Week 6 Movement Strength

Muscular Strength

Muscular strength training focuses primarily on developing muscle force mainly in a single plane of motion through high loads.

Movement Strength

Movement strength training applies sub-maximal load and variable loading positions during multi-directional movement.

Muscle Strength	Movement Strength
“Muscle” Day	“Motor Task” Day
Isolated Force to Muscles	Whole Body Integrated: Muscle Synergies, Fascia, Coordination
Internal Focus	External Focus
Highly Linear Simple Patterns	Highly Multiplanar Complex Patterns
More Force, Less Freedom	Less Force, More Freedom

Muscle Strength Training

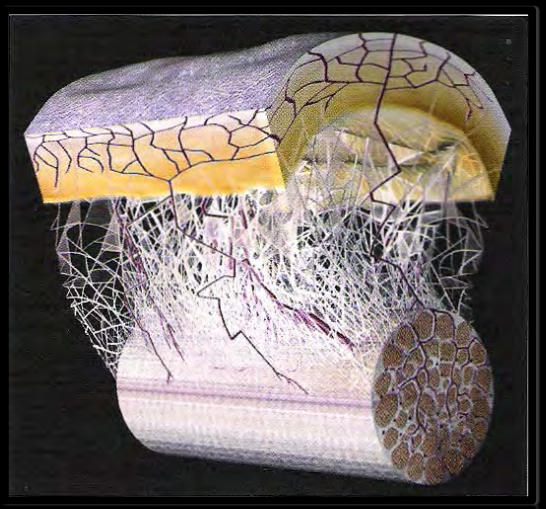
Strength	Intensity (%1RM)	Exercises/ Body Part	Sets/ Exercise	Rep Range/ Set	Rest between Sets
Max	95-100	1-3	2-6	1-3	2-5min
Submax	85-95	1-5	2-6	3-6	1-3min
Endurance	60-85	2-4	2-4	8-20	0-60s
Hypertrophy	75-85 or < 60	2-6	3-12	6-12 or 20+	60-90s

Week 5: Session of the Week!

MechanoTransduction

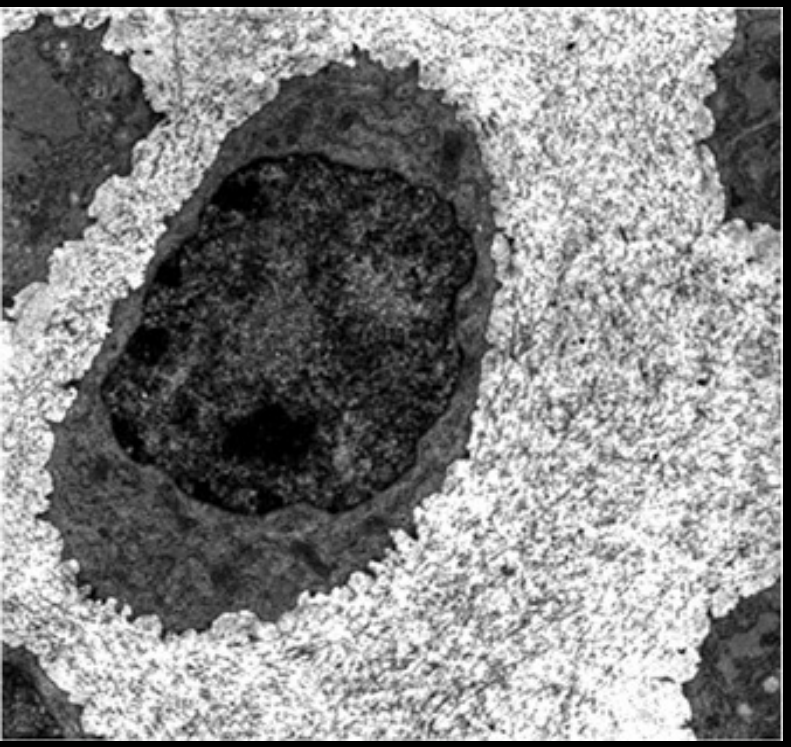
How our Bodies Dissipate Force and Why?

"refers to the many mechanisms by which cells convert mechanical stimulus into chemical activity"



MechanoTransduction

How our Bodies Dissipate Force and Why?



Extracellular Matrix

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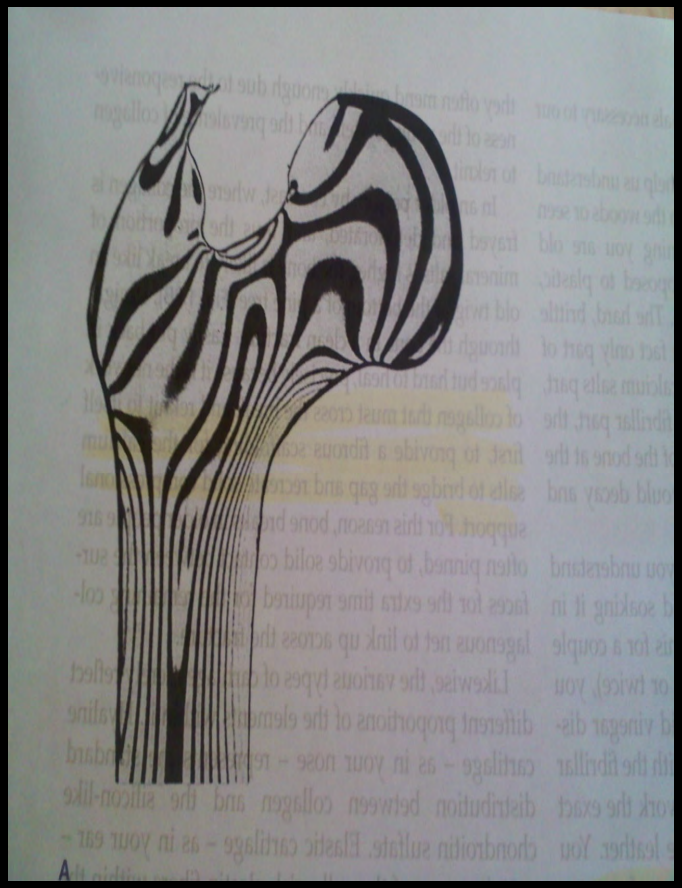
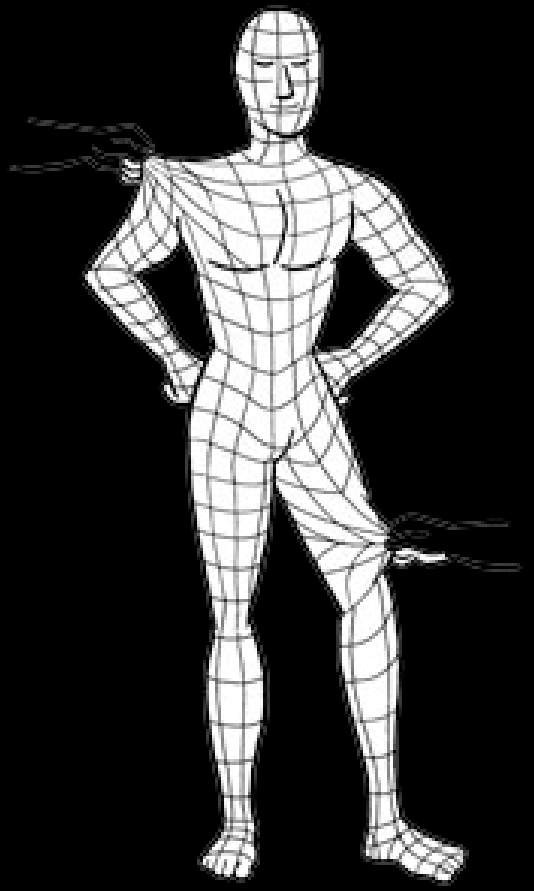
This is the non-living substance that surrounds the cells. ECM is synthesized and maintained by connective tissue cells (fibroblasts in fascia, osteoblasts in bone)

Connective Tissue Plasticity



Trabecular Patterns



Fascial Strain Patterns

MechanoTransduction

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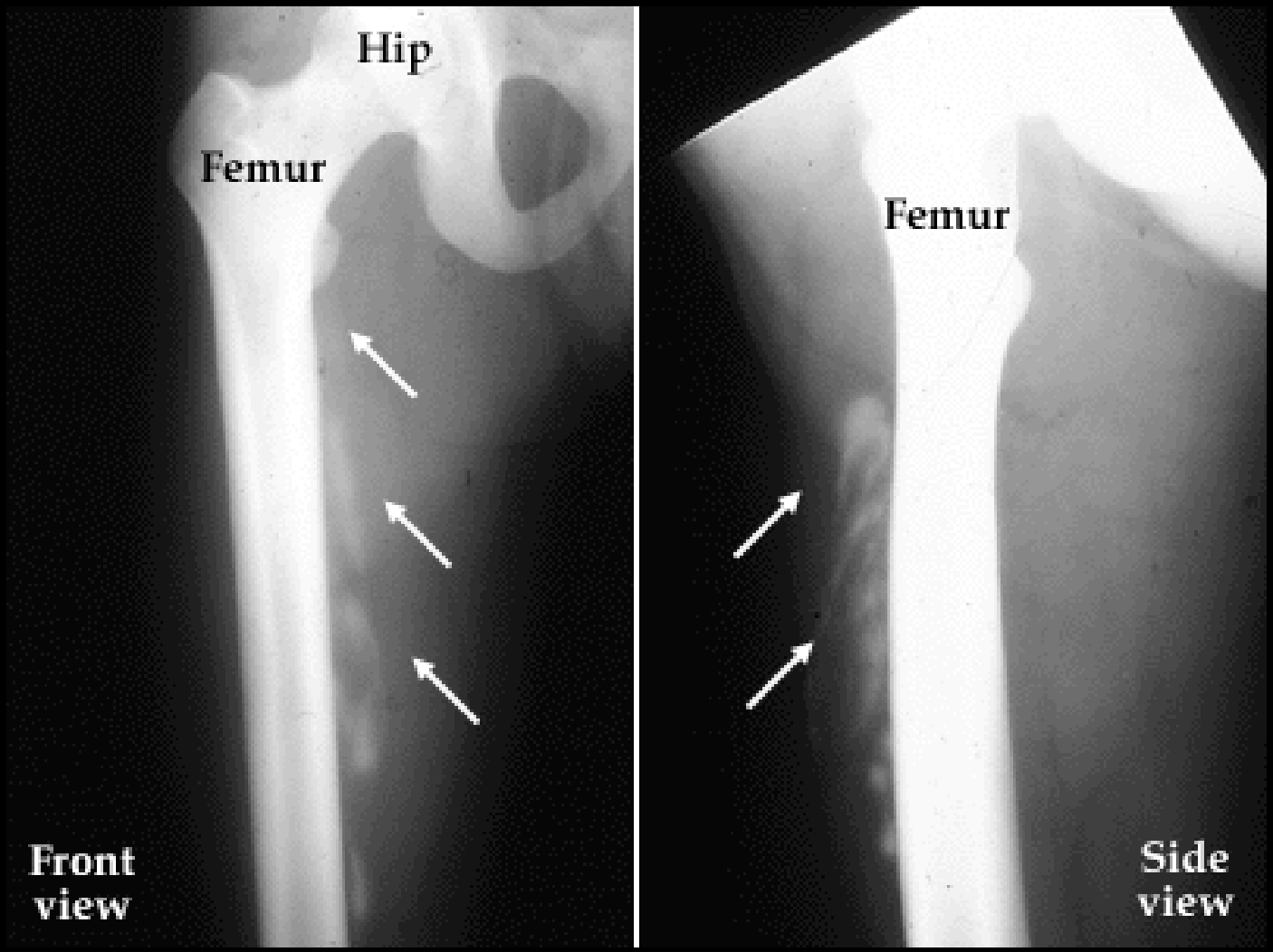


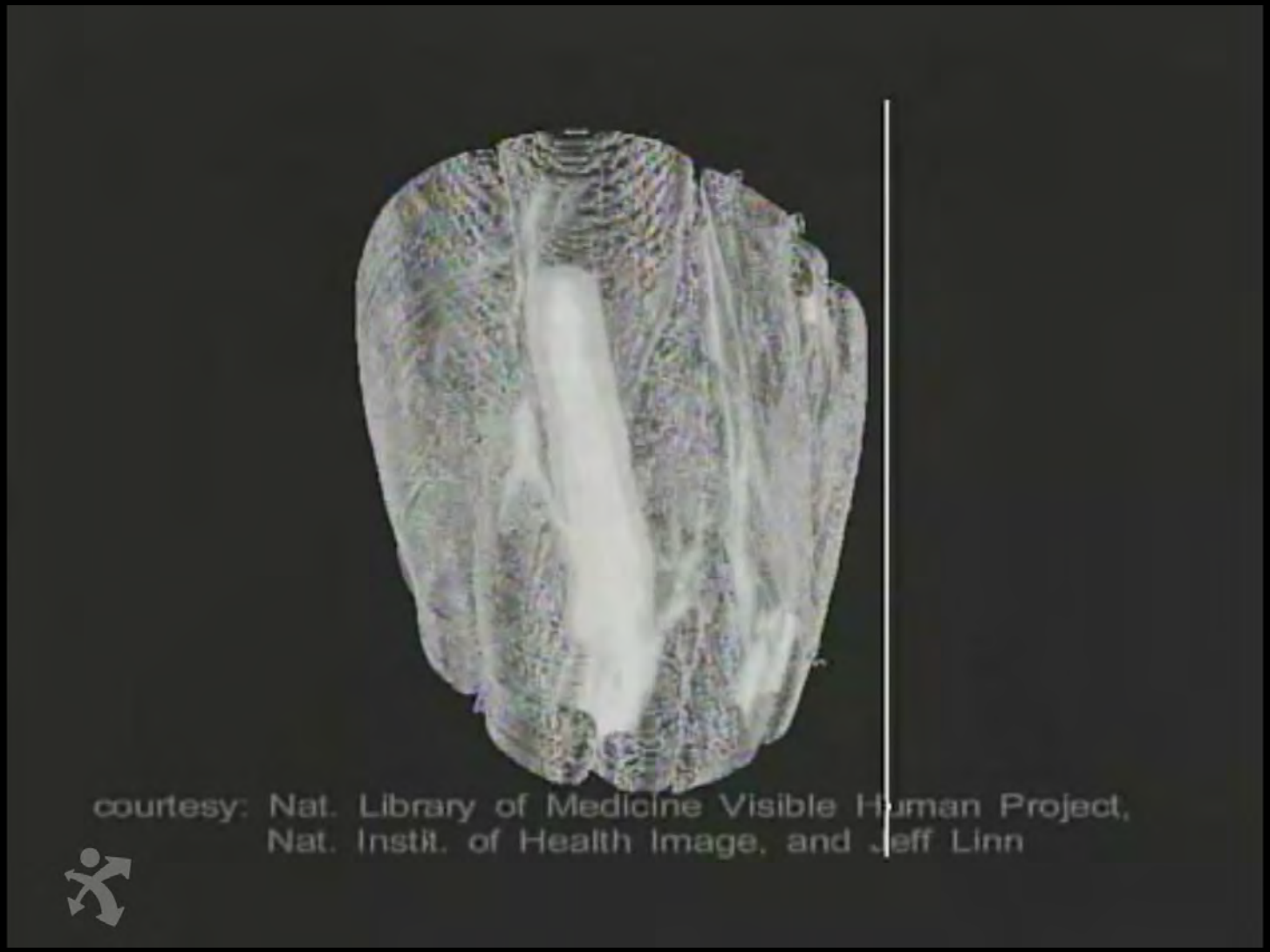
MechanoTransduction

BUNION

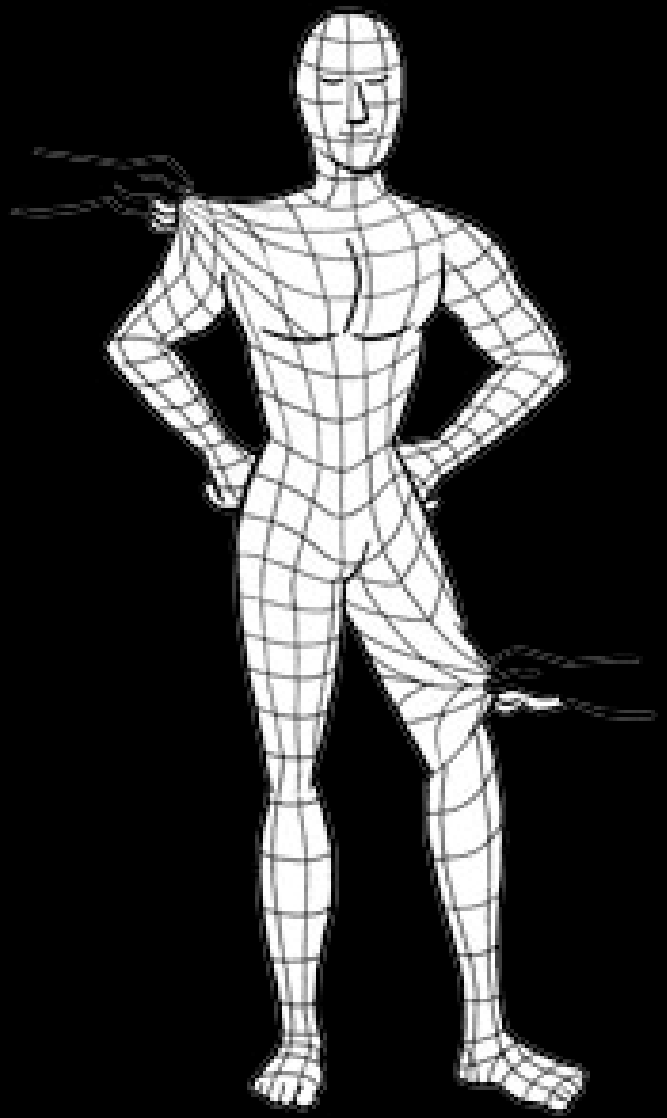
Wolff's Law:

- living cell that remodel bone are able to sense changes in mechanical stresses

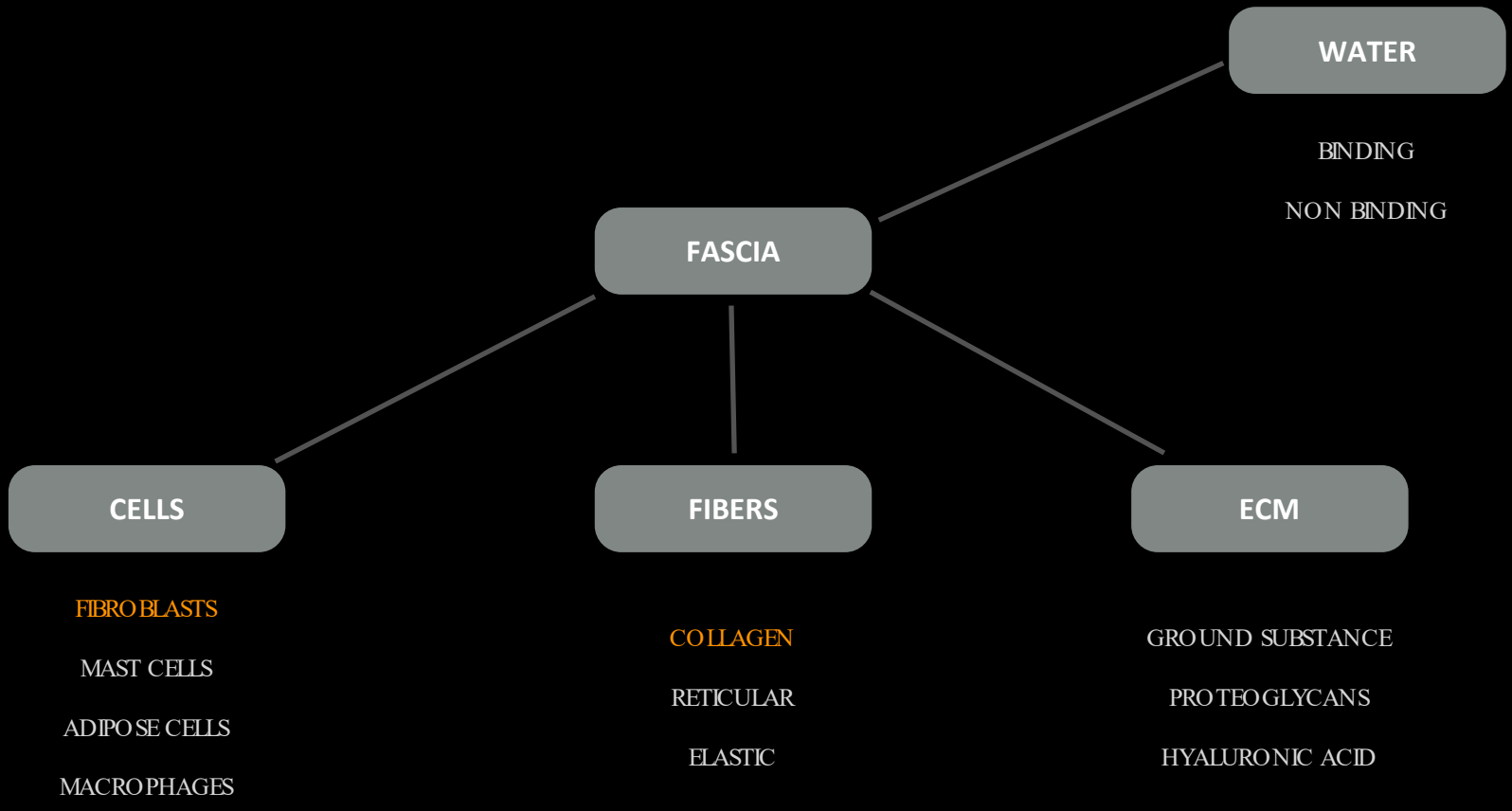
- They respond by depositing new ECM where needed and removing it from where it is not

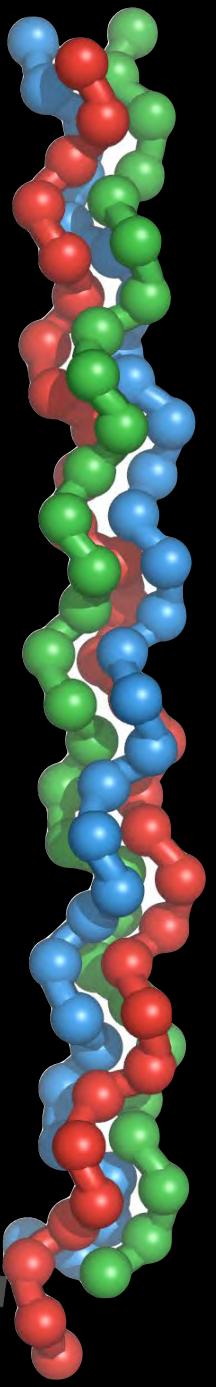

courtesy: Nat. Library of Medicine Visible Human Project,
Nat. Instit. of Health Image, and Jeff Linn

Body Wide Continuity



FASCIAL ARCHITECTURE





Collagen

Characteristics:

- Chains of amino acids coiled around each other in a triple helix format

- The longer they are, the more strength they give

- The longest/strongest collagens are the hardest to make (require the right diet and the right movement)

- All Collagen carry a special molecule called *Glycoaminoglycans*

- Once manufactured, collagen molecules get anchored to the exterior of the cell and unfurl throughout the extra-cellular matrix where molecules from adjacent cells can intertwine

- Wrinkles, arthritis, circulatory problems involve lesser quality collagen that cannot prevent the tissue from pulling apart and separating - this makes us look and function 'older' as stability begins to be affected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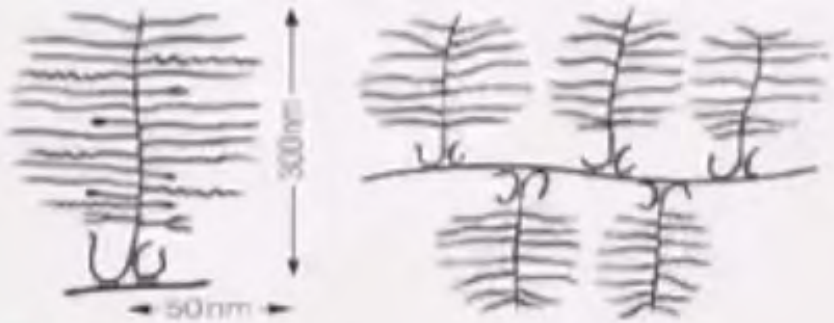
SPONGE-LIKE PROP
FASCIA



Proteoglykanmoleküle binden an Eiweißfäden und bilden so das sog. Molekularsieb

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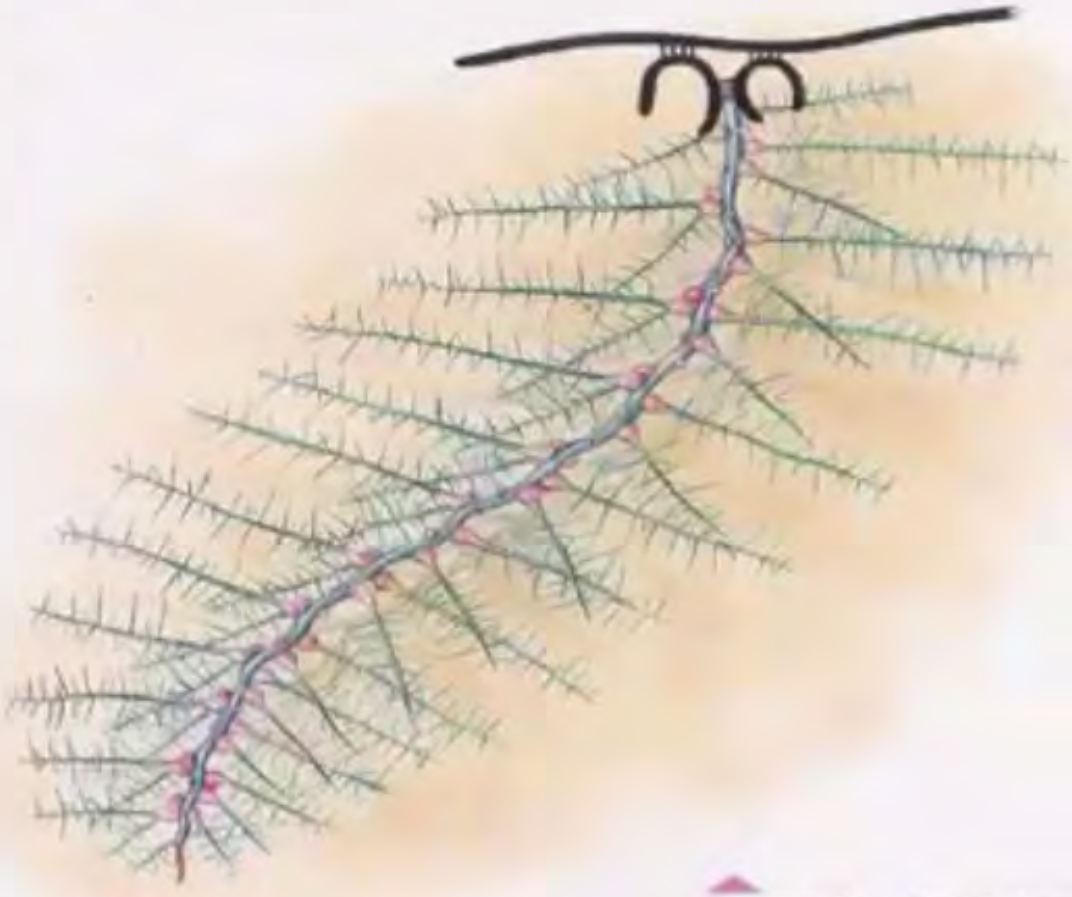

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Struktur eines Proteoglykans

Hydration Effects on Fascia

In Vitro Experiments show that:

Increased hydration goes along with an increase stiffness
(Schleip, Klingler, 2009)

KEYS TO TRAINING AND OPTIMIZING FASCIAL ADAPTATION

- USE WHOLE BODY MOVEMENT
- USE 'COUNTER-MOVEMENT' TO CREATE PRE-STRETCH (OPTIMIZES TISSUE LOADING)
- VARY FORCES AND DIRECTION OF LOAD (TRIANGULATE EXERCISES - ALLOW ENHANCED TISSUE MOBILITY AND REGENERATION)
- TRAIN IN INTERVALS (REST INTERVALS ALLOW THE TISSUE TO REHYDRATE)
- MAKE USE OF ENVIRONMENTAL DRIVERS (GRAVITY / GRF) TO CREATE ELASTIC REBOUND
- RHYTHMICAL MOVEMENT (ALLOWS TISSUE AND JOINT DYNAMICS TO SYNCHRONIZE)
- ONLY MOVE TO YOUR OWN THRESHOLD (ALWAYS BEGIN WITH A SMALLER ROM)


Maximal Strength
Agile Strength
Odd Position
Strength (Tensile)
Strength Endurance
Dead Strength
Relative Strength