STRENGTH TRAINING LOW BACK INJURIES WITH MYOFASCIAL SLING SYSTEMS

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A little about myself...
- BSc. Kinesiology
- CSCS – NSCA
- CEP – CSEP
- MES – AAHFRP
- PRO Trainer, Can Fit Pro
- Medical & Rehabilitation Coordinator, World Health.
- Former competitive athlete with multiple injuries
- Clientele ranges from pre-post surgical, MVA, cancer patients, up to athletes and “weekend warriors”

Today’s Webinar:
- Hopefully make you question everything you ever learned in anatomy class
- Will make you feverishly scratch a hole in the side of your head
- Make you feel like Neo trying to figure out the Matrix
- Show how all “common sense” workout programs are completely incorrect
- Open some new ways of thinking to help you get better results for your clients

Low Back Injuries
- Most commonly the result of high volume low amplitude (HVLA) force application – REPETITIVE STRAIN!!
  Very few are from acute accidents!!
- Why is this area so susceptible?
- What makes the back so strong in some and weak in others??
- What can trainers do about it??

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What We Know....

- Muscles have defined and specific origins and insertions
- The muscle fibre is the only part of the motor unit that can undergo contraction
- The sensory fibres for muscles are the golgi tendon organ and the muscle spindle

Wrong!

Nope!

There's More!

What Actually Happens...

- Muscles interconnect through fascial networks to form more powerful connections than individual muscles
- Fascia has tensile strength of 2000 PSI compared to 4700 PSI in the ACL – strong, and lots of it!!
- Sum of parts < unit as a whole

- Fascia has contractile properties
- May even carry an electrical charge
- Can sense pressure and tension changes
- Provides net to support blood vessels, nerves, etc in tissues
- Provides compressive forces to contracting muscles

-Schep, 2003 Fascial Plasty: A New Neurological Explanation

WTF?!?!
**What Actually Happens...**

- Fascia can sense tension and relay info back through spinal reflex loops (Pacini and Rufini mechanoreceptors)
- Most sensory nerves come from myofascial tissue, primarily as mechanoreceptors that can also act as pain receptors (nociceptors)
- **Fascial mechanical dysfunction creates pain!!!!**

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**Current View of Anatomy**

- Reductionist view, looks at muscles as isolated units
- Belief that muscles cause movement of bones closer to each other
- Does NOT look at connection of muscle to other tissues
- Fascia is no where to be seen

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**Current View of Anatomy**

- Muscles CANNOT be isolated, so look at how they work TOGETHER
- Muscles pull on fascia to cause movement AS MUCH as they pull on bones – muscles pull on muscles
- Training individual muscles is **ineffective** in solving bad backs (there's hundreds of them!!)
- Train the back with movements involving the scapula and pelvis!!!!
Current View of Anatomy

• Abdominals have few bony attachments (ribs & pelvis), and have multiple fascial attachments to create movement
• Fascial integrity and **plasticity** therefore plays a huge role in back injury prevention and rehabilitation

Anatomical lines of Force

> FUNCTIONAL SKILL
> FUNCTIONAL PERFORMANCE
> FUNCTIONAL MOVEMENT PATTERNS

Gray Cook, “Athletic Body in Balance.”
Myofascial Meridians

- Based on Thomas Myers’ work in “Anatomy Trains”
- Integrated view of anatomy, links muscles into lines of force, allows for greater movement capabilities than individual muscles
- Explains complex systems of movement mechanics, repetitive strain injuries, & force coupling relationships better than individual muscles

Superficial Back Line

- Runs from top of skull through back extensors, through sacral tubercles into hamstrings, calves, and plantar fascia
- Responsible for extension features through spine and legs

Superficial Front Line

- Connects mastoid process of skull to anterior neck, through ribs and abdomen, through hip flexors & quads, tib anterior and extensor digirotum
- Responsible for flexion through anterior body
Superficial Front Line

Myofascial Meridians

- Spiral line
- Splenius Capitus through trapezius, rhomboids, serratus anterior, external obliques into contralateral internal obliques, tensor fascia lata, IT band, hamstrings, calves, tib posterior & peroneal "stirrup"
- Responsible for rotational or twisting movements and integration of left and right sides

Fascial Response to Stress

- Wang et al (2007): leg lengthening at a rate of 1mm/d and 2mm/d in rabbits with external fixation, viewing deep fascia changes after increasing tibial length to additional 10%
- Normal wavy collagen fibres became necrotic when stretched at 2mm/d, and underwent active recovery at a rate of 1mm/d
- Chronic strain (above threshold of 1mm/d) causes a breakdown of fascial tissue, leading to mechanical dysfunction and pain not observable on MRIs or X-Rays
Fascial Response to Stress

“The efficacy of treatment depends on impulses traveling along the lines of fascia, so if the fascia is dehydrated, cut (as in accident or operations) or fixatrophic, the impulses will not travel so well. Some very interesting research has also shown that muscles will relax immediately when a client drinks water.”

John Wilks, Bowen Institute

Fascial Response to Stress

- Fascial adhesions (fixatrophic changes) can result from chronic stress and inflammatory protein buildup - super glue to tissues
- Leads to reduced movement capacity, pain with stretching, and reduced muscle function
- Decreased function leads to compensation which leads to injuries

Training Fascia

- Hydration, Hydration, Hydration!!!!
- Use of SMR techniques to relieve fixations/adhesions

“Nerve Flossing” - Dr. Stuart McGill
Training Fascia

- Active Mobilization of Thoracic Spine

Training Fascia

- Diagonal spiral integration
- Linear strengthening, focusing on weak points in lines
- Isolation as last resort

In Closing...

- Myofascial training integrates anatomy for rehab and injury recovery
- Response to SMR techniques and directed strength training can reduce pain and increase function beyond static stretching and basic strengthening
- Thinking about anatomy in new ways brings new ideas for training and new performance outcomes

THANK YOU!!!

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