An Osteopathic Rehabilitation – a new paradigm.

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- 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?

Rehabilitation of the Overhead Athlete's Elbow – Wilk et al, *Sports Health,* 2012

- "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

Hip Strengthening Prior to Functional Exercises Reduces Pain Sooner Than Quadriceps Strengthening in Females With Patellofemoral Pain Syndrome: A Randomized Clinical Trial, Dolak et al. *J Orthopedic & Sports Physical Therapy* 2011

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) → Phase II (early active) → Phase III (sports specific)
  (*rest, stop activity*) (*slow return*) (*return to activity*)
  (concurrent equipment and nutrition modifications.)
- This **assumes** that progression and time are always parallel
- This **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 a 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
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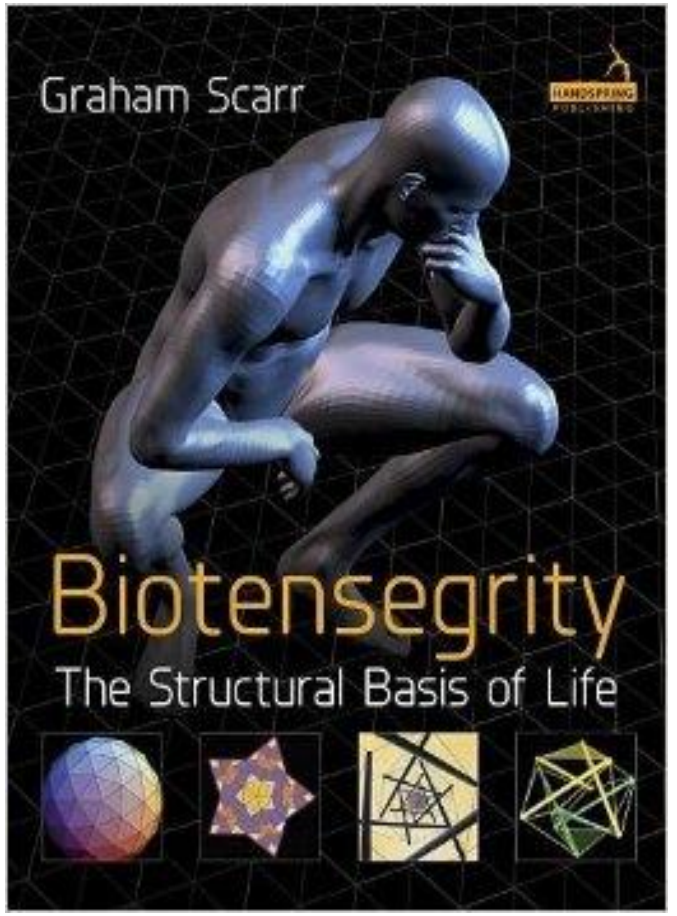


The Osteopathic Anatomy

- 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

Research

- **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?utm_source=KurzweilAI+Weekly+Newsletter&utm_campaign=12ba9b2e7c-UA-946742-1&utm_medium=email&utm_term=0_147a5a48c1-12ba9b2e7c-282037665

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

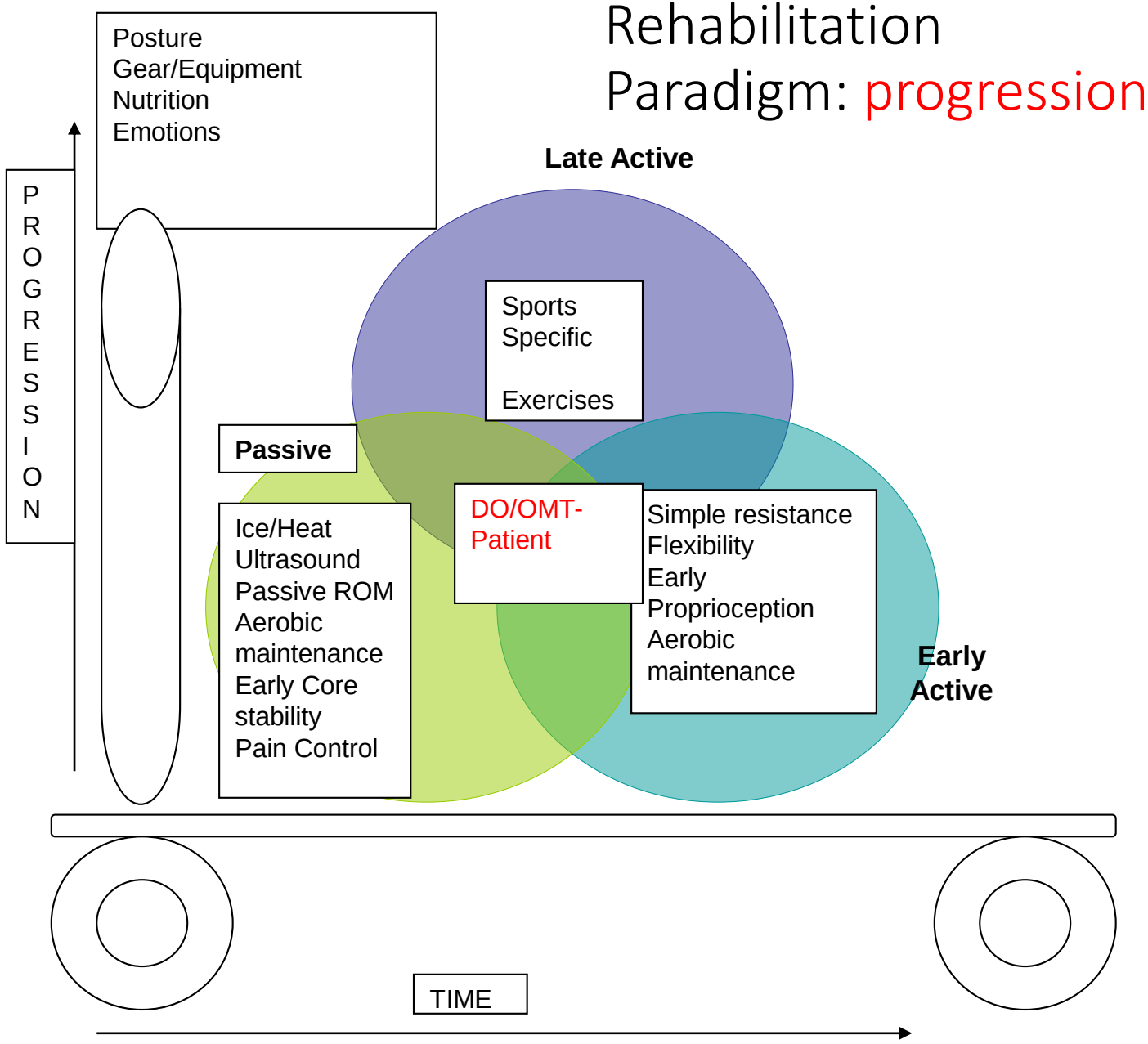
Traditional Rehabilitation Paradigm

- Phase I (passive) → Phase II (early active) → 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

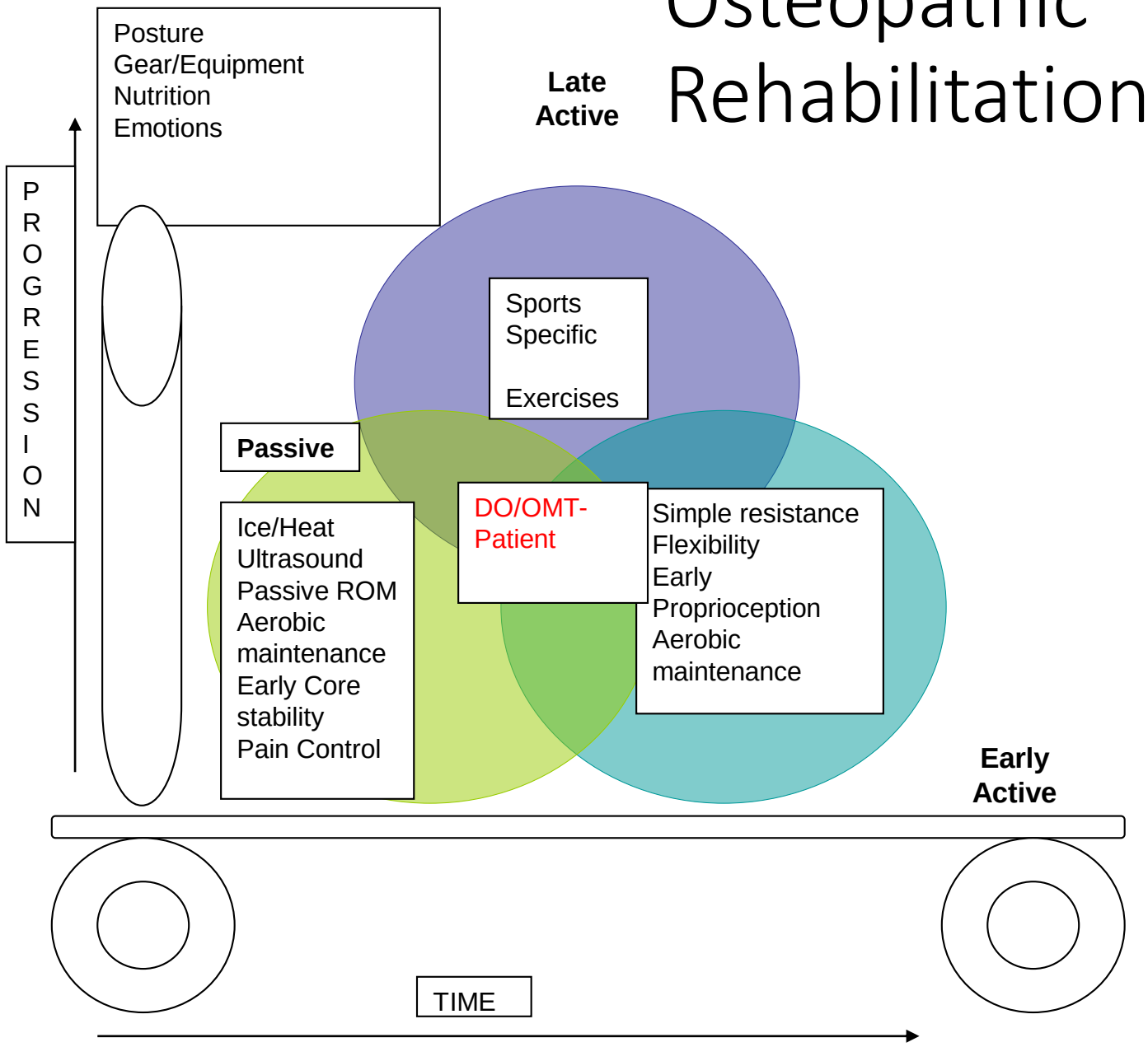
Osteopathic Rehabilitation Paradigm: progression ≠ time



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



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

Osteopathic Paradigm

- *"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

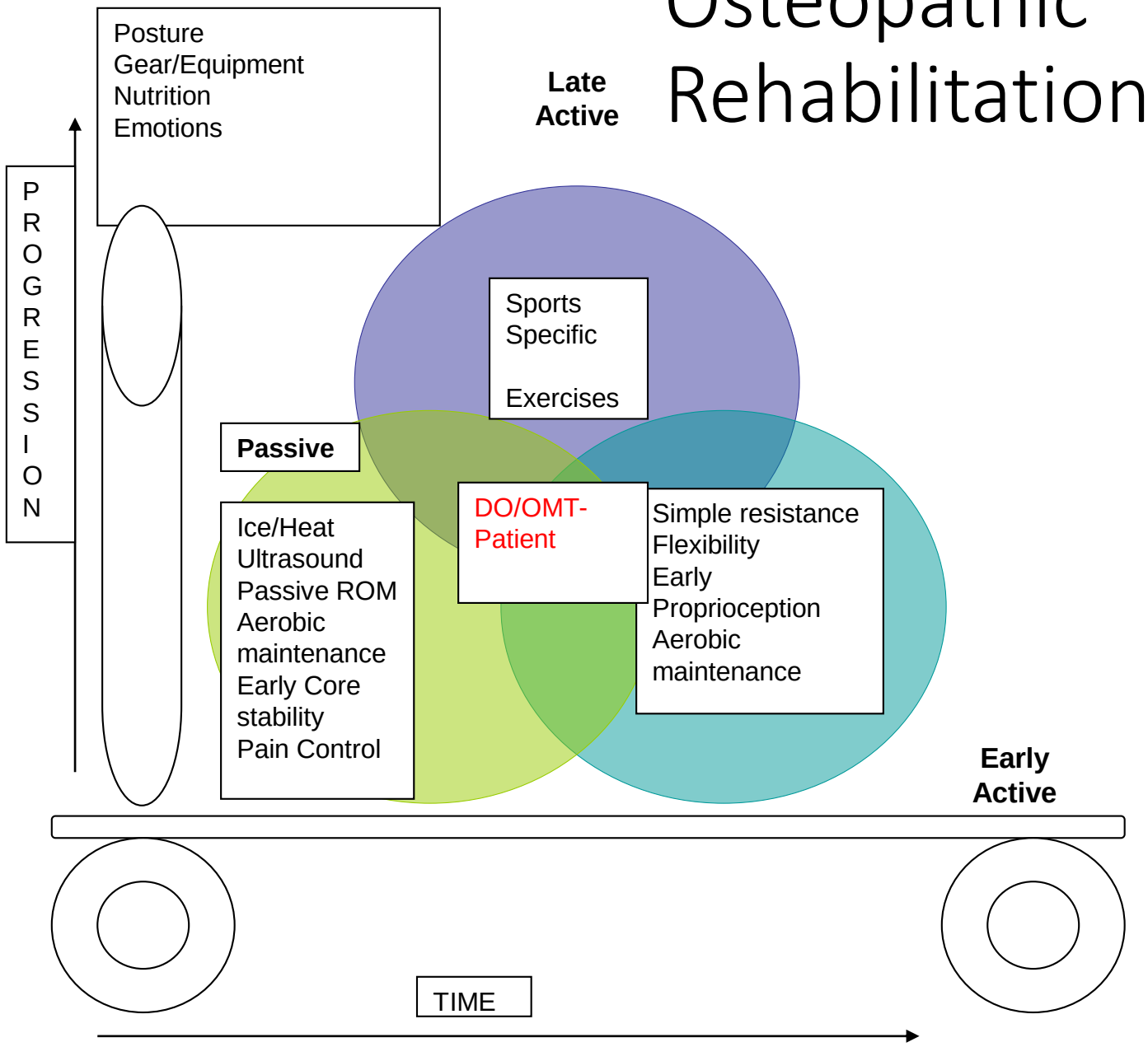
- Look for both concurrently
- **Somatic dysfunction** can exist in both conditions

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



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