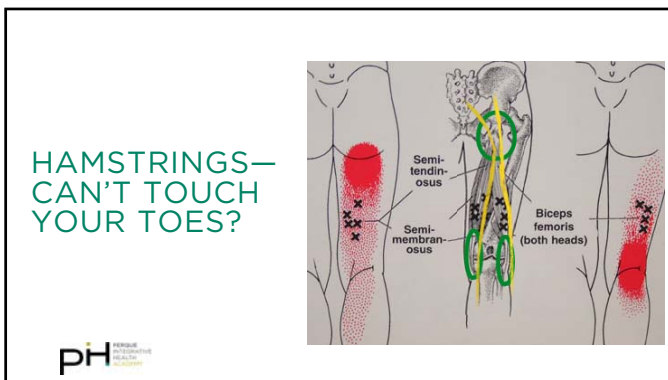
- Lumbar disc pushing on nerve?
- Thigh muscle (quad) not strong?
- Enthesis unable to hold on—where?
- How do you find it?
- How do you get your body to 'fix' it?

PH

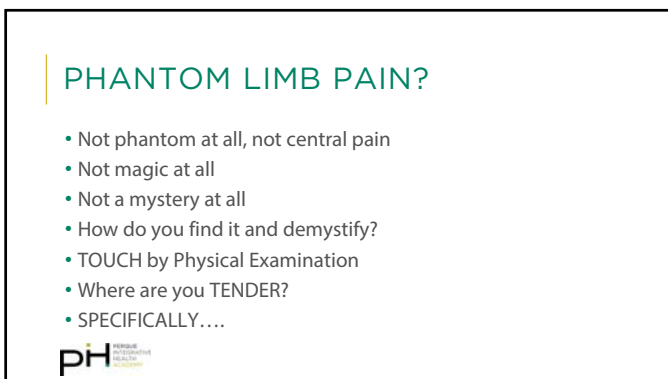
102



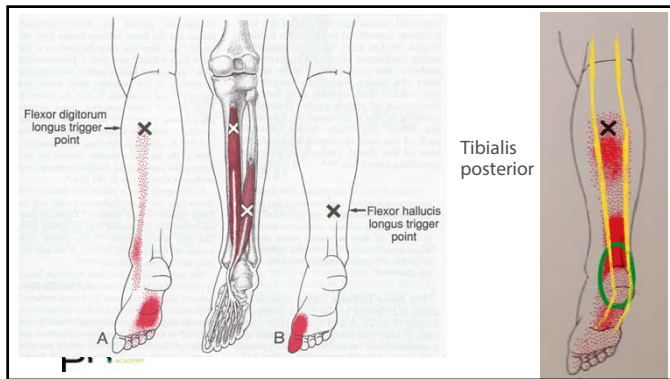
103



104



105



106

WHERE DOES FOOT PAIN COME FROM?

- You can't believe where you feel the pain
 - Where you *think* you hurt
- You can only believe where specifically you are tender
- Where are you **most** tender?
- Posterior calf? Or plantar foot?

PH

107

PAIN TRANSMISSION

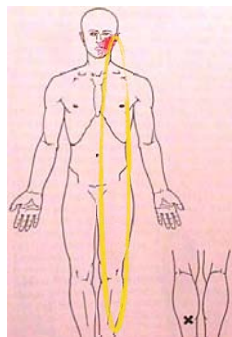
Nervous system that transmits this pain
Does not know up from down
Does not know front to back
Does not know left from right

Cannot differentiate nociceptive and neuropathic pain

Myofascial pain is autonomic and neuropathic and nociceptive

There is no pain sensation that cannot be generated by fascia

PH



108

HOW TRPS CAUSE PAIN PATTERN

- What the pain patients feel is the total of the CNS/ANS input from the orchestra of TrP's in the body
- How they feel depends on:
 - How loudly the orchestra plays
 - Which solo artist stands up to sing



109

SEVERITY OF PAIN PATTERN

- This depends on (for the person who hurts)
 - What you have done in the past 3 days that has "over stressed" your muscles
 - What the weather is going to do tomorrow (food based and env toxicity based inflammation)
 - How well you slept last night
 - How much stress you are under
 - What you have eaten in the past 4 months
 - FOOD BASED INFLAMMATION



110

ACTIVE TRP

- Focus of Hyperirritability in a **muscle** or its **fascia** that causes pain
- Refers pain at rest
- Refers pain with motion that stretches or loads that muscle
- Always tender, usually will refer pain with direct compression
- Weakens and prevents full lengthening of the muscle
- Can evoke **autonomic** phenomena



111

LATENT TRP

- Does not cause pain during normal activity
- Usually causes pain when palpated
- May persist for years after "recovery"
- Causes restriction of motion
- Causes weakness without atrophy
- Predisposes person to acute attacks of pain:
 - T.P.'s re-activated with:
 - Over stretching
 - Chilling
 - Overuse



112

SATELLITE TRP

Develops in zone of referred pain from another trigger point
Construct to understand spread of pain over time
Pain patterns evolve over time



113

FASCIA + INFLAMMATION = PAIN

- Allergies/toxicities
- Food/nutrition/supplementation
 - Increase inflammation¹
 - Wheat - 3-4 weeks
 - Sugar (potato, fruit juice, starch) - 2-4-30 days
 - Dairy (cow, tenderness in neck and upper traps, headaches) - 3-4 weeks
 - Decrease inflammation
 - Fish oil supplementation
- Other do not eat foods
 - Artificial sweeteners
 - Hydrogenated fat



1. Galland L. Diet and inflammation. Nutr Clin Pract, Dec 2010; 25(6): 634-40.

114

TREATMENT

Make the knots/kinks smaller
Strengthen and repair the enthuses as needed



115

INACTIVATE TRIGGER POINTS

- Ischemic compression (Acupressure)
 - 1 to 2 minutes
- Dry needling
- Trigger Point Injection (local anesthetic, gas, never cortisone)
- Photon Therapy, infrared light



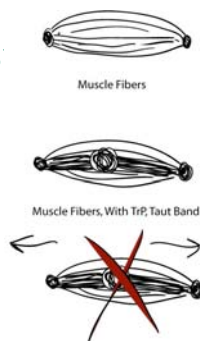
116

WHY INACTIVATE TRPS

Most instructed stretches are pulling on the ends of the muscle and ropey band

Pain comes from a knot in the middle of a shoelace

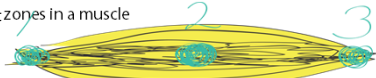
Why are we pulling on the ends?



117

PROLOTHERAPY

- There are three trigger point zones in a muscle
- Origin
- Belly
- Insertion
- Prolotherapy at enthesis is also a trigger point injection--relieving the controversy
- Prolotherapy is also an unkinking (tendon and ligament and enthesis)
- Tendon weakness and kinks perpetuate trigger points in the muscle, increases fragility



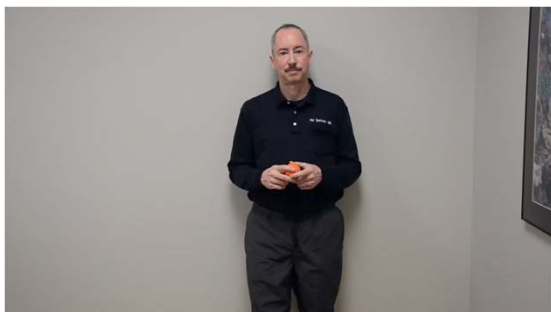
118

HEALING

- When a trigger point is inactivated, the pain pattern may shift to that of an earlier TrP and that muscle must also be treated
- If the original TrP in pain pattern is inactivated first, patient may recover without further treatment
- Pain patterns evolve backwards in time



119



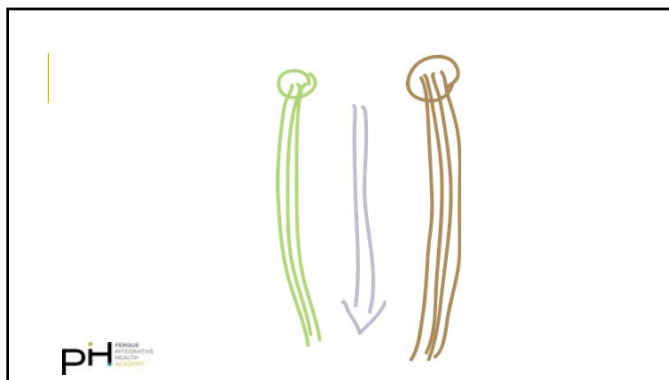
120

FASCIA SHEAR THEORY BY BLATMAN

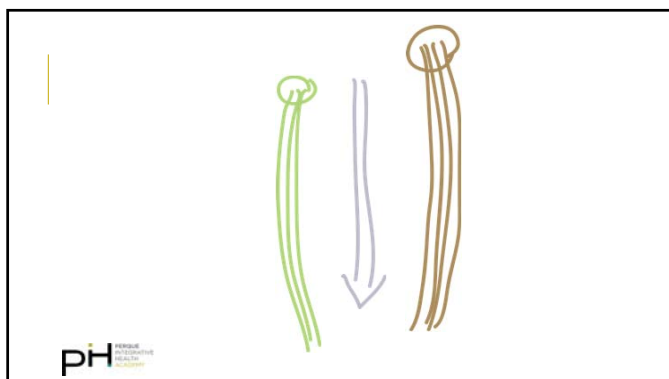
How do trigger points form
Can you think of them as kinks in fascia?
Every ropey band has tender ends



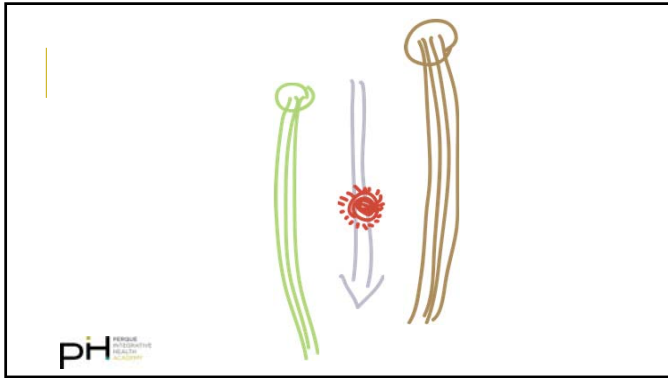
121



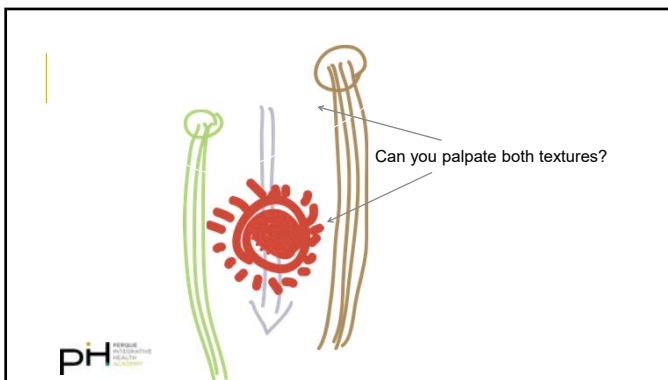
122



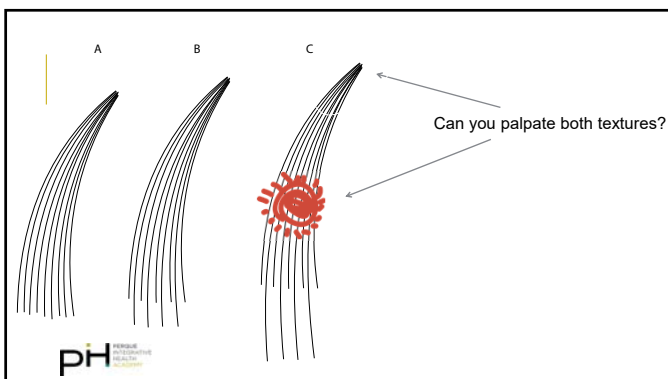
123



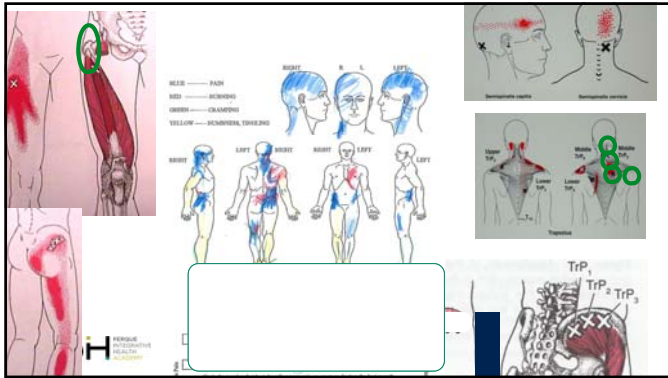
124



125



126



127

TREATMENT

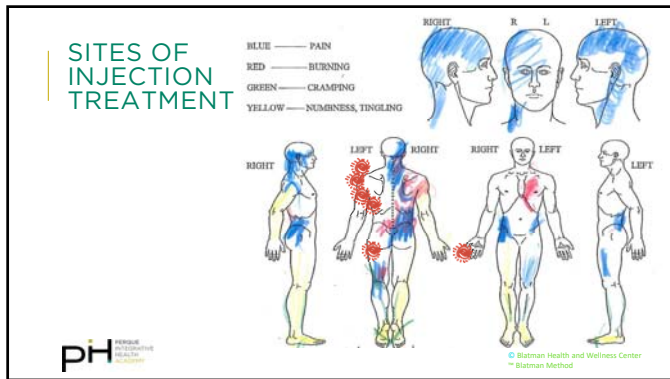
- Platelet rich plasma injections to:
 - Right quadriceps origin
 - Right gluteal tendons
 - Right levator scapulae tendon
 - Right teres and infraspinatus tendons
 - Right scalene and sub occipital attachments
 - Right medial upper trap attachments

PH PERIPHERAL INJECTION HEALTH

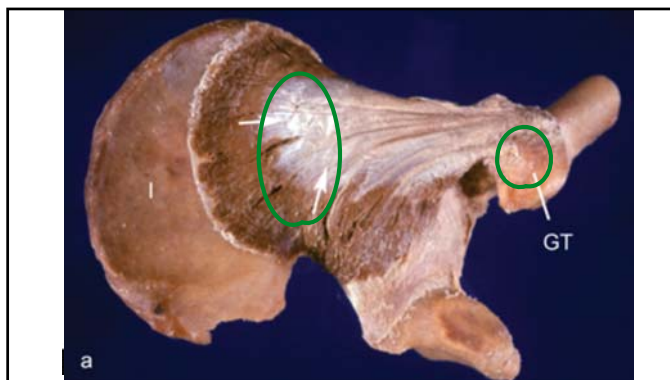
128



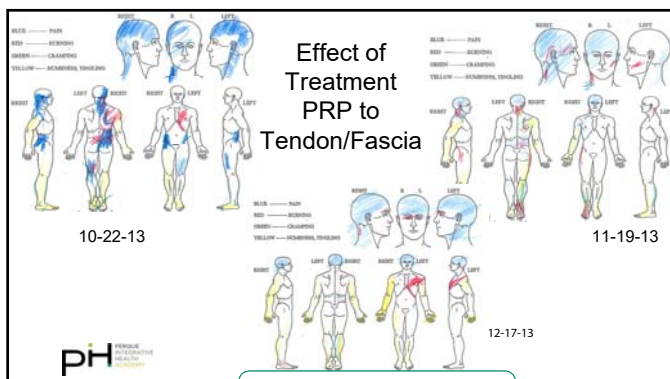
129



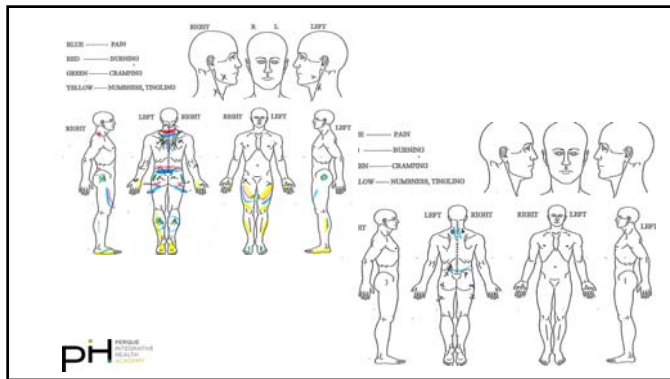
130



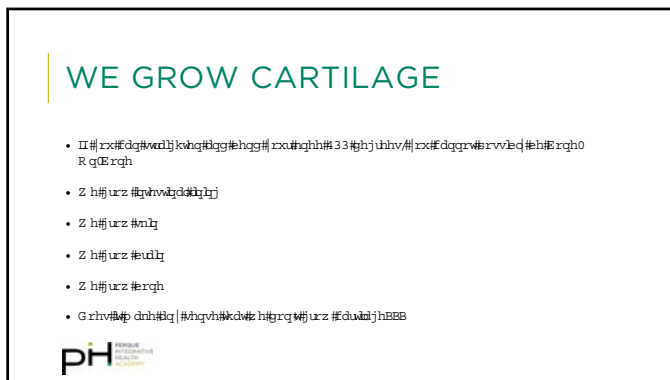
131



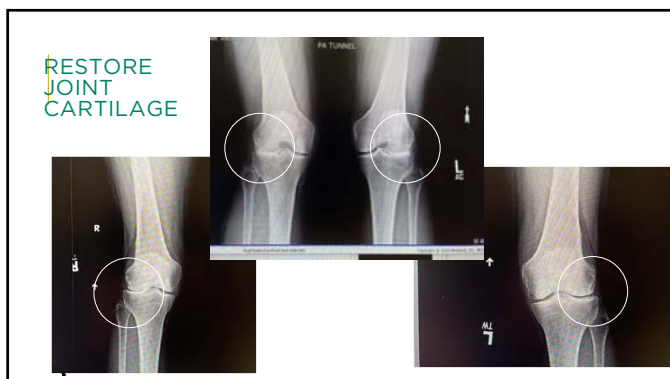
132



133



134



135



FASCIA SHEAR

- What happens when our body repairs the injured attachments?
- Muscle pull is more solid, shear force between layers of fascia is decreased
- Muscles become less fragile to exercise
- Strength increases
- Pain decreases
- Numbness and tingling go away
 - ie. patient can feel dog lick bottoms of his feet



136

WHAT CAUSES PAIN?

- Free nerve endings between fascia strings and layers measure pressure and shear
- Tight ropey bands put pressure on free nerve endings
- More pressure leads to more and radiating pain
- Reduce the pressure and reduce/eliminate pain



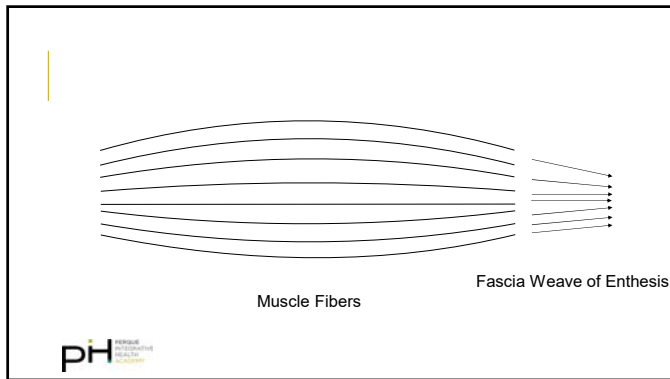
137

PRESSURE ON FREE NERVE ENDINGS

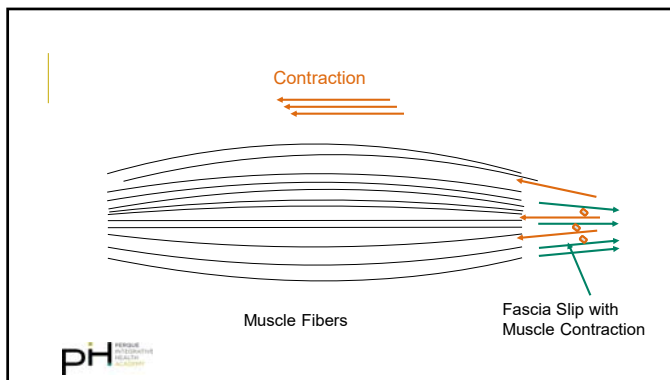
- Itch
- Tickle
- Numbness
- Burning
- Tingling
- Bladder distension
- Sexual arousal



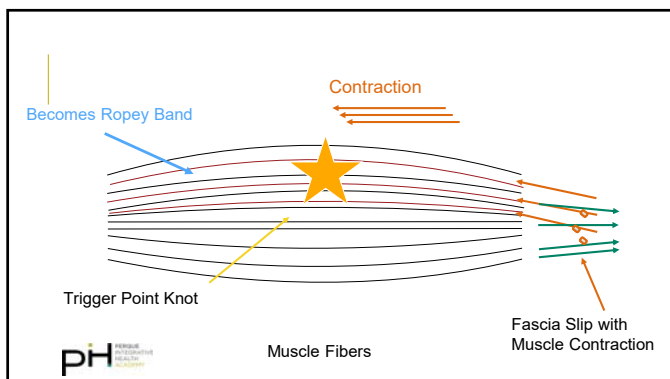
138



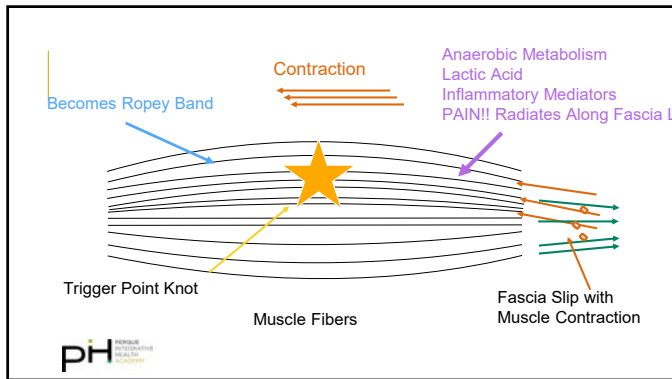
139



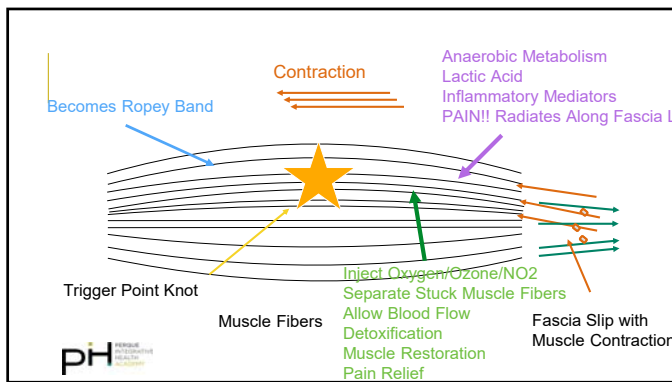
140



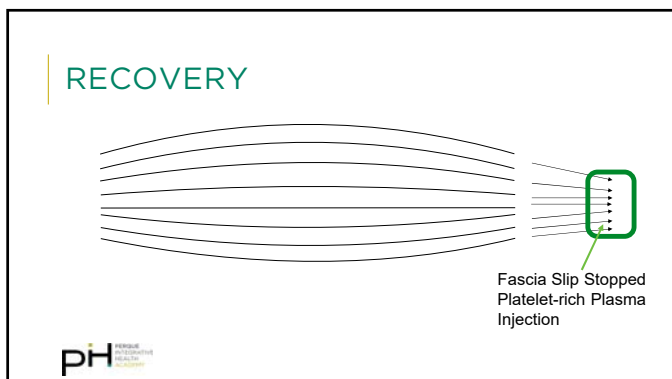
141



142



143



144



145



146

RELATIONSHIP OF FASCIA—PAIN AND STRESS

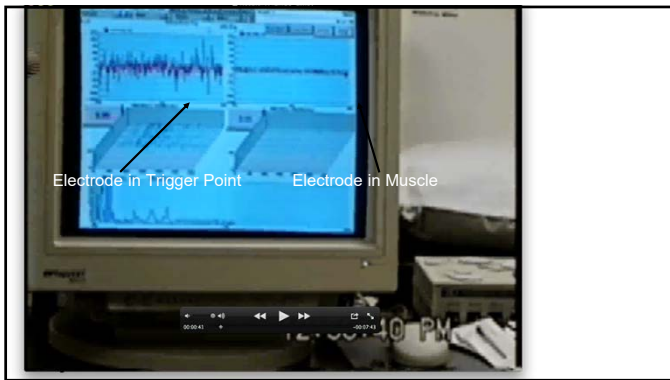
- Mental, emotional, physical, trauma connection
- Hubbard/Gevirtz
- Needle transducers in
- Shoulder trapezius muscle
- One in TrP
- One not
- Relationship with stress

Needle EMG Activity

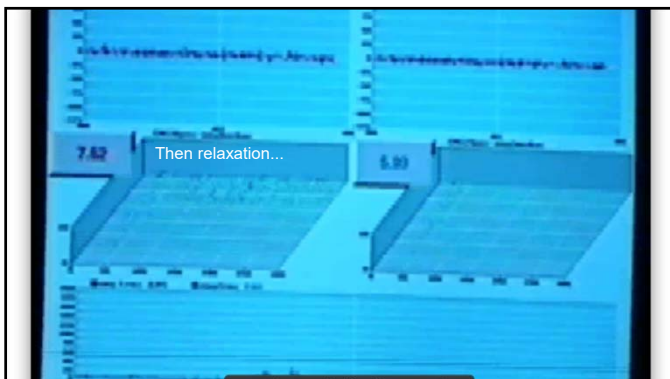
147



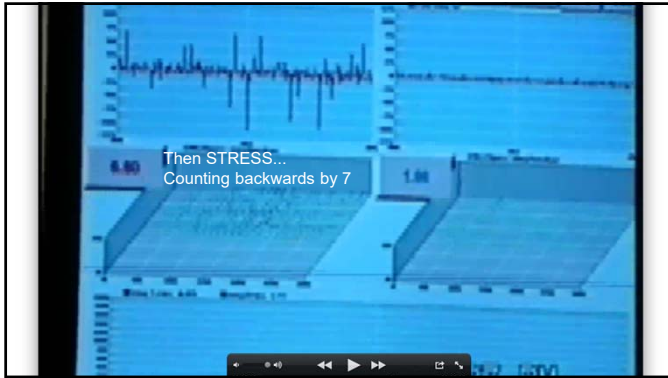
148



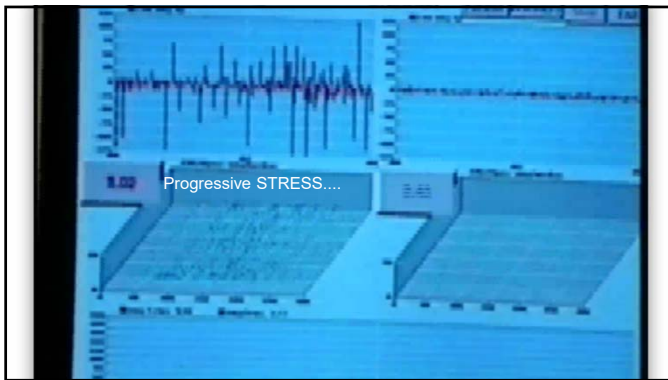
149



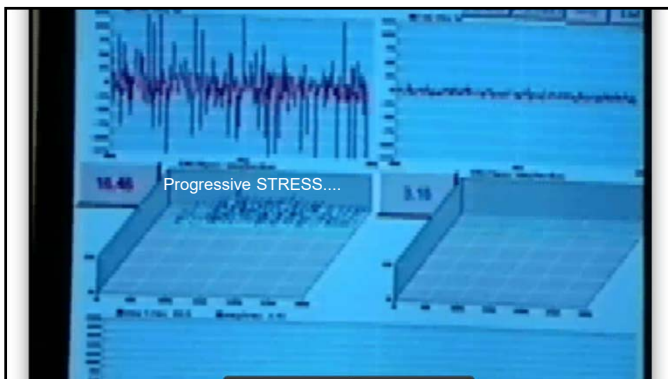
150



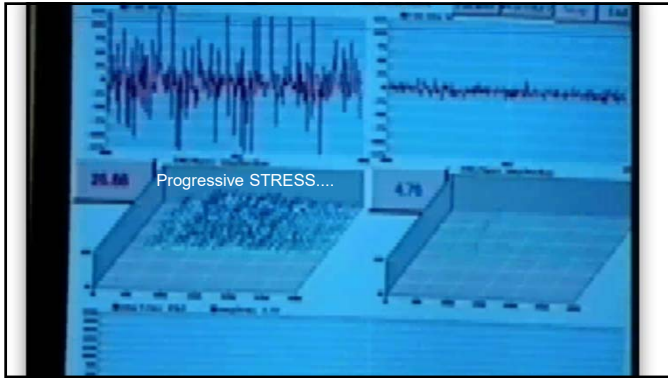
151



152



153



154

AS WE GET MORE STRESSED

- Sympathetic nervous system effects increase
- Trigger point activity increases
- Orchestra of pain generators plays louder...all over the body
 - Muscle tension, headache, back pain.....



155



We were
designed to run
away from tigers.



156

WHAT TIGERS?

- Every time a
 - Horn beeps
 - Phone rings
 - Friend scowls
- Some people are more sensitive
 - Sounds
 - Frights
- Responding to the tiger
- Exploits the communication link between fascia and autonomic nervous system



157

INTERCEPTION



- Sensitivity to and processing of stimuli originating in the body
- The sense of the physiological condition of the body
- Primates have distinct cortical image of homeostatic afferent activity¹
 - Reflects all aspects of physiological condition of all tissues of the body
 - Associated with autonomic motor control
- Dorsal posterior insula of the brain
 - pain, temperature, itch, tickle, sensual touch, muscular and visceral sensations, sexual arousal, distention of bladder or intestine, vasomotor activity, hunger, thirst, 'air hunger'
 - basis for subjective image of material self as a feeling entity—emotional awareness
- Unmyelinated (free) sensory nerve endings project to insular cortex²
 - Not somatosensory cortex (target of proprioceptive sensations)



1.Craig, 2003
2.Berlucchi, Aglioti, 2010

158

INTERCEPTION



- Minority of sensory nerve endings are myelinated mechanoreceptors for proprioception
 - Golgi receptors, Paccini corpuscles, Ruffini endings
- 80% of afferent nerves terminate in free nerve endings (Schleip 2003)
 - Located in fascial tissues
 - 90% are slow conducting C-fibers (Mitchell & Schmidt 1977)
 - Functional MRI shows activation of insular cortex, not somatosensory (Olausson et al 2008)
- Interoceptive nerve endings outnumber proprioceptive nerve endings more than 7:1



159

INTEROCEPTIVE NERVE ENDINGS

- Measure
 - Mechanical tension
 - Pressure
 - Shear deformation
- 40% responsive to light touch
- Responsive to myofascial manipulation
- Myofascial and visceral therapists encounter psycho-emotional responses during therapy



160

COMPLIMENTARY MEDICINE PRACTICES

- Promoting inner mindfulness, refining internal listening skills
 - Yoga
 - Thai Chi
 - Chi Gong
 - Feldenkrais
 - Pilates
 - Body mind centering
- Effective for diverse clinical conditions



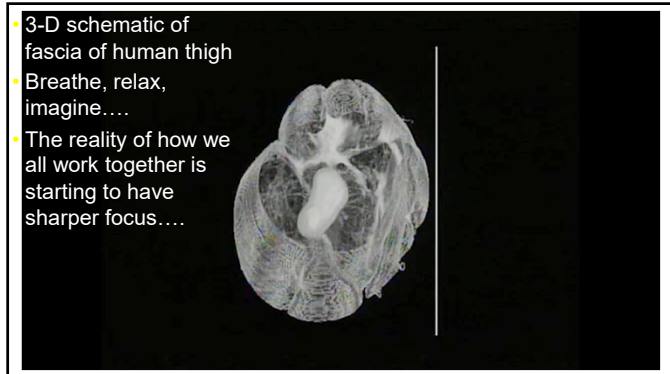
161

PRACTICE OF HEALING

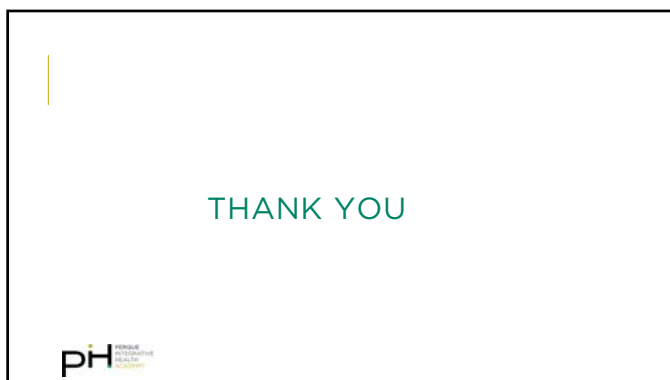
- Fragmentation/specialization - one of greatest problems
- Connective tissue - brings us all together
 - individual patient bodies, as well as therapists of all kinds
- It does not matter what discipline has selected us, we influence by intention the body's ability to heal
- Fascia forms a true continuity through the entire body, influencing all systems, being influenced by many modalities of therapy



162



163



164
