
Introduction to the Fascial Distortion Model



Hawaii Association of Osteopathic Physicians and Surgeons
2019 Primary Care Update
Ken Nakasone, PT, PhD, FDM IC, ATC, CSCS • 03.27.2019

I have no financial interest in any of the products used or discussed in this course.

I am a certified FDM practitioner and am currently training to become a certified instructor with the AFDMA, a non-profit association with the mission to promote the FDM by:

- informing and educating the medical and public communities,**
 - establishing certification standards for practitioners and instructors in the USA with cooperation from the European, Asian and African FDM associations, and**
 - funding and performing FDM related research**
-

FDM
Global Organization



European
Fascial Distortion Model
Association

EFDMA



FDM Asian Association

FDM

Clinical and Theoretical Application of the
Fascial Distortion Model
Within the Practice of Medicine and Surgery



Stephen Typaldos, D.O.

Endorsed by Asian Council

Stephen Typaldos, DO

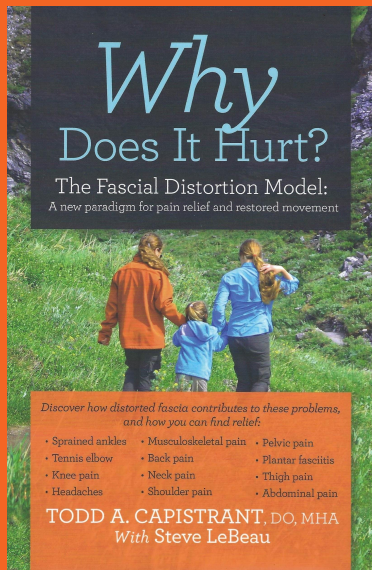
March 25, 1957-March 28, 2006



<http://www.typaldos.org/memorial/stephen-marge.jpg>

Bachelor's degree: UC-Riverside

**Medical degree: University of Health
Sciences, College of Osteopathic Medicine,
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11/2014. Why Does It Hurt?. Amazon digital/hard copy

02/2015. FDM Module 1. Maui, HI

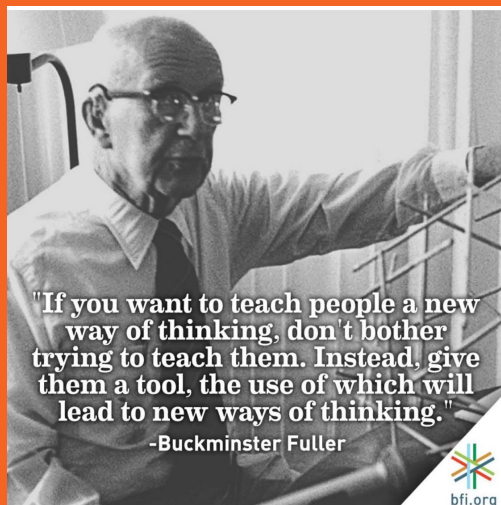
11/2015. FAA International Seminar. Tokyo, Japan

02/2016. FDM Module 2. Maui, HI

05/2016. FDM Module 3. Yakima, WA

03/2017. FDM IC Exam. Colorado Springs, CO

10/2018. FAA International Seminar. Osaka, Japan



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Overview Introduction to the FDM and FDM Workshop: Assessment and Treatment of Ankle Pain

Ankle injuries

- Literature update

Fascial Distortion Model

- Define six distortions
- Recognize gestures for each distortion
- Assessment: CC-MOI-BLG-OF-MOVT

FDM for ankle

- Triggerband
 - Continuum distortions
 - Folding distortions
-

Clinical Diagnostic Assessment

- MOI (Delahunt et al; McGovern and Martin; Vuurberg et al; Lin et al; Dublin et al)
 - Hx of LAS (Delahunt et al; McGovern and Martin; Vuurberg et al; Lin et al; Dublin et al)
 - WB status (Delahunt et al; McGovern and Martin; Vuurberg et al; Lin et al; Dublin et al)
 - Assessment of bones (Delahunt et al; McGovern and Martin; Vuurberg et al; Jonckheer et al; Lin et al; Dublin et al)
 - Assessment of ligaments (Delahunt et al; McGovern and Martin; Vuurberg et al; Lin et al; Dublin et al)
-

Delahunt et al, 2018. Clinical assessment of acute lateral ankle sprain injuries (ROAST): 2019 consensus statement and recommendations of the International Ankle Consortium

Objective Findings

- Pain: numerical rating, FADI
 - Swelling: Figure 8
 - ROM: DF, anterior reach SEBT, WB lunge test
 - Arthrokinematics: posterior talar glide (DF)
 - Muscle strength: hand held dynamometers
 - Static posture balance: BESS; foot lift test
 - Dynamic postural balance: SEBT
 - Gait: load/unload, LE biomechanics
 - Physical activity level: exercise programming, PLOF
 - Patient response outcomes: FADI
-

Ottawa Ankle Rules

Ankle x-ray series if pain or tenderness over the...

Posterior edge or tip of lateral malleolus

Posterior edge or tip of medial malleolus

Unable to take 4 steps immediately or in ED



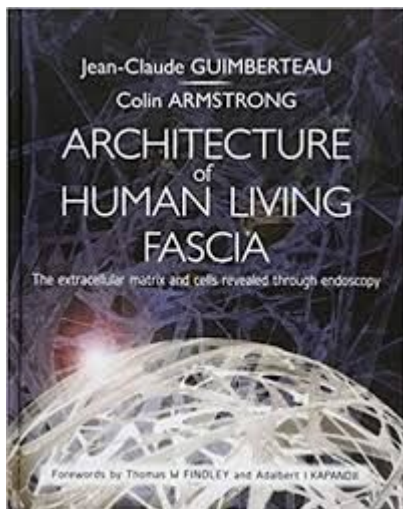
US

Foot x-ray series if pain or tenderness over the...

Base of the 5th metatarsal

Navicular

Unable to take 4 steps immediately or in ED



“...tensional, continuous fibrillar network within the body, extending from the surface of the skin to the nucleus of the cell. This global network is mobile, adaptable, fractal and irregular; it constitutes the basic structural architecture of the human body.”

Guimberteau and Armstrong. 173

Review Article

Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia

Bruno Bordini^{1,2,3} and Emiliano Zanier^{2,3}

- Fibroblasts can contract and communicate with other fibroblasts.
 - Transmit tension from muscles
 - Source of proprioceptive and nociceptive information
-

FDM is an anatomical perspective in which the underlying etiology of virtually every musculoskeletal injury (and many neurological and medical conditions as well) is considered to be comprised of one or more of six specific pathological alterations of the body's connecting tissues (fascial bands, ligaments, tendons, retinacula, etc.).

Fascial Distortion Model

Patient is the expert

Provides the diagnosis AND guides the treatment

Results are objective, obvious, measurable and immediate

Fascial Types in the FDM

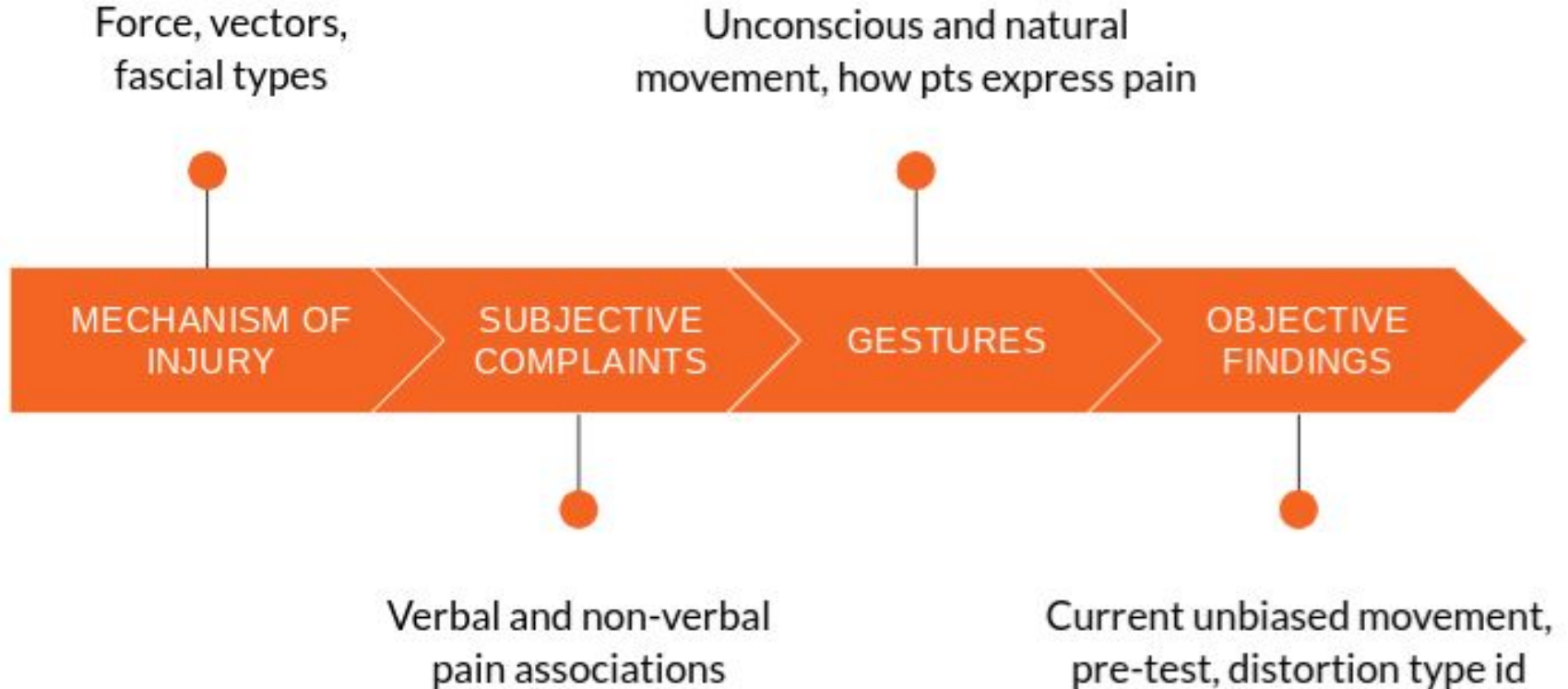
Banded fascia (TB, CD) weightlifters, football players

Coiled fascia (CyD) jumpers, basketball players

Folding fascia (FD) ballet dancers

Smooth fascia (HTP, TF) spectators

FDM DIFFERENTIAL DIAGNOSIS



FDM FASCIAL DISTORTIONS

Triggerband (TB): contorted banded fascia

Herniated Triggerpoint (HTP): tissue protrusion through fascial layer

Continuum Distortion (CD): transition zone alteration b/w tissue types

Folding Distortion (FD): 3-D alteration of fascial plane at the joint

Cylinder Distortion (CyD): entangled or collapsed coiled fascia

Tectonic Fixation (TF): fascia loses ability to glide

FDM Body Language or Gestures “Pearls”

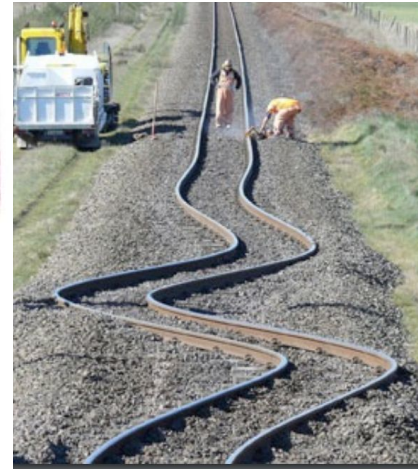
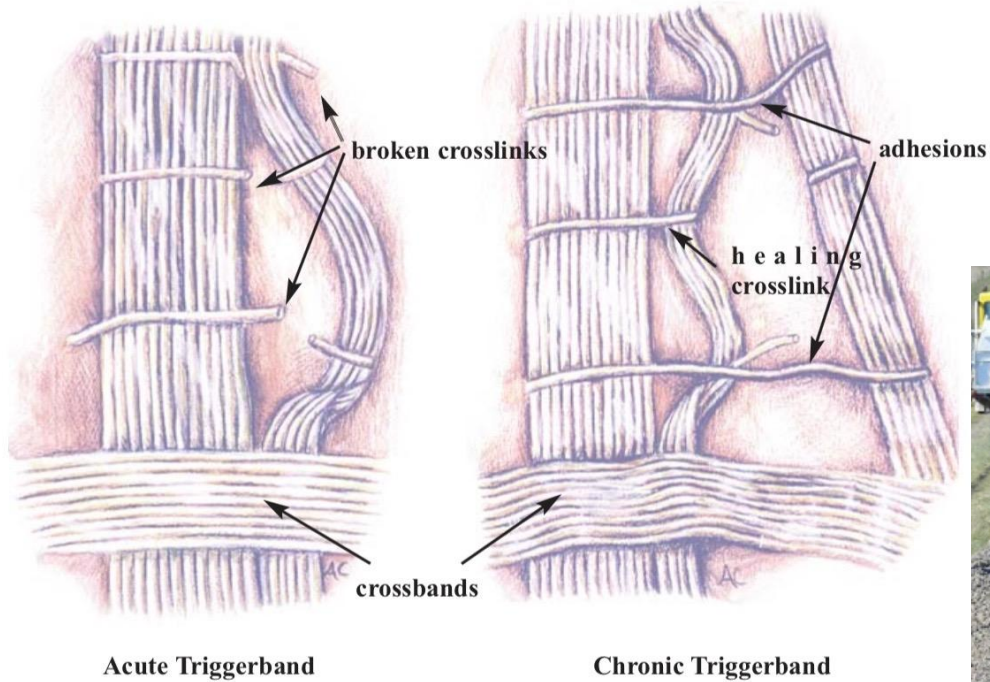
M.Kasten p.40

Distortion	TB	HTP	CD	FD	CyD	TF
Body language Gestures	Sweeping motion with fingers	Pushes with fingers or fist into non-jointed area	Points to one or more spots of pain on bone	hand cups joint or finger drawn across joint	Squeezes or rubs hand over area	Has trouble moving joint, feels and looks stiff
Verbal descriptions	Burning, pulling, tethering, restricted motion	Aching, pinching or tightness in soft tissues	Hurts in one spot	Aches deep in the joint, feels unstable	Wakes up at night, comes and goes, N/T, paresthesias	Feels like it is stuck, needs to pop
Key words	Pulls or heard it snap	Feels tight, stiff or pinches	Just that one spot	Unstable, changes w/weather	Spaghetti legs, weakness, numb	Stiff, tight in joints

Triggerband (TB): twist, crumple, knot, pea, wave, grain of salt

- Sx: burning, pulling pain along a linear pathway/line
- BLG: sweeping motion with fingers along painful line
- Problem: twisted or wrinkled banded fascia
- Feels like: ribbon or violin string
- Treatment: use your thumb to untwist/iron wrinkled tissue
- Warning: no heat, e-stim and avoid rest

Triggerband (TB): twist, crumple, knot, pea, wave, grain of salt



Triggerband (TB): BLG: sweeping motion with fingers along painful line



Triggerband (TB): BLG: sweeping motion with fingers along painful line



Triggerband (TB): BLG: sweeping motion with fingers along painful line



“NOTHING YOU
CAN DO ABOUT
IT” ...CPT

Saturday 9:15 AM

Thanks again. I went for a full run, though slower, yesterday and my foot feels fine today. Such a difference!

Great!

Almost like you know what you're doing. Pretty cool!

Somewhat. Haha

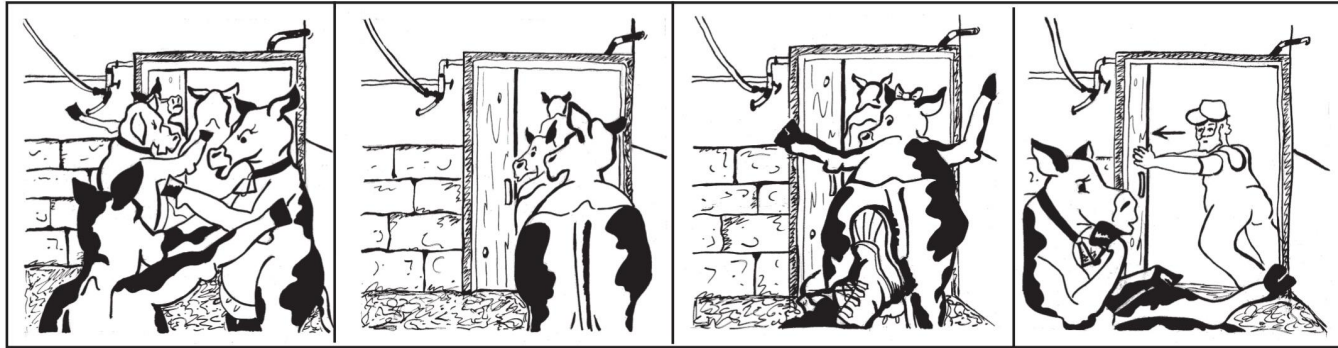
Delivered

TB, CD, HTP

Herniated Triggerpoint (HTP): banded, non-banded

- Smooth fascia
- Tissue protrusion and stuck
- Trade-off of motion for strength

Figure 4-2. Cows-Through-the-Barn-Door Analogy



Recalcitrant cows
outside barn

1. Cows lined up

2. Cows shoved into barn

3. Barn door
opened fully

Herniated Triggerpoint (HTP): Non-traumatic muscle hernia

- 26yo; sx x 10d; MOI: weight training
- Nagging pain (exercise) with use; denies sensorimotor deficit
- Palpation, US (0.72cm)
- Fasciotomy then fasciorrhaphy; clear after 6 month F/U



Case report

Symptomatic non-traumatic muscle hernia in the dorsal forearm

Ming-Sheng Lim*, Niall M. McInerney, Edward J. Kelly

Department of Plastic, Reconstructive and Hand Surgery, Cork University Hospital, Wilton Road, Cork, Ireland

M.-S. Lim et al. / JPRAS Open 3 (2015) 26–28

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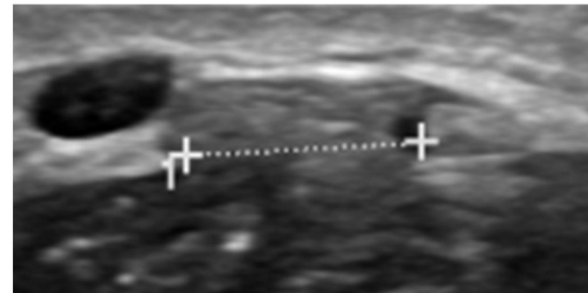


Figure 1. Axial ultrasound image of forearm showing loss of continuity of hyper-echogenic fascia with herniation of muscle belly.

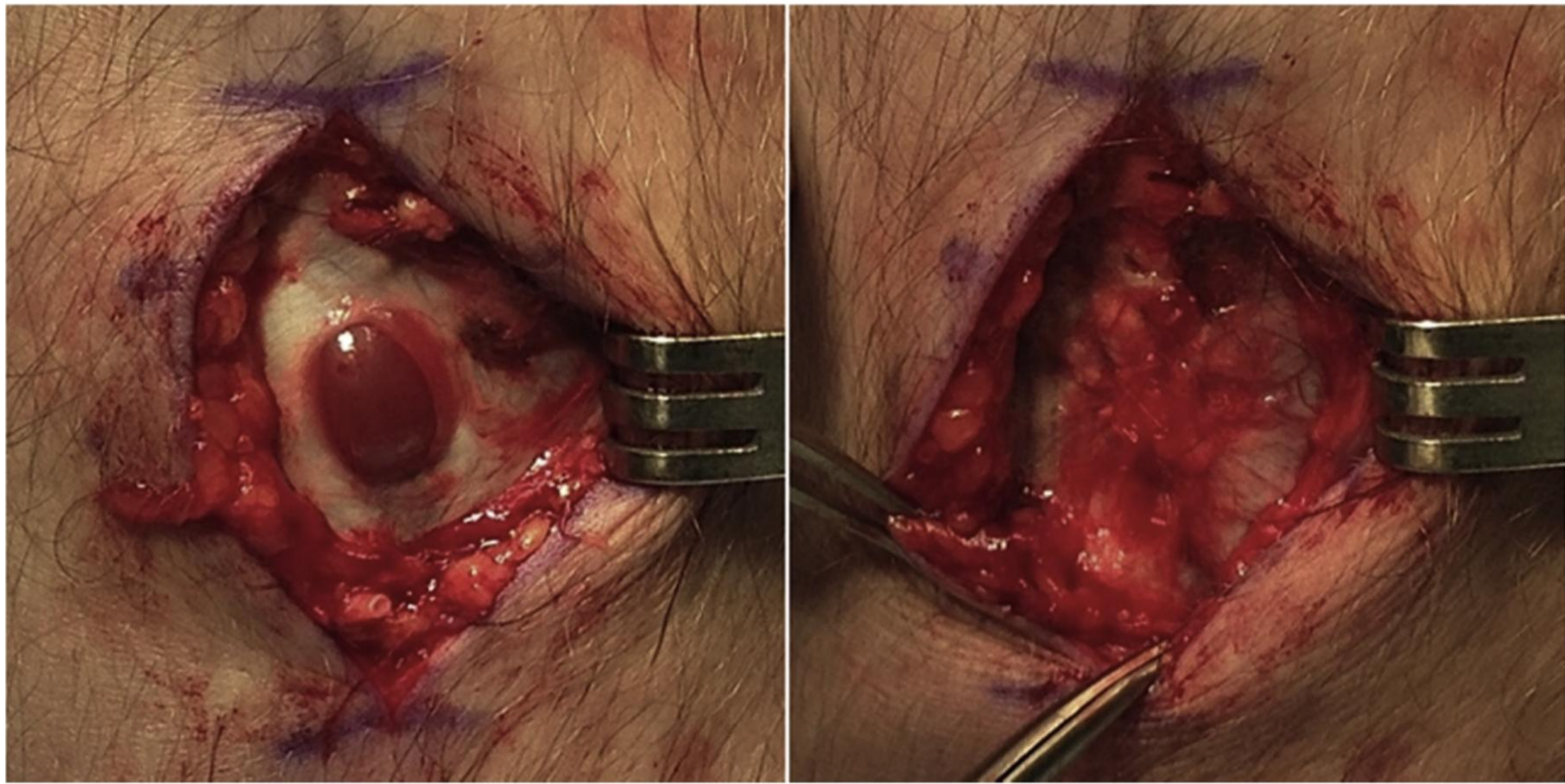


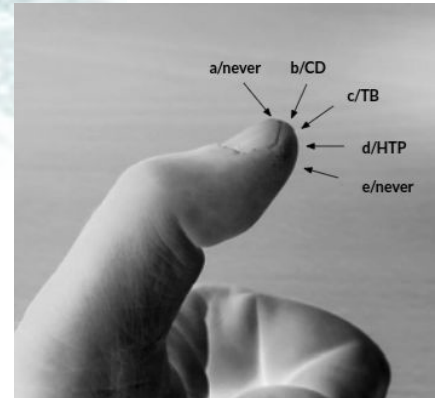
Figure 2. Intraoperative photos of the hernia before (left) and after fasciorrhaphy (right).

Herniated Triggerpoint (HTP): banded, non-banded

- Sx: ache, pinching or catching
- BLG: pushes the thumb/fingers into a specific spot; punches
- Problem: tissue is protruding through a rupture in smooth fascia
Non-banded: protrusion through non-banded tissue
Banded: protrusion through tissue due to a TB
- Feels like: knot or grape
- Treatment: push the knot back through the fascial layer
- Warning: HTP are permanent unless treated

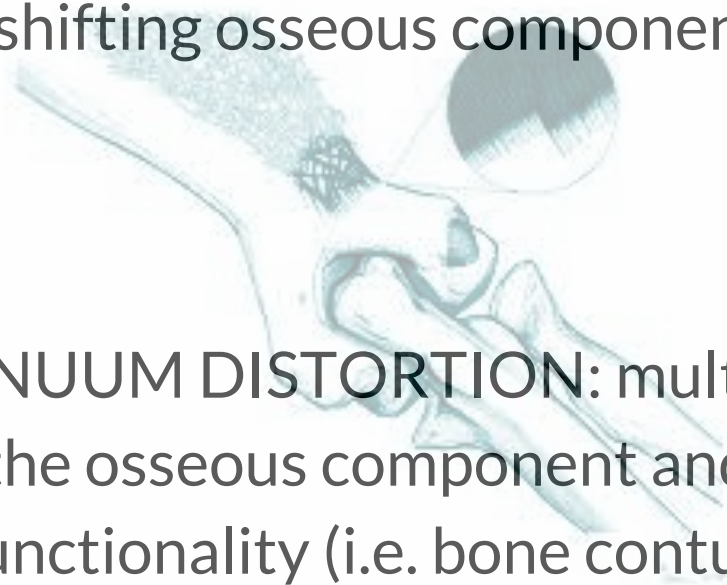
Herniated Triggerpoint (HTP): banded, non-banded

- Palpate HTP to find appropriate direction (most painful)
- Appropriate force held till distortion releases and protrusion returns below the tissue layer
- Stubborn cases = milking/rocking thumb back and forth (thumb only)
- Tissue stretch or slack via patient positioning or movement



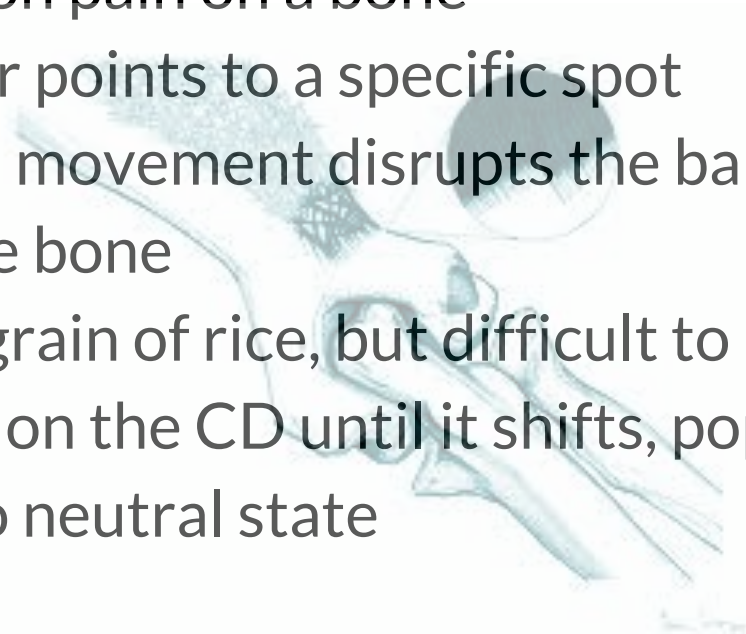
Continuum Distortion (CD): inverted, everted

- Everted CONTINUUM DISTORTION: unidirectional force (Tx or compression) shifting osseous component into TZ and remain stuck
- Inverted CONTINUUM DISTORTION: multi-directional forces shift into the osseous component and remain stuck and destroy the TZ functionality (i.e. bone contusions)

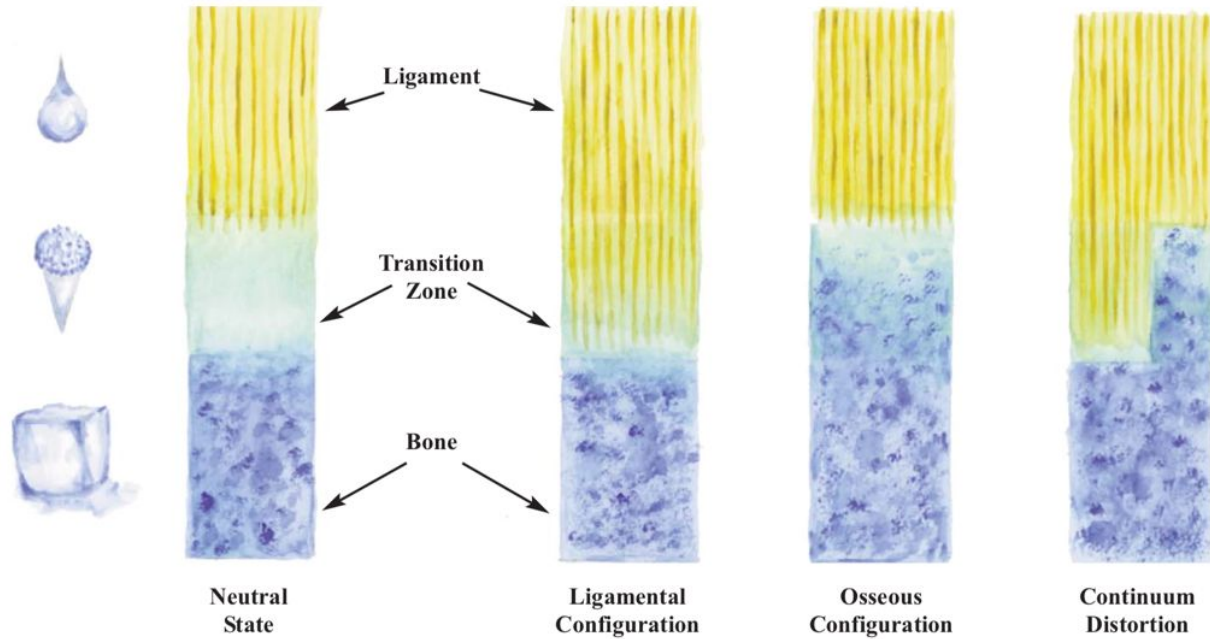


Continuum Distortion (CD): inverted, everted

- Sx: specific spot on pain on a bone
- BLG: single finger points to a specific spot
- Problem: sudden movement disrupts the banded fascia fluid connection to the bone
- Feels like: small grain of rice, but difficult to palpate
- Treatment: push on the CD until it shifts, pops or melts, thus shifting it back to neutral state



Continuum Distortion (CD): inverted, everted



*Future treatments of ICD's will involve more precise methods of pulling or suctioning bony elements into the transition zone.

Continuum Distortion (CD): BLG: points to one spot of pain on bone



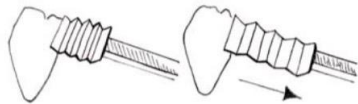
Folding Distortion (FD): unfolding, refolding

- Folding fascia (joint capsules, intermuscular septa, interosseous membranes, spinal paraventricular fascia)
- External forces distort the tissues and deprive them of their original ability to subsequently expand or contract
 - Unfolding: Tx MOI
 - Refolding: Compression MOI
- Pain deep in the joint, decrease with Tx or compression
- Place palm of hand over joint or draws a line across the joint

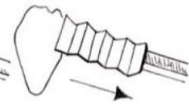
Folding Distortion (FD): unfolding, refolding

- Sx: deep ache in the joint that feels like it restricts movement but when tested, the ROM is normal
- BLG: cups hand/draws a line over the joint
- Problem: folding fascia gets stuck after opening or closing due to the imparted forces
- Treatment: “repeat the injury” unfolding = Tx; refolding = compression. Treatments should not be painful
- Warning: Permanent unless treated

Folding Distortion (FD): unfolding, refolding



Schematic of
resting folding
fascia



Fascia unfolds as
postal worker
reaches into
mailbox



As mail is laid down,
hand is turned and
shoulder fascia
torques

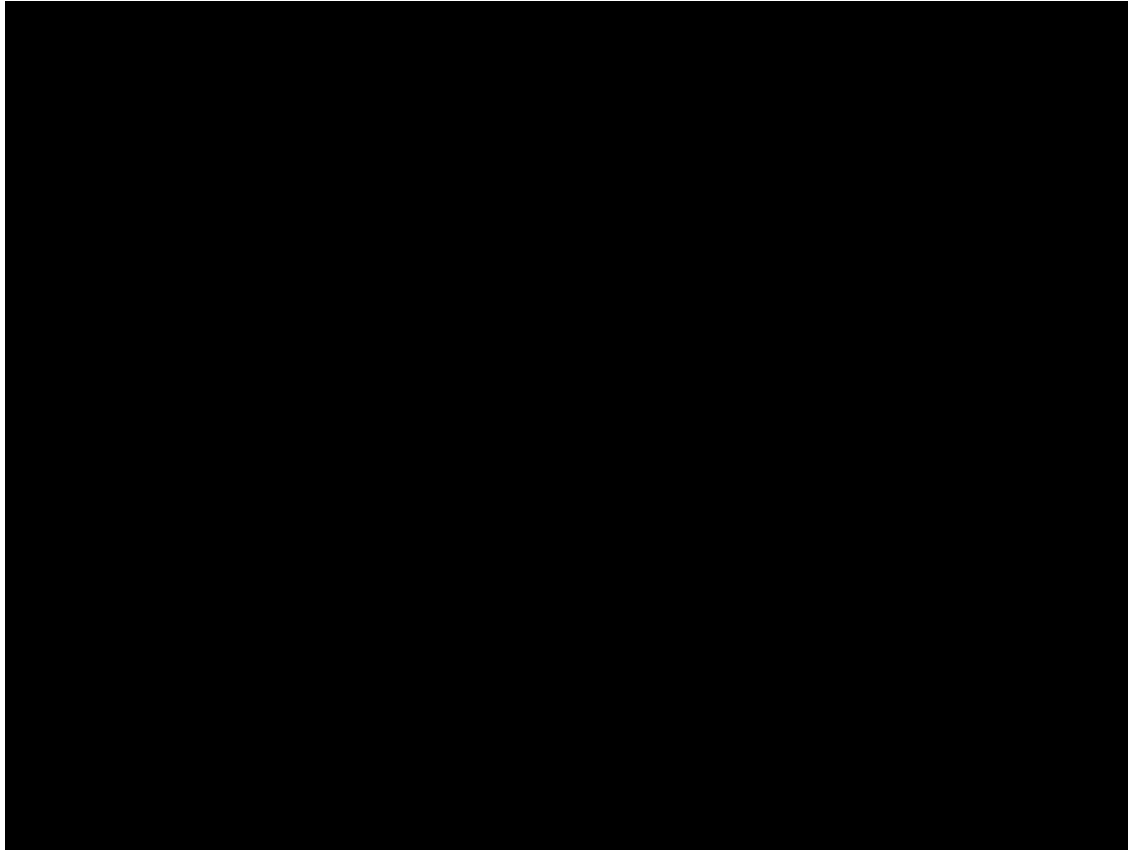


As hand is brought
back into truck,
shoulder fascia
refolds contorted

Folding Distortion (FD): unfolding, refolding



Folding Distortion (FD): unfolding, refolding



Cylinder Distortion (CyD): partial collapse, widespread, entangled

- Coiled fascia
- Most difficult to eliminate
- Very strange and mysterious sx
- Patients may have difficulty describing sx at times and show no abnormalities on objective findings



Cylinder Distortion (CyD): partial collapse, widespread, entangled

- Sx: bizarre pain that fluctuates or jumps from one area to another, N/T, tremor, impression of swelling
- BLG: hand appears to squeeze or sweep the pain away
- Problem: coiled fascia collapses or tangled
- Feels like: difficult to feel, may have to use a pet comb to feel the tangle
- Treatment: untangle fascial coils with hands, cups, pet comb
- Warning: referral to psychiatrist is common

Cylinder Distortion (CyD): partial collapse, widespread, entangled

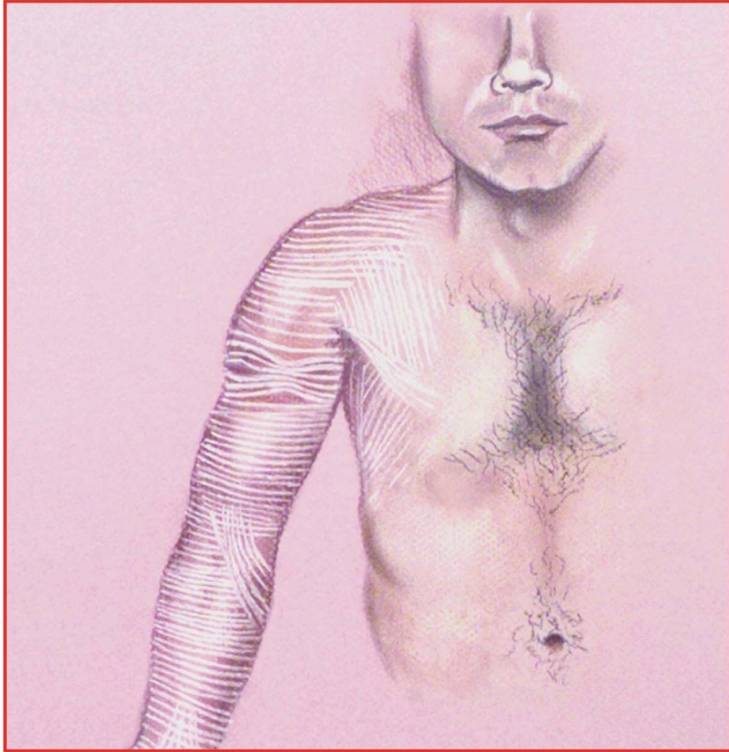
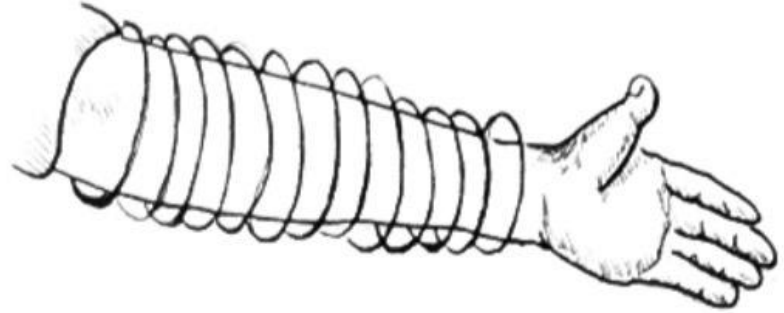
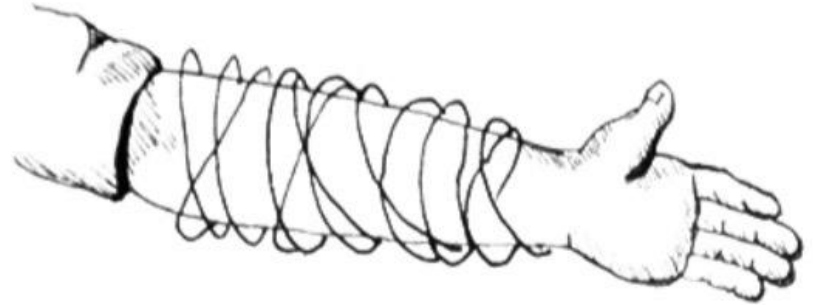


Figure 7-1. Cylinder Distortion of Brachial Fascia



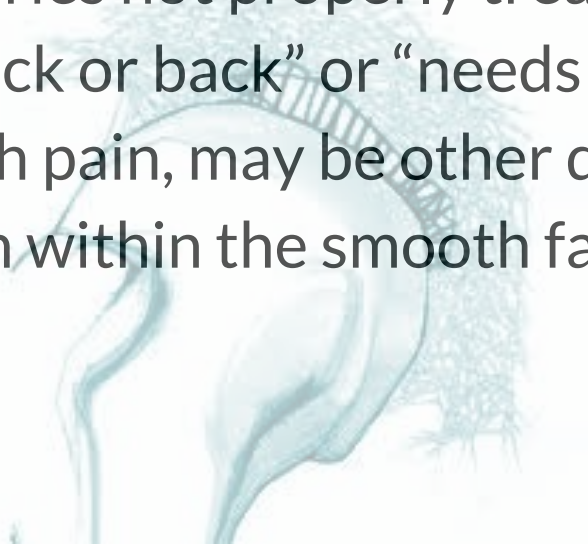
Schematic of Uninjured Cylinder Fascia



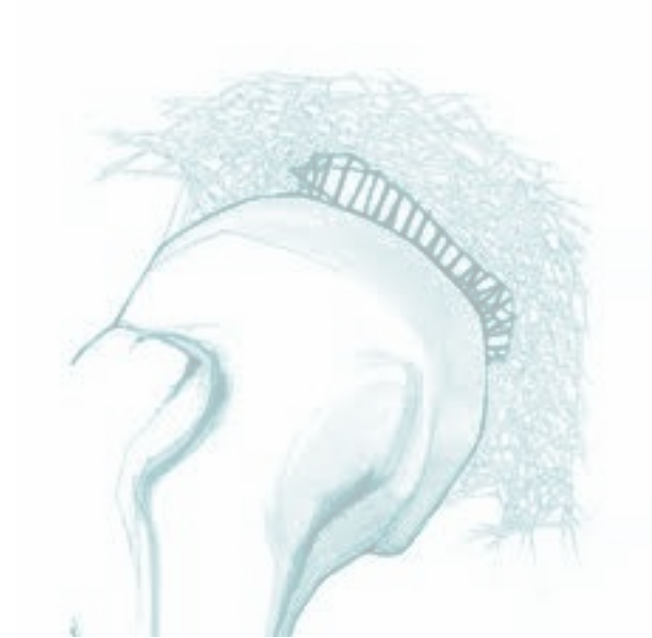
Schematic of Tangled Cylinder Fascia

Tectonic Fixation (TF)

- Smooth fascia
- Chronic injury, injuries not properly treated
- “Desire to crack neck or back” or “needs to pop feeling”
- Not associated with pain, may be other distortions
- Restore lubrication within the smooth fascia

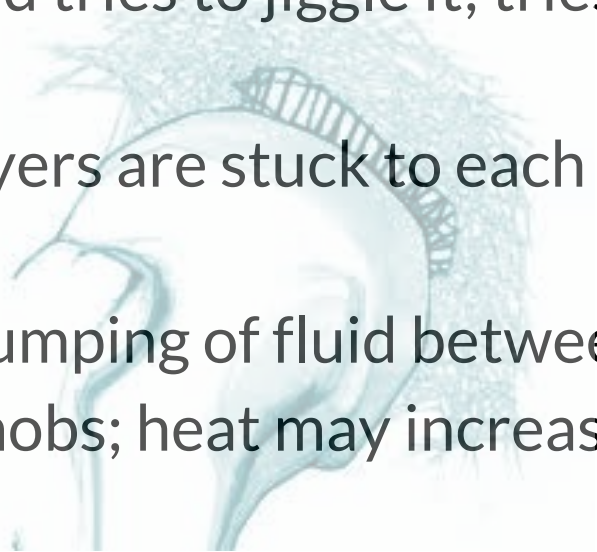


Tectonic Fixation (TF)



Tectonic Fixation (TF)

- Sx: joints that won't move
- BLG: grabs joint and tries to jiggle it; tries to move joint with force
- Problem: fascial layers are stuck to each other instead of gliding
- Treatment: slow pumping of fluid between the fascial layers, followed by joint mobs; heat may increase lubrication of joint



Fascial Distortion Model Workshop: Assessment and Treatment of Ankle Pain

Ken Nakasone, PT, PhD, FDM IC, ATC, CSCS



Case descriptions

- Burning or pulling pain at the back of the foot, lateral ankle or along the Achilles tendon TB
 - Painful spot (s) at the ankle CD
 - Pain deep in the joint and a feeling of instability FD
 - Diffuse pain at the back of the ankle/foot CyD
-

Gestures

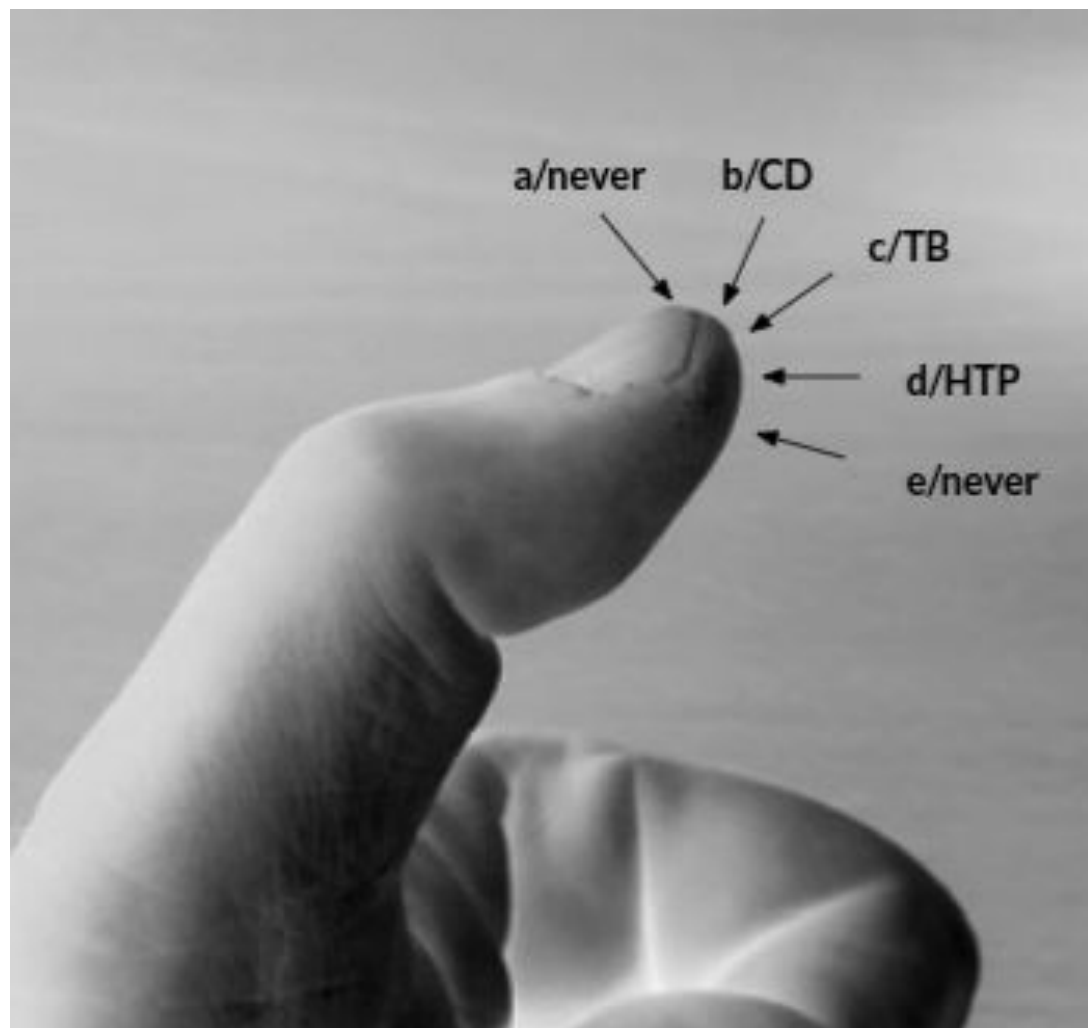
- Sweeping motion with the hand around the ankle and up the lower leg
- Indicates one (or several) painful spots on the bone
- Cups the ankle with one or both hands
- Clasps the ankle with one hand and rubs finger over it

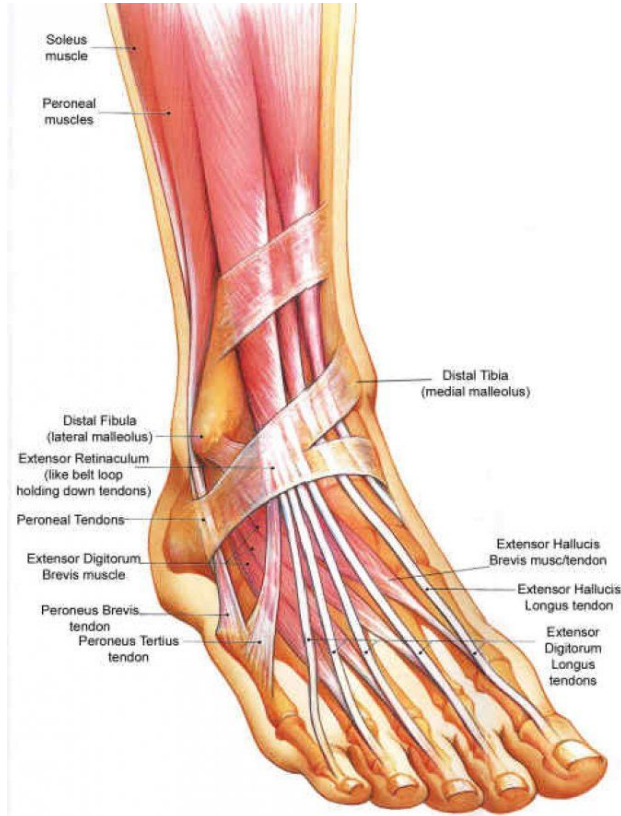
TB

CD

FD

reFD





CD, TB, FD

CD

Anterior ankle, common. Treat old AACD if present in Hx.
Reason for restricted DF

TB

8 common pathways

FD

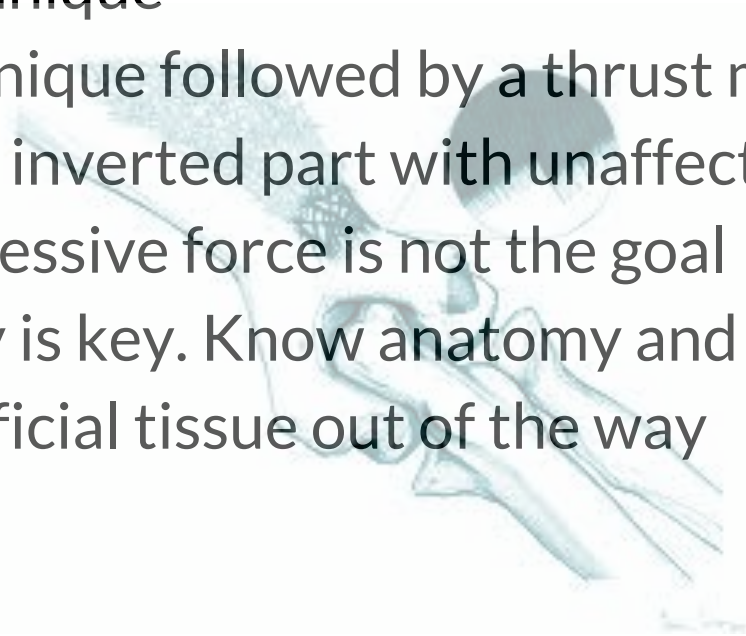
Medial or lateral; unfolding or refolding

Priority order for LAS

AACD > TB/FD > CD > CyD. If thrust, may develop AACD

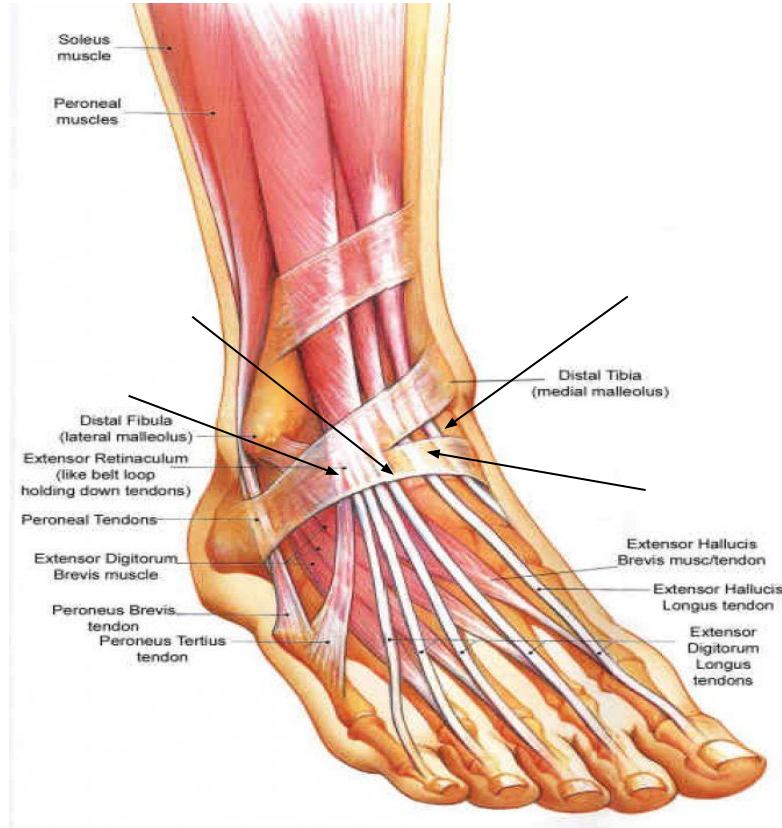
Continuum Distortion (CD): inverted, everted

- ECD: thumb technique
- ICD: thumb technique followed by a thrust manipulation (thumb levels off inverted part with unaffected part)
- Very painful. Excessive force is not the goal
- Tissue specificity is key. Know anatomy and get to the tissue by moving superficial tissue out of the way



AACD

Tibial/Fibular/Deep ankle (medial/lateral/middle)



- Treat old AACD if present in Hx
 - Medial tibialis anterior tendon
 - b/w TA tendon and EHL tendon
 - b/w EDL and EHL tendon
 - Clear EDL tendons
 - Lateral EDL tendons
- Direction of force is parallel to AITFL
- Dorsiflex ankle with pressure
- Watch patient/athlete's reactions

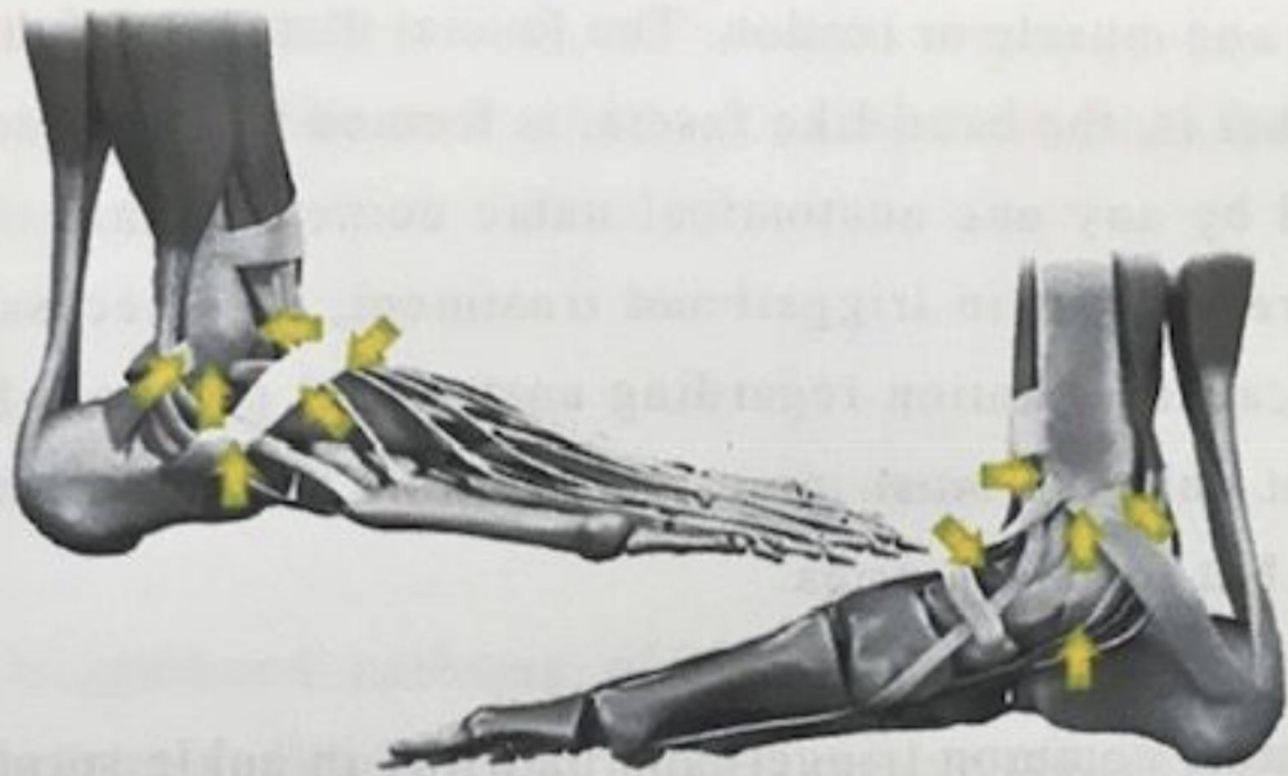
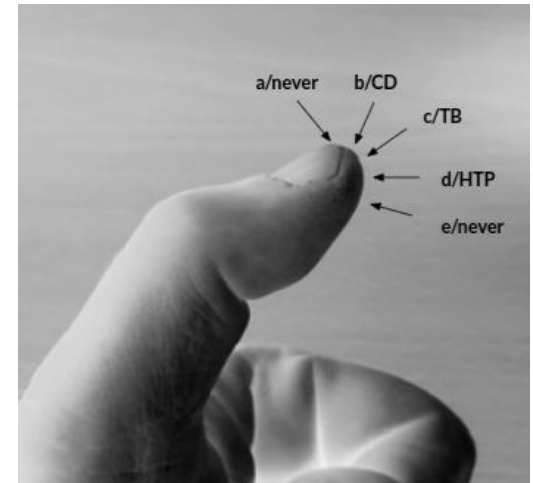


Figure 2-1-d-2 Locations Where Continuum Distortions Frequently Occur

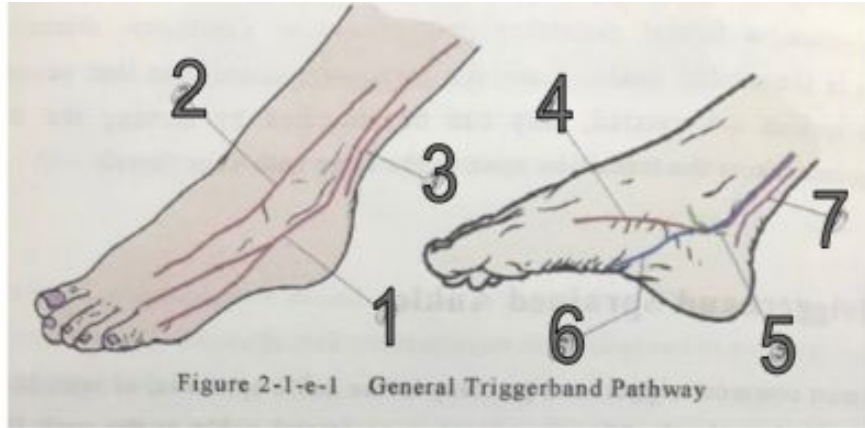
Triggerband (TB): twist, crumple, knot, pea, wave, grain of salt

- Technique

- Subjective complaints/body language: starting point
- Start beyond edge of TB @ right angle into tissue
- Shovel twist out
- Push twist along pathway
- Appropriate force needed to restore twisted banded fascia to original.



Ankle Triggerbands



Triggerband Pathways

1/Lateral ankle triggerband: lateral calf (sock line), posterior to lateral malleolus, distal 4th or 5th metatarsal, toe

2/Anterior ankle triggerband: anterior calf (sock line), anterior to lateral malleolus, distal 4th or 5th metatarsal, dorsal surface

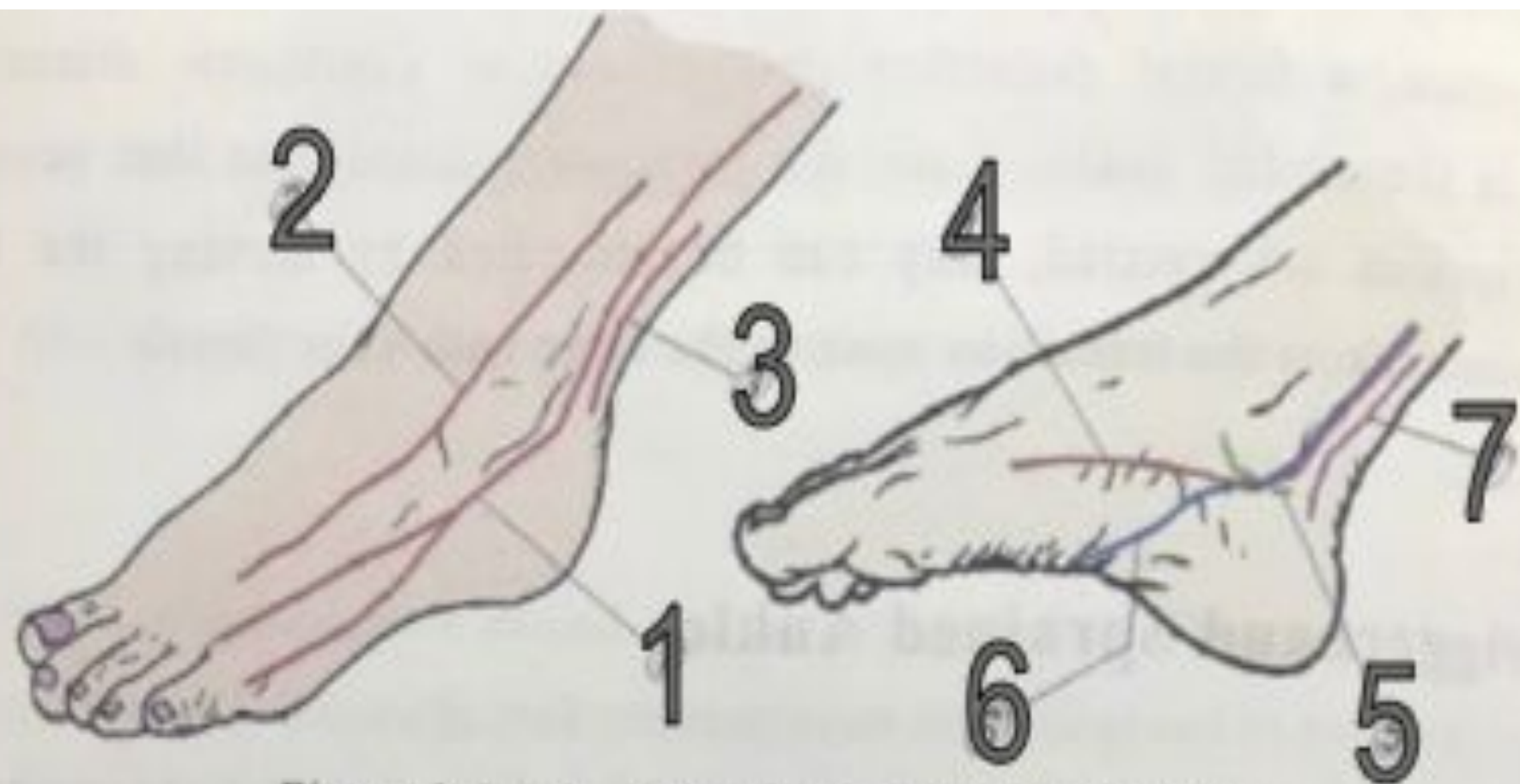
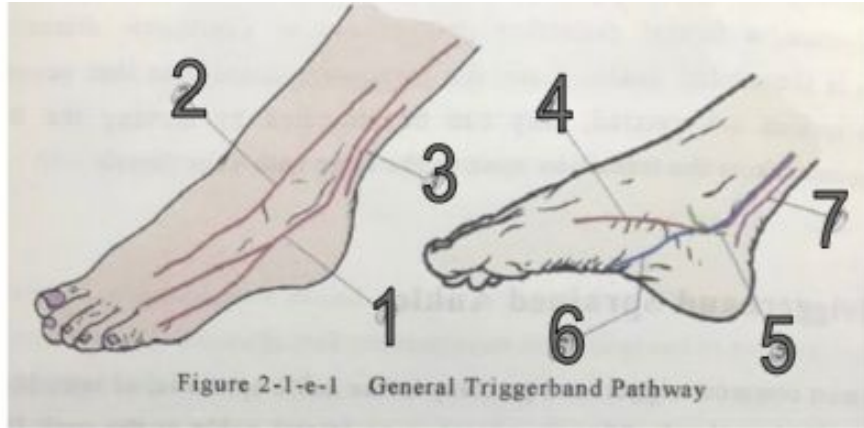


Figure 2-1-e-1 General Triggerband Pathway

Ankle Triggerbands

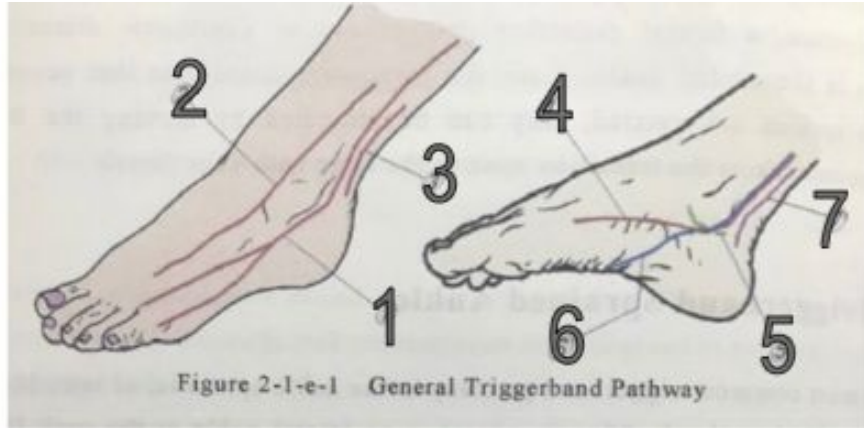


Triggerband Pathways

3/Fibula posterior triggerband: difficult to verbalize and locate pain; deep pressure next to Achilles tendon (not on it)

4/Inner ankle triggerband: medial calf (sock line), posterior to medial malleolus, medial 1st metatarsal

Ankle Triggerbands



Triggerband Pathways

5/Endocervical (external condyle) underside:
short index finger sweeps under medial
malleolus

6/Inner ankle to sole triggerband: medial calf
(sock line), posterior to medial malleolus, sole
towards 5th metatarsal, plantar surface, firm
pressure

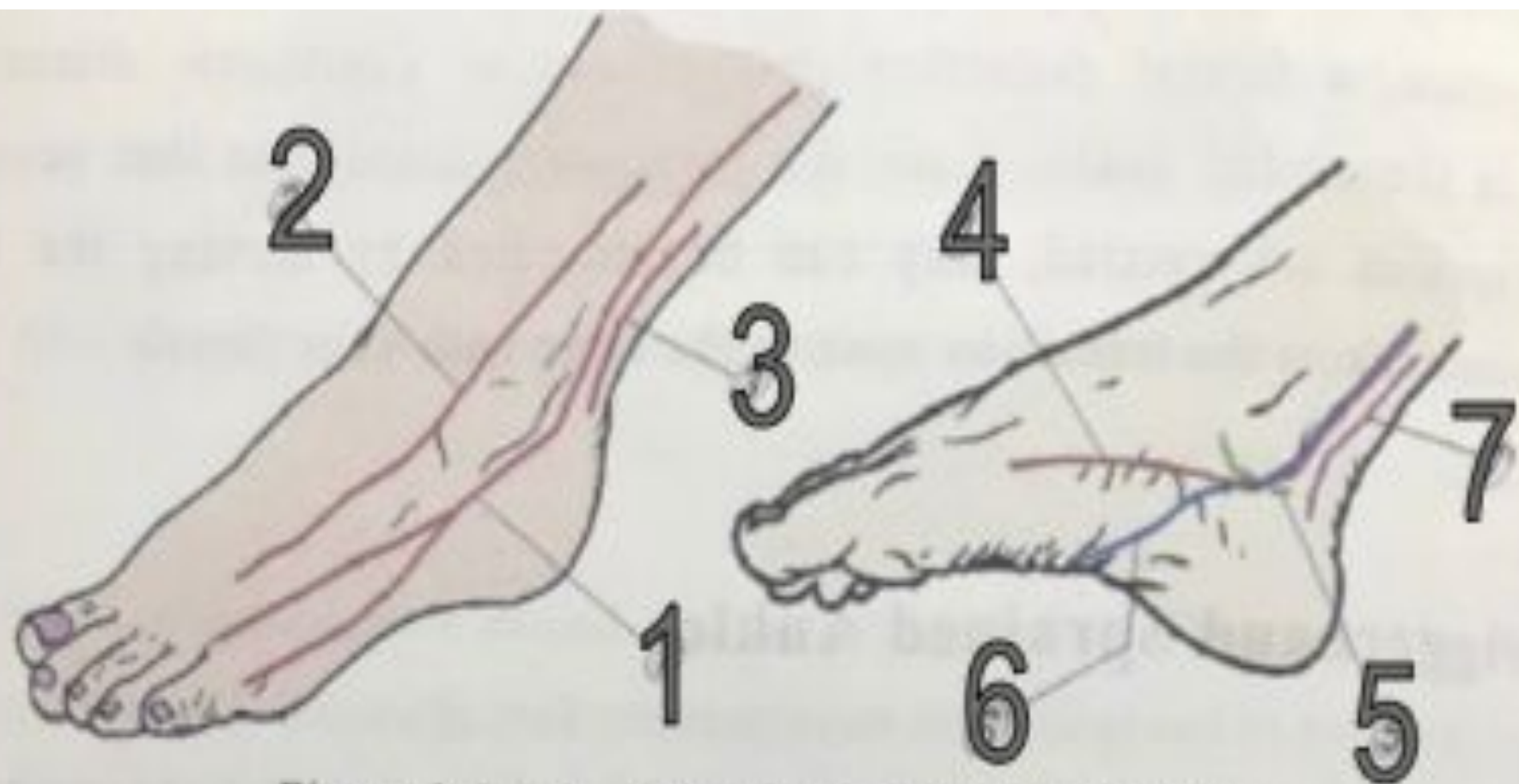
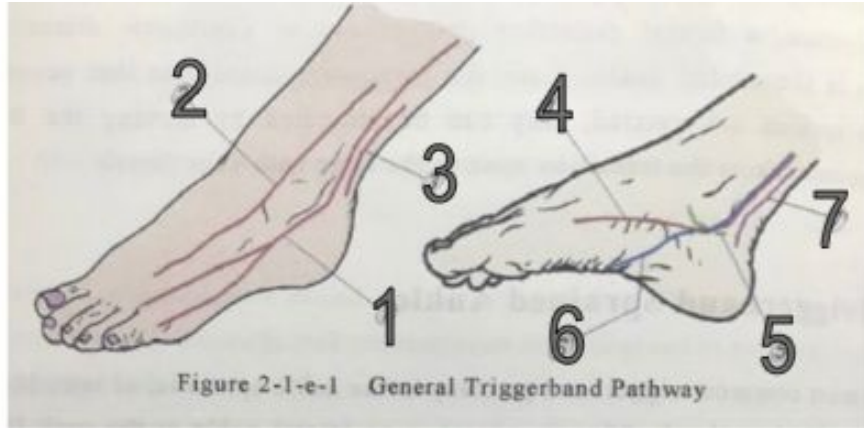


Figure 2-1-e-1 General Triggerband Pathway

Ankle Triggerbands



Triggerband Pathways

7/Tibia posterior triggerband: patient determined pathway between posterior tibia and achilles tendon

8/Achilles tendon triggerband: calcaneus along either side of the Achilles tendon to $\frac{3}{4}$ of the lower leg.

Unfolding Distortions Treatments

1. Vertical traction
 2. Traction thrust
 3. Vertical traction and traction thrust in seated position
 4. Whip technique (Typaldos)
 5. Whip technique (Harrer)
 6. Unfolding thrust in seated position
-

Unfolding Distortions Treatments



Figure 2-1-f-1 Vertical Traction, Vertical Thrust Unfolding Technique

- Vertical traction
- Traction thrust
- Vertical traction and traction thrust in seated position



Figure 2-1-f-2 Vertical Traction
Vertical Thrust Unfolding Technique in Sitting Position

Unfolding Distortions Treatments



Figure 2-1-f-3 Whip Technique (Typaldos Technique)

- Whip technique (Typaldos)
 - Whip technique (Harrer)
-



Figure 2-1-f-4 Whip Technique (Harrer Technique)

Unfolding Distortions Treatments



Figure 2-1-f-5 Position For Unfolding Manipulation In Sitting Position

- Unfolding manipulation in sitting position



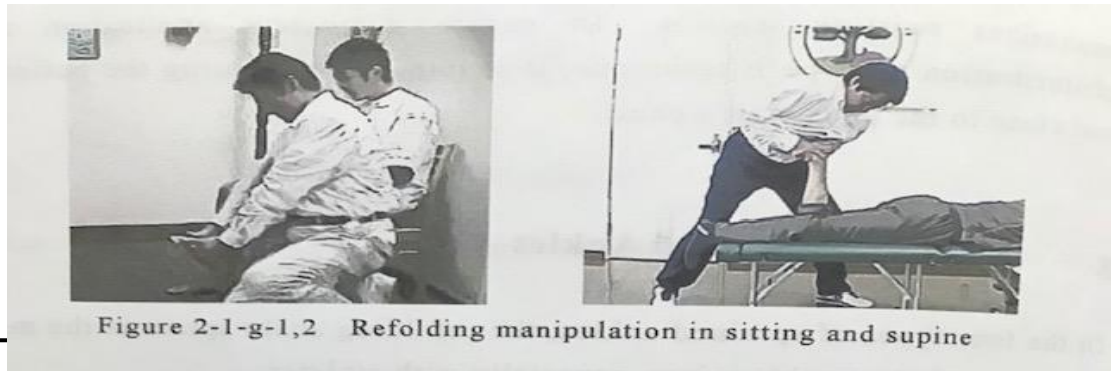
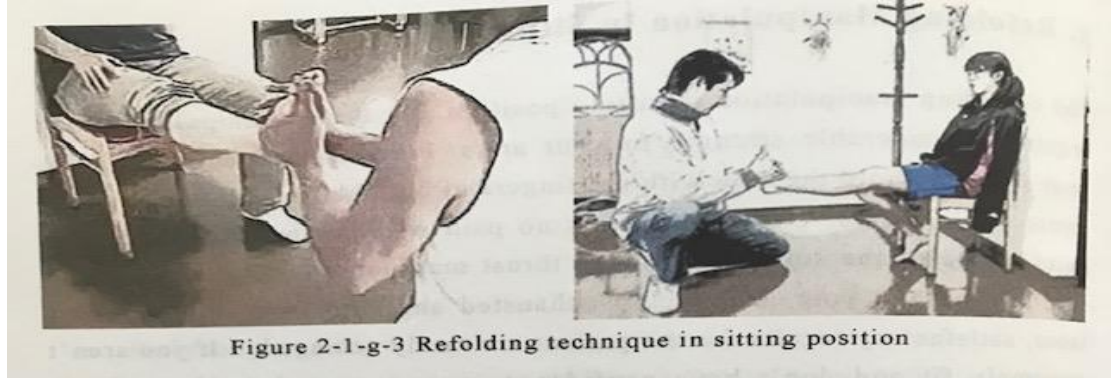
Figure 2-1-f-6 Position For Unfolding Manipulation In



Figure 2-1-f-7 Position For Unfolding Manipulation In Sitting Position Type B

Refolding Distortions Treatments

- Refolding manipulation in sitting



Refolding Distortions Treatments

- Refolding manipulation in supine



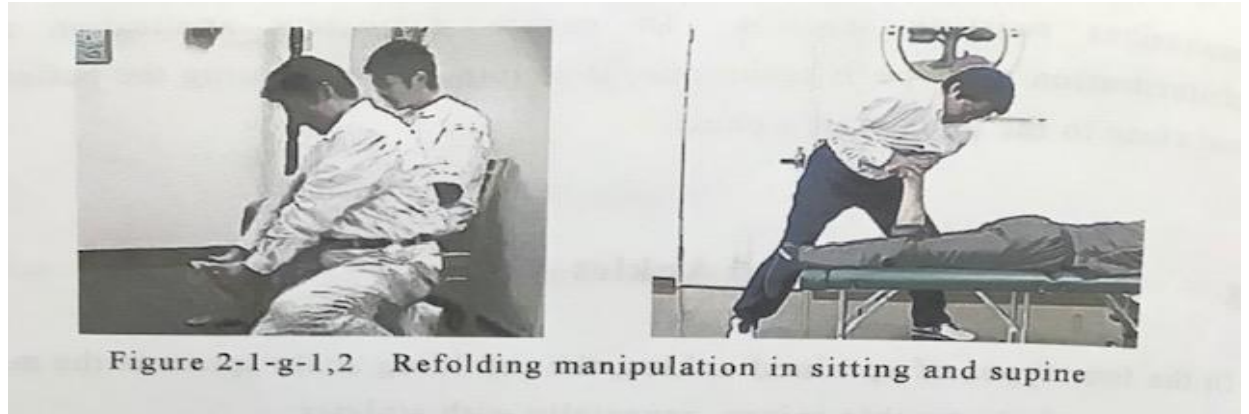
Figure2-1-g-4 Refolding technique in supine position



Figure 2-1-g-1,2 Refolding manipulation in sitting and supine

Refolding Distortions Treatments

- Refolding manipulation in prone



References

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