Principles of a fascia oriented training approach

Dr. biol. hum. Robert Schleip
Fascia Research Group, Ulm University, Germany

www.fascial-fitness.com
Muscle emphasis:
muscle fibers shorten

Fascial recoil emphasis:
use of elastic recoil
Effects of plyometric training on both active and passive parts of the plantarflexors series elastic component stiffness of muscle–tendon complex

Alexandre Fouré · Antoine Nordez · Peter McNair · Christophe Cornu

34 plyometric training sessions (1 hr each for 14 wks.)

“A significant increase in the passive component of the SEC stiffness was found. In contrast, a significant decrease in the active part of the SEC stiffness was observed.”
Two methods of storing and releasing kinetic energy

Swing Storage

- Fluidity, sense of ease
- Fascial tissues not loaded
- Low chance of strain injury

-> Very nice movement. But not FF

Spring Storage

- Fascial tissues stretch loaded
- Impact needs to be very rapid
- Strain injuries more common

-> FF. Good for re-modeling crimp into fascial tissues
11 wks of hopping training for 11 wks in elderly men improves performance and tendon utilization
Healthy loading induces remodeling of fascial architecture

- Staubesand 1996 found a 2-directional lattice orientation in fasciae of young women compared with older women.
- Wood 1998 reported an increased collagen crimp formation in daily running rats.
Higher stimulation threshold for tendinous tissues than for myofibers

Moderate loading seems sufficient for training effect in intramuscular fasciae

Arampatzis et al. 2007 J Experim Biol 210
Davis' Law

Mechanical Stimulation

Fibroblast

Optimal Training

Status Quo Maintenance

Insufficient Challenge

Edema + Fibrosis

Fibroblast Training

Mechanical Stimulation

Davis' Law
Synthesis

Degradation

Homeostatic Matrix Remodeling

Appropriate Challenges

Strength

Time

Regeneration Period

Supercompensation

↑Strength  ↑Collagen Renewal  ↑Storage Capacity

Overloading  Optimal Training

Insufficient Challenge  Status Quo Maintenance

Biological Milieu

Genetic Factors  Previous History

Mechanical Stimulation

TGF-β1

Collagen III

Edema + Fibrosis

Inflammatory Cytokines

↑Neural Sensitization

Flexibility

↓Strength

↑AGE + Crosslink Formation

Perimysium Thickness

↑Inflammation

Flexibility

Irregular Fiber Alignment

Fibrosis

Homeostatic Matrix Remodeling

Degradation

Edema + Fibrosis

Fibrosis

Flexibility

↓Strength

↑AGE + Crosslink Formation

↑Perimysium Thickness

Mechanical Stimulation

Fibroblast
Effect on different fascial elements

1. serial
2. transversal
3. parallel
4. extramuscular
Fascia Training:
Stretch-Loading of the most important fascial elements

Usual muscle work
Muscle active
Normal range.

Melting stretch
Muscle relaxed
Long range.

Active resistance stretch
Muscle active
Long range.
45 subjects with tight hamstrings were assigned into 3 groups: control, stretching and strength training in lengthened position; performed 3x/wk for 8 wks.

- Stretching as well as Strengthening increased stretch tolerance.
- **Only Strengthening produced modification of flexibility.**
How to include specific fascia training in a standard muscle gym environment

- Working with 1/3rd of usual weight
- Mindful attention (3 seconds)
- Tensegral expansion
- Preparatory counter movement
- Proximal initiation of main movement
- Mini-bounces in both end-positions
- Embodiment (3 seconds)
For hypomobile persons:
- No mini-bounces in long-stretched position only.
- Final exhausting mini-repetitions in long-stretched position.

For hypermobile persons:
- Short percussive bounces in short-fibred position
- Proprioceptive refinement in long-stretched position
- Final exhausting mini-repetitions in short-fibred position
• **Acute effects**
  - Flexibility - **increases**
  - Athletic performance – **no changes**
  - DOMS – **decreases**
  - Parasympathetic tone -> possible increases?

• **Long-term effects**
  - Flexibility – **increases**
  - Balance – possible increases?