Fascial Manipulation®

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Disclosures

I president of Fascial Manipulation Association:

The Association is non-profit, with the objective of promoting and supporting research in the field of pain relief in general and, in particular, the field of the anatomy and the physiopathology of the fasciae.

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- Sliding System
- Myofascial unit
- Centers of Coordination
- Selection of points
- FM literatures

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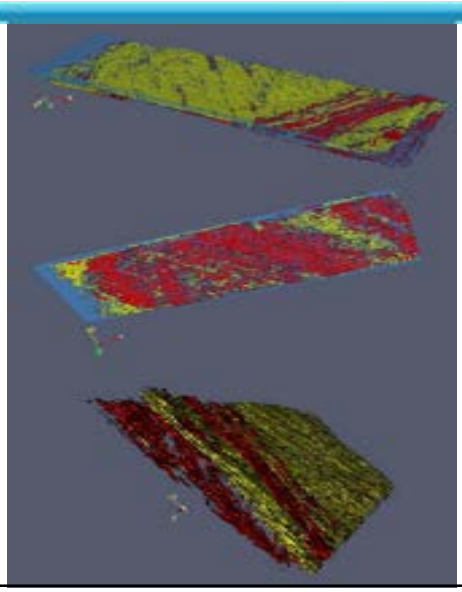
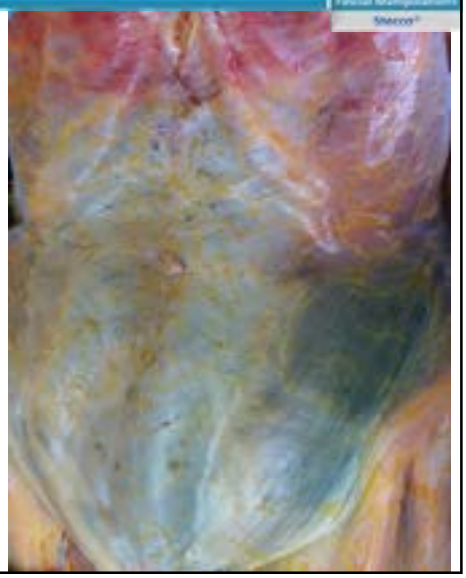
Fascial layers





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Myofascial expansion

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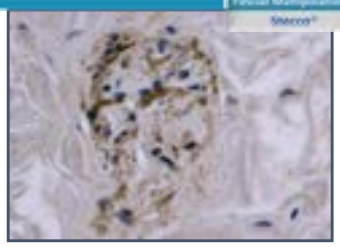
Innervation of the deep fascia

In the last years various researches have demonstrated the presence of many free and encapsulated nerve terminations, particularly Ruffini and Pacini corpuscles, inside the fasciae

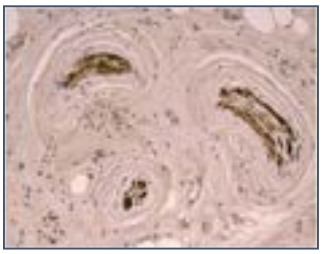


Ruffini corpuscles (S100, 200x)

ORIGINAL ARTICLE

Anatomy of the deep fascia of the upper limb. Second part: study of innervation

C. Stecco[a], O. Gagey[b], A. Belloni[c], A. Pozzuoli[d], A. Porzionato[a], V. Macchi[a], R. Aldegheri[d], R. De Caro[a,*], V. Delmas[b]



Pacini corpuscles (S100, 100x)

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Innervation of the deep fascia

- Nerve elements were present in all of the specimens, although differences existed according to zones and subjects:
  - Small nerves were revealed in all specimens, whereas Ruffini and Pacini corpuscles were present only in some.
  - The flexor retinaculum resulted the more innervated structure, while lacertus fibrosus was the less innervated

	Brachial fascia	Lacertus fibrosus	Antibrachial fascia	Flexor retinaculum
Nerve	48.57	27.36	44.37	53.55
Pacini Corpuscle	0.43	0.26	0.26	0.66
Ruffini Corpuscle	0.29	0.1	0.26	0.55

Number and types of mechanoreceptors in 1 cm^2

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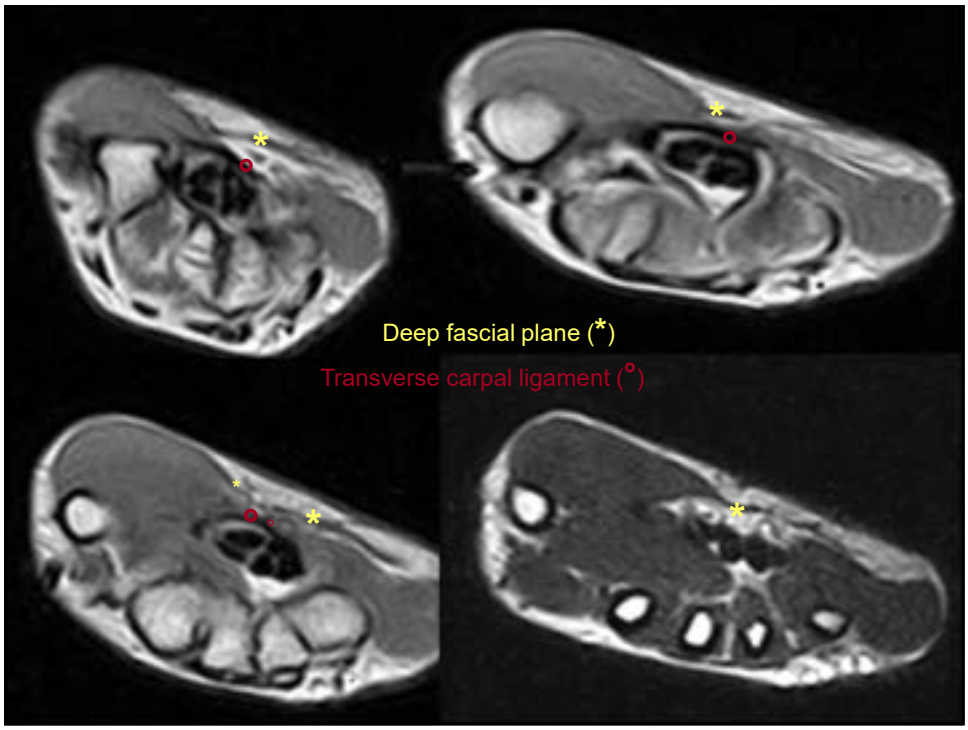

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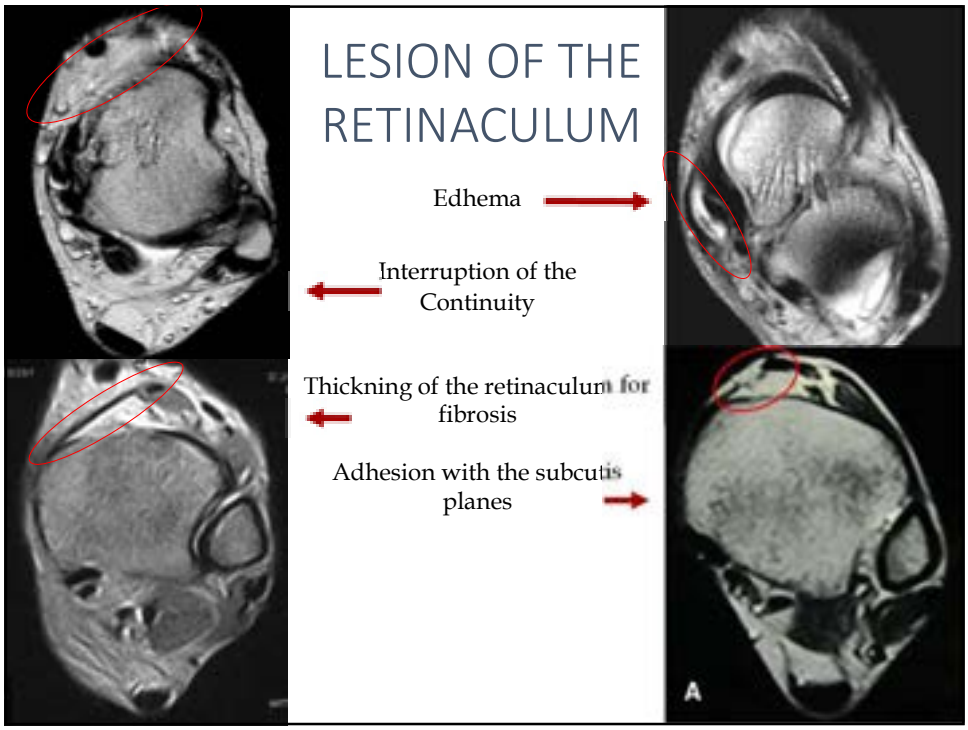

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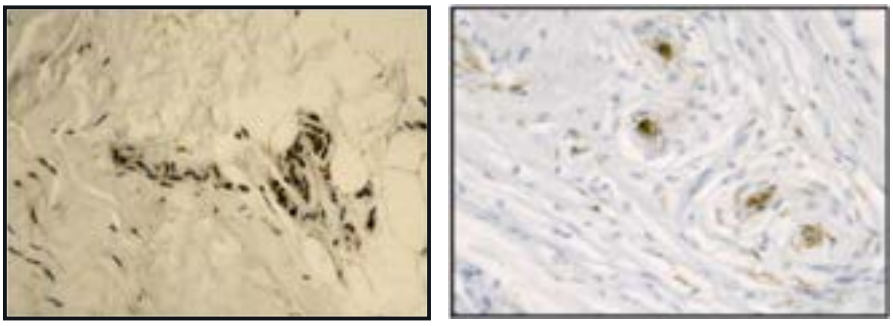
Relationships among nerves and fascia

The capsules of the corpuscles and the free nerve endings are connected to the surrounding collagen fibres

Stretching of the deep fascia activates these receptors



S-100 immunohistochemical stain

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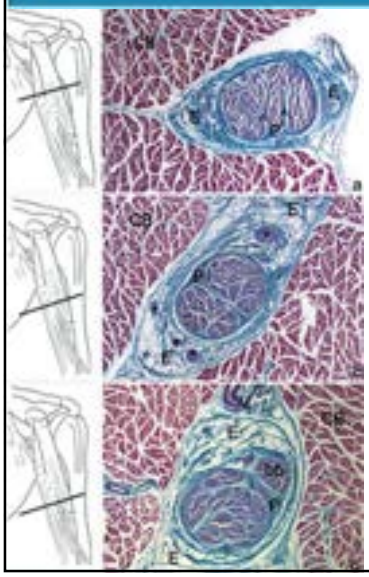
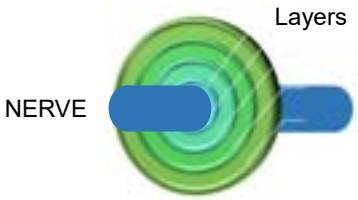
Large nerve fibres and deep fascia



The larger nerve fibres are often surrounded by different layers of loose connective tissue that preserves the nerve from traction to which the fascia is subjected.



Musculocutaneous Nerve: Histotopographic Study and Clinical Implications

VERONICA MACCHI,[1] CESARE TIENGO,[2] ANDREA PORZIONATO,[1] ANNA PARENTI,[1] CARLA STECCO,[3] FRANCO BASSETTO,[2] RAFFAELE SCAPINELLI,[4] GIUSEPPE TAGLIALAVORO,[1] AND RAFFAELE DE CARO[1*]

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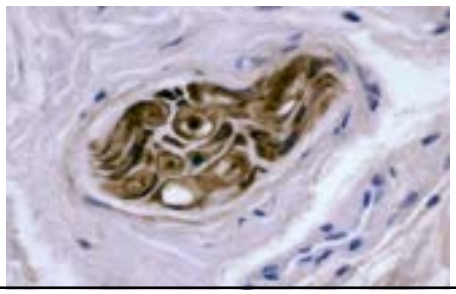
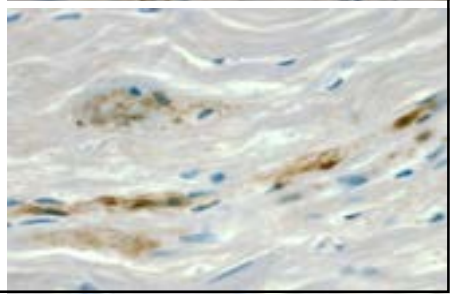
Fascia and proprioception

Could the nerve terminations within the fascia perceive the state of contraction of the underlying muscles?





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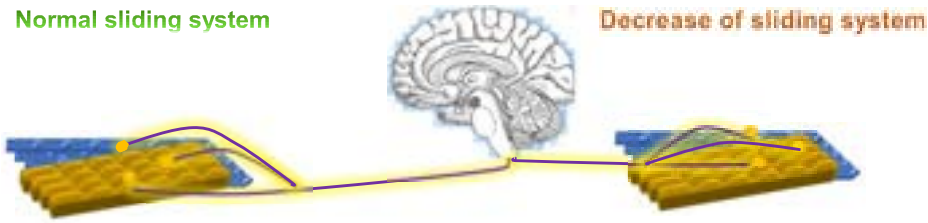
Tissue viscoelasticity shape the dynamic response of mechanoreceptors



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Sliding System

Myofascial unit

Centers of Coordination

Selection of points

FM literatures

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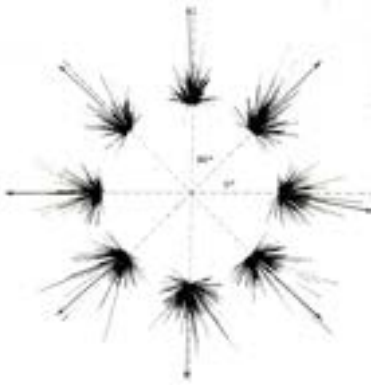
During the movement in specific direction, many neuron become active



Cerebral motor systems: reflex and voluntary control: During the movement in a particular direction, many neuron become active that have different selective direction, but the final vector corrispond at the final movement.

Kandel, Georgopoulos

CNS + movement: finalized gestures or patterns of movement, stored as multiple representations in the cortex. **Not single muscle activity**.

• **New theories of motor control:** equilibrium point hypothesis, principle of abundance and uncontrolled manifold hypothesis...*Latash M.L.*

… CNS interprets/programs movement in terms of **spatial directions and angles**

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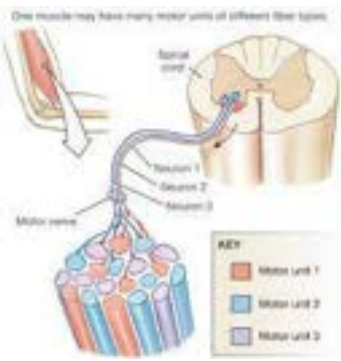
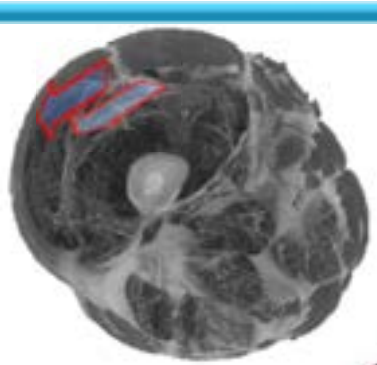
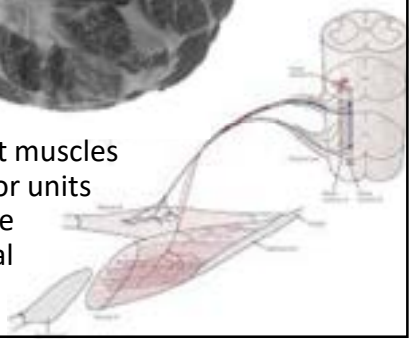
Compartments and motor units

Fascia and septa coordinate synergistic motor units localized in different muscle bellies





In different muscles same motor units are activate simultaneal



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THE MYOFASCIAL (MF) UNIT

a MF unit is composed of :

1. A group of motor units in one or more muscles (monoarticular and biarticular) that move a body segment in a specific direction
2. the joint that is moved
3. nerve (efferents, receptors, afferents) and vascular components
4. the fascia that connects these elements together

Mono fibres : vastus med, lateralis, intermedius. Bi fibres: Rectus femoralis

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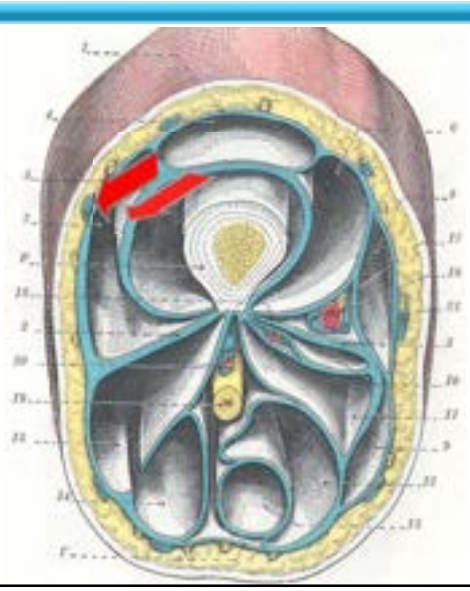
Muscles interconnections



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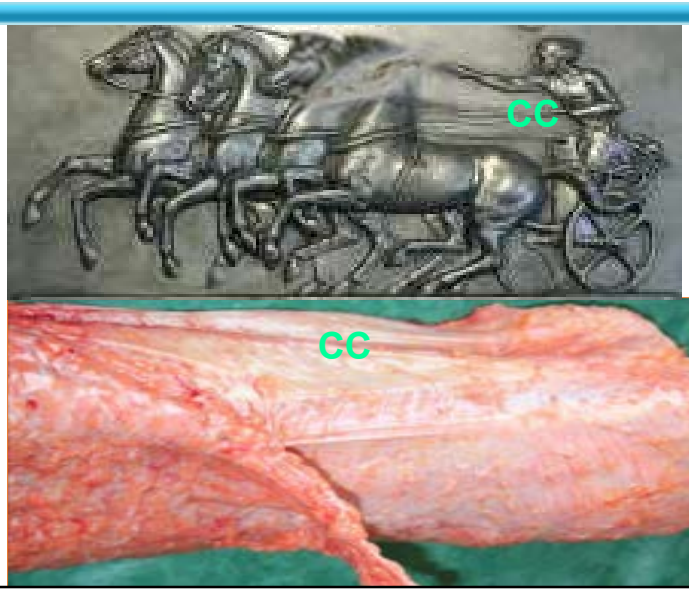
The Myofascial-Unit



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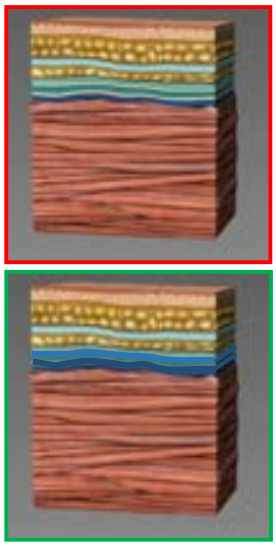
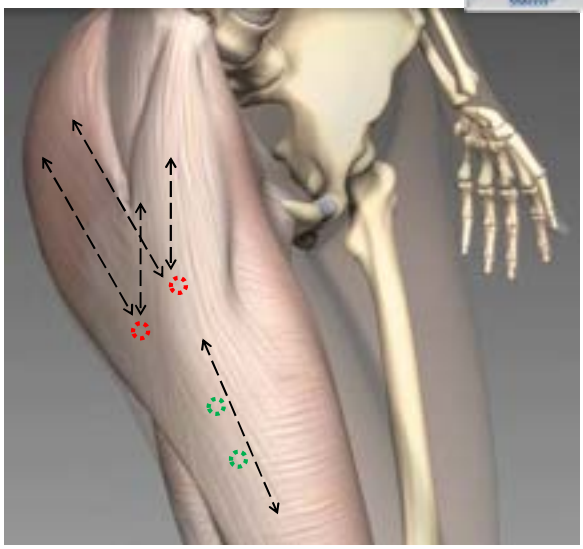
= CC
= Areas without sliding between the fascia layers





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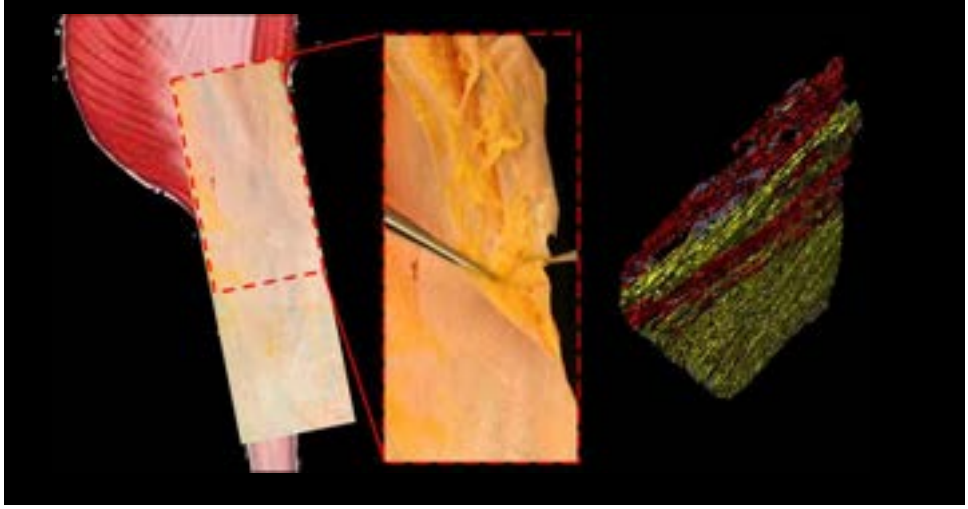
Fascial layers sliding



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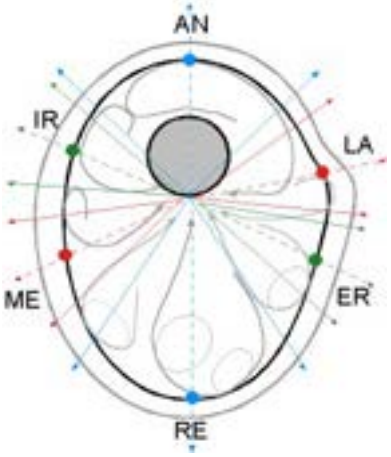
Compartments and formation of CCs

- From the muscle spindles, localized in the perimysium, until epimysium and deep fascia where is present the CC
- Each body segment has 6 CCs who coordinate the movements in one of the 6 directions in the three planes of the space



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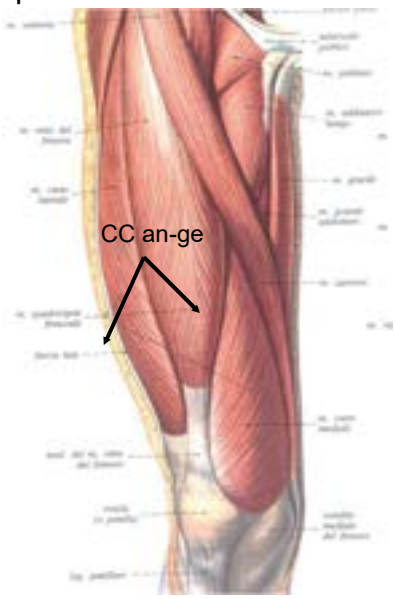
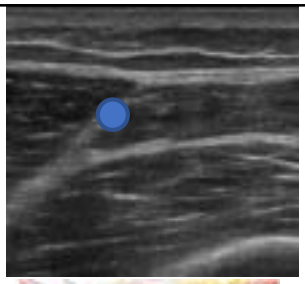
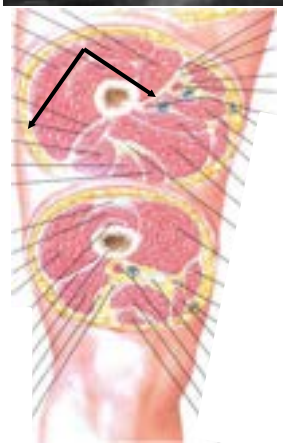
Why do CCs have a specific location?







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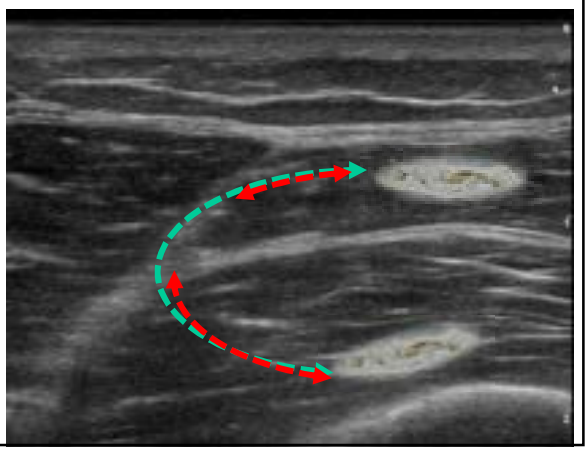
Load transmission between motor units

Load transmission between motor units localized in mono and biarticular synergic muscles in the same mfu through perimysium, epimysium and deep fascia

- **Normal coordination**
- **Incordination between synergic motor units**



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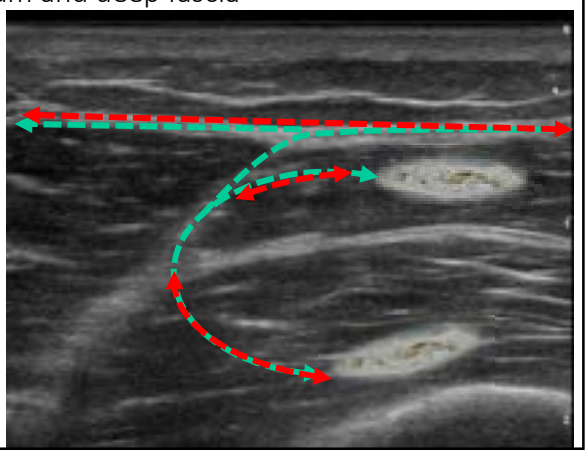
Load transmission body segments

Load transmission between motor units localized in mono and biarticular synergic muscles in different segments along the same sequence through epimysium and deep fascia

- **Normal coordination**
- **Incoordination between synergic motor units in different segments**



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AS1

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Sliding System

Myofascial unit

Centers of Coordination

Selection of points

FM literatures

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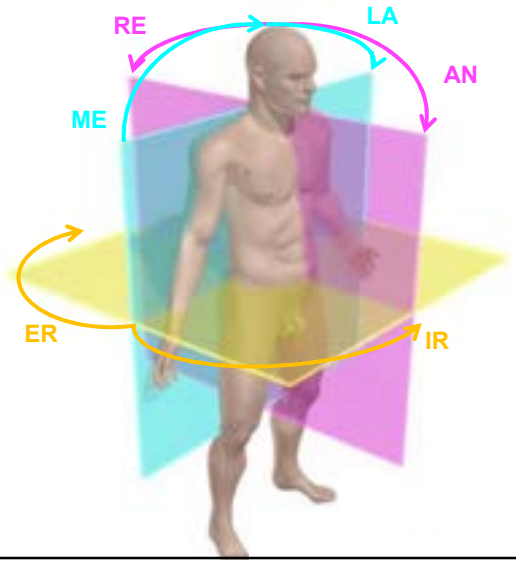
Slide 27

AS1 Antonio Stecco, 16/02/2019

Define movements <u>in terms of direction</u> :



SAGITTAL PLANE
- Antemotion (AN)
- Retromotion (RE)

FRONTAL PLANE
- Lateromotion (LA)
- Mediomotion (ME)

HORIZONTAL PLANE
- Intrarotation (IR)
- Extrarotation (ER)

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FRONTAL PLANE

MEDIOMOTION

LATEROMOTION

30

HORIZONTAL PLANE

EXTRAMOTION

INTRAMOTION

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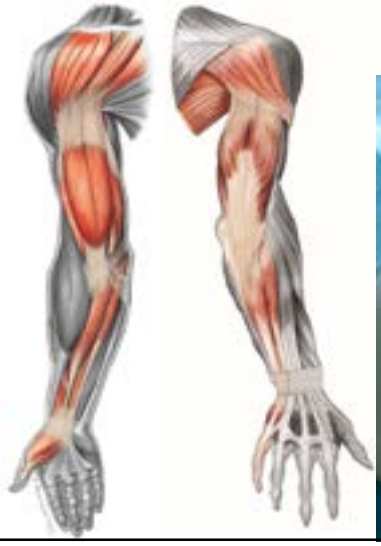
THE SAGITTAL PLANE

ANTEMOTION



RETROMOTION

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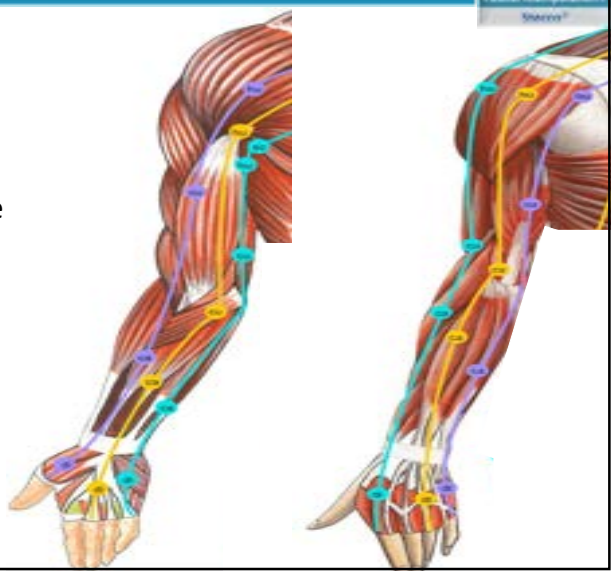
Selection of points:

The patients have to be evaluated through a palpatory evaluation of the 6 different CCs in the anatomical segments where:

- pain is present
- plus the healthy segment where previous symptoms\trauma happened



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During the palpatory evaluation we will distinguish:

FIBROSIS: damage of the fibrous component that affects the capacity of loading transmission.

DENSIFICATION: damage of the loose component that affects the sliding system between different layers,

Curr Pain Headache Rep (2014) 18:441
DOI 10.1007/s11916-014-0441-4

MYOFASCIAL PAIN (R GERWIN, SECTION EDITOR)

Painful Connections: Densification Versus Fibrosis of Fascia

Piero G. Pavan · Antonio Stecco · Robert Stern · Carla Stecco

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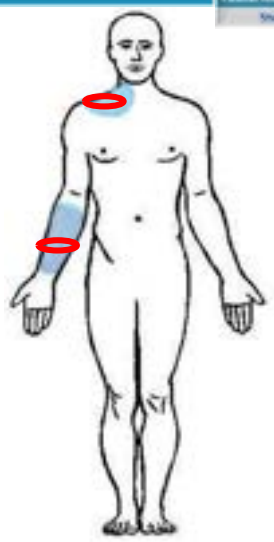
Tranverse palpation:

It help to decide which sequence is more involved



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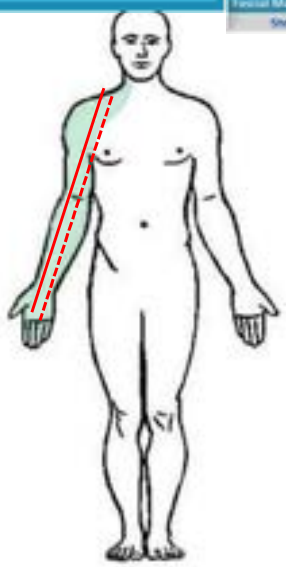
Longitudinal palpation:

help decide for:

- Confirm the plane
- Confirm the alteration of the CCs in the middle segments
- Organize a **Proximo-distal detensioning**
- Organize the **Agonist-antagonist balance**



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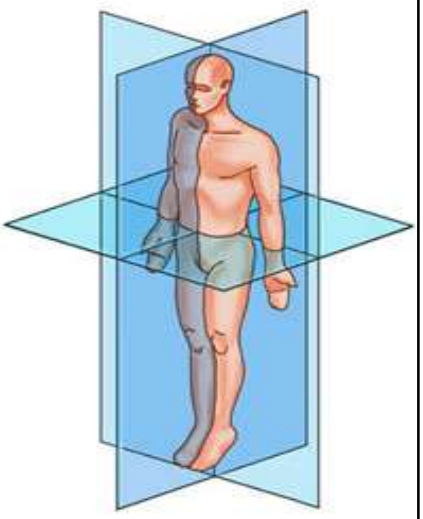
The plane that present more CCs altereted has to be treated!

It has to be injected the points located:

1. in both the sequences of the plane
2. both proximal as distal of the primary spastic area



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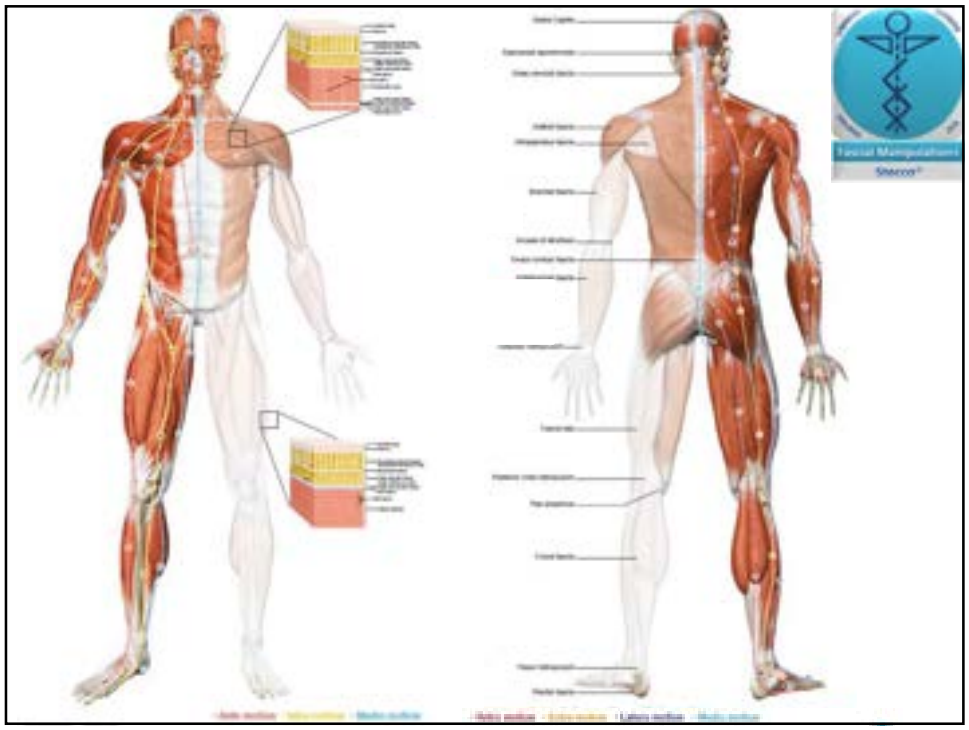

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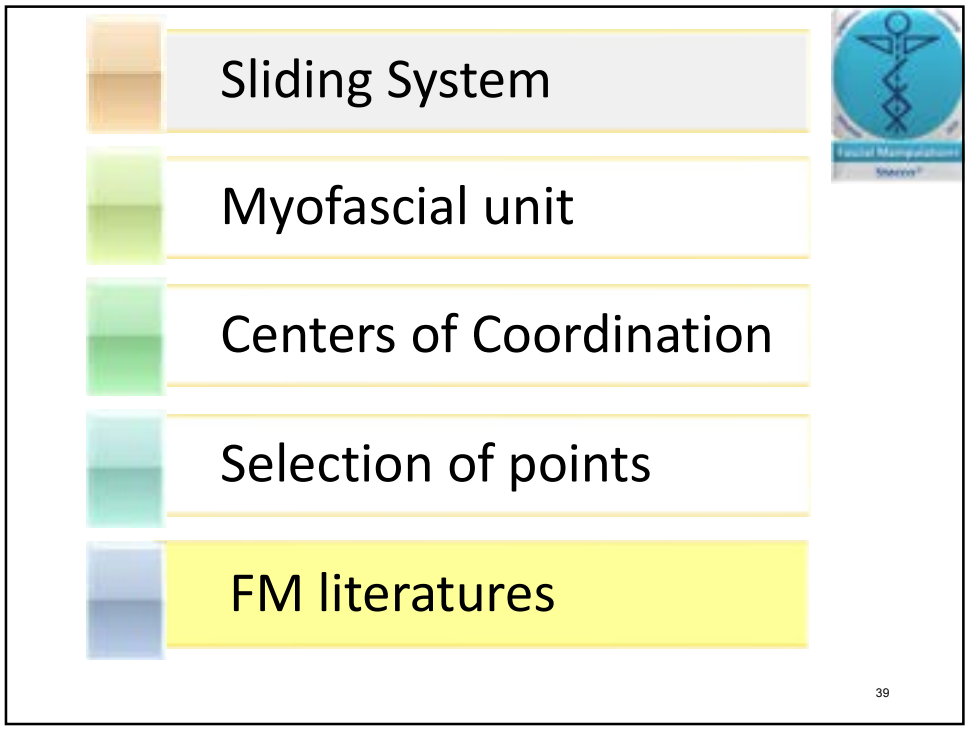

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