An Osteopathic Rehabilitation – a new paradigm.

Rob Truax, DO
Director, Osteopathic Sports Rehabilitation Clinic
University Hospitals Connor Integrative Network
Associate Professor, OMM
Ohio University Heritage College of Osteopathic Medicine
• No Discloser to Announce
Case #1

• 34 yo f complaining of right elbow pain for 6 weeks
• No trauma
• The pain has made it such that it is painful to do even 1 push-up
• She has had to modify her workouts
• PE:
  • No swelling
  • Tenderness to palpation at the lateral epicondyle
• Dx: lateral epicondylitis
• What to do?

• “The non-operative approach for treatment of epicondylitis focuses on pain and inflammation control.” pg 410

• “Initial Treatment consists of modalities, stretching, light strengthening to stimulate repair.”

• Phase 1: Get simple ROM back
• Phase 2: Gentle stretching and strengthening
• Phase 3: Advanced strengthening
• Phase 4: Return to Activity
Case #1

• What did I do:
  • I noticed imbalanced muscles of the shoulder and the hip
  • I did OMT to the 9 regions hips, pelvis, lumbo-sacral, thoracics, Upper extremity, cervicals, ribs
  • After I did this she was able to do 2 complete push-up with minimal pain before leaving that first visit
  • Follow-up visit: no significant functional limitations
Case #2

• 21 yo f cheerleader for the Cavs complaining of right knee pain
• Pain persisted despite stretching and modified rest
• She is a dance major
• PE:
  • no knee swelling
  • Hip flexor and hip extensor weakness

Case #2

- Osteopathic Evaluation:
  - Right upslipped inominant

- Treated lumbar, sacrum, pelvis, LE somatic dysfunction
  - Immediate improvement in hip strength
  - 4 days later – no symptoms
Case Study

• 77 yo male hiker with worsening hip pain x 2 months
• Seen in Ortho clinic but did not have too much pain -dx hip pain
  • “Symptomatic treatment, follow-up in 4 weeks”
  • Worsening pain over weekend and seen the next week
  • Dx – tendonitis. Rx Physical therapy, Cold, NSAIDs
• Hip pain did not improve, did not return to that doctor
• Saw different Ortho 4 months later – normal hip x-ray, DJD in spine
  • “Medrol Dose pack did not help. I recommend heat and NSAIDs.”
  • “His expectations of physical activity are unrealistic.”
Research for hip pain

• Does land-based exercise reduce pain and disability associated with hip osteoarthritis? A meta-analysis of randomized controlled trials
  • Fransen et al  Osteoarthritis and Cartilage May 2010
    • Silver level evidence. Limited number and small samples size

• A review of the clinical evidence for exercise in osteoarthritis of the hip and knee
  • Bennell and Hinman J. of Sci and Med in Sports 2011
    • Exercise plays an important role in managing symptoms but optimal exercise dosage is uncertain

• Exercise for osteoarthritis of the hip (Review)
  • Fransen, et all The Cochran Library, 2009
    • No improvement in self-reported physical function
Case #3

- PE
  - Hip flexor and knee flexor weakness
  - Upslipped inominant

- OMT to the lumbo-sacral-pelvic region
  - Immediate return of muscle strength

- Follow-up visit 4 weeks later: “The pain went away the next day and has not returned.”

- 6 months later he walked 192 miles on an England touring hike
What do all three cases have in common?

• All have non-traumatic soft tissue problems
• Literature review and doctor visits focus on progressive exercises and anti-inflammation
• Typical treatment/literature does not have immediate improvement as an option
Traditional Rehabilitation Paradigm

- Phase I (passive) $\rightarrow$ Phase II (early active) $\rightarrow$ Phase III (sports specific)
  - \textit{rest, stop activity} \hspace{1cm} \textit{slow return} \hspace{1cm} \textit{return to activity}
  - (concurrent equipment and nutrition modifications.)

- This \textbf{assumes} that progression and time are always parallel
- This \textbf{assumes} that the athlete has anatomical damage and inflammation which requires stopping activity and then slow return
- This is for ALL issues:
  - Post-surgical – logical and reasonable
  - Post-traumatic (fractures, sprains)- logical and reasonable
  - Non-surgical, non-traumatic: not logical in the Osteopathic Paradigm
What muscle is she using to hold herself?

Biotensegrity: where structural shapes are maintained by a continuous compression-tension behavior of the entire system, as opposed to a discontinuous and local behavior.

- This assumes that the body always works together
- This assumes that any disruption of this working relationship impacts the entire body, no matter how small or subtle
The Osteopathic Anatomy

- Fascial-dynamic model
- Muscular anatomy cannot be separated from the dynamic/functional anatomy
- Living Body is NOT the same as the Dead body
- Anatomy is 4-dimensional

- The musculo-skeletal system is a web network of overlapping, inter-dependent parts connected by the:
  - Fascial system
  - Nervous system
  - Vascular system

- This system CAN respond to mechanical modalities
Research

- **Panjabi** viewed 3 spinal subsystems: neural, active, passive
- **Hodges** noted that the transverse abdominus (TrA) muscle fired BEFORE the shoulder moved: FEED-FORWARD system
  - Those with hx of low back pain, the TrA did NOT fire before shoulder movement
- **Kibler** wrote about the importance of the kinetic chain on elbow health
- **Gillis** noted OMT improved Trendelenberg gait in those with Sacro-iliac dysfunction
- **Sung; Travell; Twomey**: Joint dysfunction can cause neurally-mediated muscle inhibition
Mechanotherapy may replace drug and cellular therapies for injured muscle tissue; January 28, 2016

- Wyss Institute for Biologically Inspired Engineering at Harvard University
- Discovered that direct mechanical stimulation can accelerate healing of injured muscles using cyclic mechanical compression
- “Until now, most approaches to muscle regeneration have been biologic, relying on the use of drugs or cells,” said Christine Cezar, Ph.D., lead author on the study.

“Our finding that mechanical stimulation alone is enough to enhance muscle repair could open the door to new non-biologic therapies, or even combinatorial therapies that employ both mechanical and biological interventions to treat severely damaged skeletal muscles.”

“Chemistry tends to dominate the way we think about medicine, but it has become clear that physical and mechanical factors play very critical roles in regulating biology,” said David Mooney, a Wyss Institute Core Faculty... “The results of our new study demonstrate how direct physical and mechanical intervention can impact biological processes and can potentially be exploited to improve clinical outcomes.”

http://www.kurzweilai.net/mechanotherapy-may-replace-drug-and-cellular-therapies-for-injured-muscle-tissue
Compare and Contrast Research and Osteopathic Paradigm (not just OMT)

1) Panjabi sub-system
   • Neural, passive, active

2) Kibler: Kinetic Chain

3) Hodges: TrA and Shoulder movement

4) Gilles: OMT treats gait

5) Cezar and Mooney: – mechanics for self-healing

• 1) Somatic Dysfunction: altered arthrodial, myofascial and neural components

• 2) The body is a Unit

• 3) Structure/function related

• 4) self-healing

• 5) OMT – mechanical treatment
Traditional Rehabilitation Paradigm

• Phase I (passive) $\rightarrow$ Phase II (early active) $\rightarrow$ Phase III (sports specific) 
  $(rest, \ stop \ activity)$    $(slow \ return)$    $(return \ to \ activity)$

• This **assumes** that progression and time are always **parallel**

• This assumption is based upon the paradigm:
  • Pain ALWAYS has tissue damage and inflammation which requires time to heal
Osteopathic Rehabilitation Paradigm: progression \( \Rightarrow \) time

- **Late Active**
  - Sports Specific Exercises
  - Simple resistance, Flexibility, Early Proprioception, Aerobic maintenance

- **Early Active**
  - Ice/Heat, Ultrasound, Passive ROM maintenance, Early Core stability, Pain Control
  - DO/OMT-Patient

- **Passive**
  - Posture, Gear/Equipment, Nutrition, Emotions

- **Progression**
  - Time

**Key Points**
- Early Core stability
- Pain Control
- DO/OMT-Patient

**Abbreviations**
- DO/OMT: Doctor of Osteopathic Medicine
- ROM: Range of Motion
Osteopathic Paradigm

- 30 yo f runner with acute right ankle pain after a 10-mile run. No trauma
- I see her 2 days afterwards and she is limping
- Swelling in her right tibialis posterior
- Dx: acute tibialis posterior tendonitis
- But why? She is a chronic runner and her body is used to this type of activity?
- Osteopathic evaluation: right leg is short, upslipped right hip
- I treat with OMT – walks out NOT limping, activity as tolerated and she returns to pain-free running 2 days later
Osteopathic Rehabilitation Paradigm

Late Active

Early Active

P R O G R E S S I O N

Posture
Gear/Equipment
Nutrition
Emotions

Passive

Ice/Heat
Ultrasound
Passive ROM
Aerobic maintenance
Early Core stability
Pain Control

DO/OMT-Patient

Simple resistance
Flexibility
Early
Proprioception
Aerobic maintenance

Sports Specific Exercises

Early Core stability
Aerobic maintenance

TIME

P R O G R E S S I O N
Osteopathic Paradigm

• 65 yo male marathoner with right hip pain
• 2 years prior had hip surgery for hip fracture from a cycling accident
• Marathon run 4 weeks before to seeing me – he missed Boston qualification by 5 min
• Admits he needs 10 weeks to rest and 10 weeks to train but he has another marathon in 6 weeks to qualify for Boston
• I treated him 4 times before his next marathon
Anyway, thanks to your great work, I was able to regain strength in my right leg permitting me to train harder and faster. The result was a 3:31.10 race in Richmond. I actually ran the second half faster than the first while running mostly uphill into a strong wind. I passed hundreds of other runners. It felt great! I now have a Boston qualifying time 24 minutes under the standard. I am assured of running in 2017. Not bad for a guy who doctors told just two years ago he would never run again or walk unassisted.

Thank you once more. You changed my life!

OMT can not only be rehabilitative but also improve sports performance and relieve stress!!
Question

• What do you call it when someone engages in daily acute overuse activities??
  • EXERCISE!!!!

• What do you call it when some steadily increases their daily acute overuse activities?
  • FITNESS!!!!
PARADIGM PROBLEM

• If overuse activities is a CAUSE of pain (shoulder pain, elbow pain, hip pain)
  • You must NEVER recommend exercise
  • If you ever recommend exercise, then you are recommending people to hurt themselves

• Do you see the problem with diagnosing “overuse injury”? 
• Because of the traditional paradigm, >90% of issues are:
  • Trauma injury 
  • Overuse injury
How to think more Osteopathically

• Pain is due to:
  • **Trauma or acute overload** → tears, inflammation.
    • RICE, bracing, surgery, etc
  • **Joint instability** – often the result of trauma – surgery?
  • **Repetitive overload (not “overuse”)** – stress fractures, inflammation, micro-tears
  • **Neuromuscular imbalance** (with or without compensation)
  • **Muscle Fatigue**: often due to muscle imbalance
  • **Accumulative** – layers of compensation
  • **Medical**

• Somatic Dysfunctions: neuromuscular response that **cause**, or the **result from**, the above.

• Rather than a constant pursuit of CAUSE->EFFECT, what about the pursuit of biomechanical homeostasis??
Osteopathic Paradigm

Disease

• Trauma or acute overload → tears, inflammation.
  • RICE, bracing, surgery, etc
• Joint instability – often the result of trauma – surgery?
• Repetitive overload (not “overuse”) – stress fractures, inflammation, micro-tears

Lack of Health

• Neuromuscular imbalance (with or without compensation)
• Muscle Fatigue: often due to muscle imbalance
• Accumulative – layers of compensation

• Look for both concurrently
• Somatic dysfunction can exist in both conditions
How to do both??

• Listen for both disease and “lack of health” in the history

  • **Disease**: “My elbow began hurting yesterday after falling.”
  
  • **Lack of Health**: “I do not know when my elbow began hurting; every time I do push-ups it hurts.”

• What sounds like a disease could just be lack of health; what sounds like lack of health could be disease. It is the job of the physician to figure this out

• **UTILIZE OMT TO CORRECT THE BIOMECHANICAL IMBALANCE**
Osteopathic Rehabilitation Paradigm

- Passive
  - Ice/Heat
  - Ultrasound
  - Passive ROM
  - Aerobic maintenance
  - Early Core stability
  - Pain Control

- DO/OMT-Patient
  - Simple resistance
  - Flexibility
  - Early Proprioception
  - Aerobic maintenance

- Late Active
  - Sports
  - Specific Exercises

- Early Active
  - Posture
  - Gear/Equipment
  - Nutrition
  - Emotions

- TIME
  - PRORIGIN
  - GISTIC
References


References


