



# TBI-BH ECHO

Traumatic Brain Injury - Behavioral Health ECHO  
UW Medicine | Psychiatry and Behavioral Sciences

# Integrative Health: How can it help with TBI care

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**TBI-BH ECHO**

# Speaker disclosures

✓ Any conflicts of interest?

Royalties from *Holistic Pain Relief*



# Objectives

1. Name 2 defining features of integrative health practice
2. Name 2 key determinants of health
3. Name 2 strategies that need to be assessed in persistent TBI



# Cultural Transformation

- ▶ Not the same as QI
- ▶ Changing the conversation
  - ▶ Health focus: innate healing capacity
  - ▶ Empowered patient
  - ▶ IM is not an add on but rather a starting point



# Integrative Health

- ▶ Patient centered health creation
- ▶ “What matters to you” rather than “What is the matter with you” (VHA)
- ▶ Root cause medicine, beyond symptom management



# What is integrative health?

- ▶ An approach to the medical conversations that brought different perspectives into focus.
- ▶ Health is not merely the absence of disease.
  - Fundamental determinants of health:  
*eat drink think feel do*
  - Self efficacy
  - Wide angle lens: *longer timeline, more comprehensive story*



# Root Cause Medicine

## ▶ WHY?

- Why this patient?
- Why this condition?
- Why now?



## Connection, Complexity, Uncertainty

- We are made of interconnected physiologic systems that share signaling mechanisms: molecules, enzyme systems, free radicals, inflammatory markers, neurotransmitters, electrical signals of our nervous system and the energetic bonds that connect our atoms and electrons. Changes in one system necessarily impact other systems.





## Connection, Complexity, Uncertainty

- Gives us much more to think about, worry about and target for research and patient care.
- It also makes it more difficult to be dogmatic, and gives us the freedom to say, to ourselves and even to patients: “I don’t know but I am always looking for better answers”.



# Disease Focus=Diagnosis

- ▶ An **agreed** upon category
- ▶ Collection of symptoms and findings
- ▶ A concept



# Mervyn Singer: Time to kiss the right frog

“how our iatrogenic meddling either helps or hinders.”

“to move away from **syndromic fixations** that, while offering convenience, have generally proved **counterproductive**.

Importantly, we need to discover a far more **holistic approach** to patient care, evolving from the prevailing **overmedicalized**, number-crunching perspective towards a **true multidisciplinary effort**”

Singer Critical Care 2013, 17(Suppl 1):S3<http://ccforum.com/content/17/S1/S3>

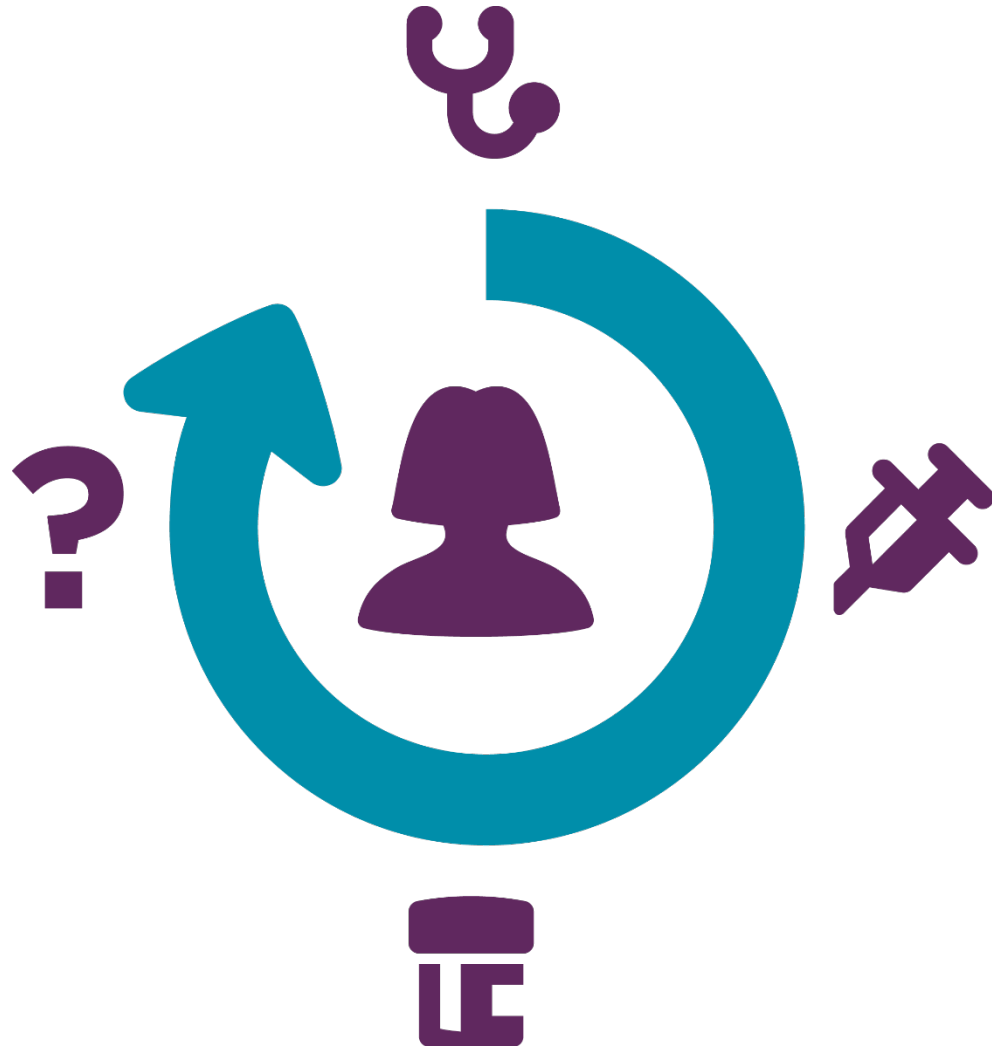


## Mervyn Singer: Time to kiss the right frog

“The greatest advances in critical care over the past two decades have been achieved through doing less to the patient.”



# HOW MUCH OF OUR HEALTH OUTCOME IS GENETICS?



GENETICS  
20-30%



LIFESTYLE  
70-80%



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# WE DON'T ALWAYS LOOK FOR ANSWERS IN THE RIGHT PLACES?



# EPIC: EUROPEAN PROSPECTIVE INVESTIGATION INTO CANCER AND NUTRITION

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- 23,000 people for 7.8 years
  - *Not smoking*
  - *Exercise 3.5 hr/week*
  - *Healthy diet: veg, fruit, beans, whole grains, nuts, seeds, low meat consumption*
  - *BMI <30*

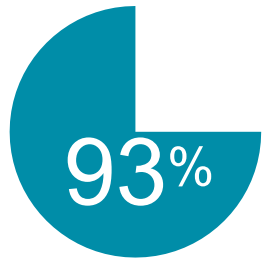
E. S. Ford et al., “Healthy Living Is the Best Revenge: Findings from the European Prospective Investigation into Cancer and Nutrition — Potsdam Study,” *Archives of Internal Medicine* 169, no. 15 (2009): 1355–62.



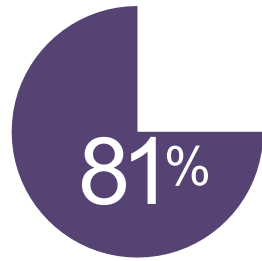


# WOULD YOU TAKE A DRUG THAT PREVENTED THIS PERCENTAGE OF DISEASES?

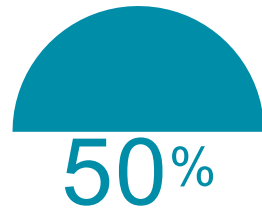
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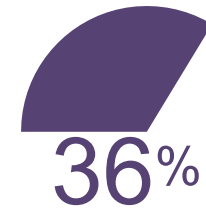
DIABETES



HEART  
ATTACKS



STROKES



CANCERS



# AGOUTI MOUSE

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# Nutrition: Food is information

You change your body chemistry every time you eat.  
You increase your inflammation or decrease your inflammation.



# Developed World Diseases

Dramatic increases in:

IBD, asthma, atopic disorders (skin, respiratory, and food allergies), rheumatoid arthritis, type 1 diabetes and multiple sclerosis

Rapidity of the rise in disease rates appears to argue against a solely genetic basis



# Health

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**Eat Drink Think Feel and Do**

Visit me at my website for more health information.  
[www.heathertickmd.com](http://www.heathertickmd.com)



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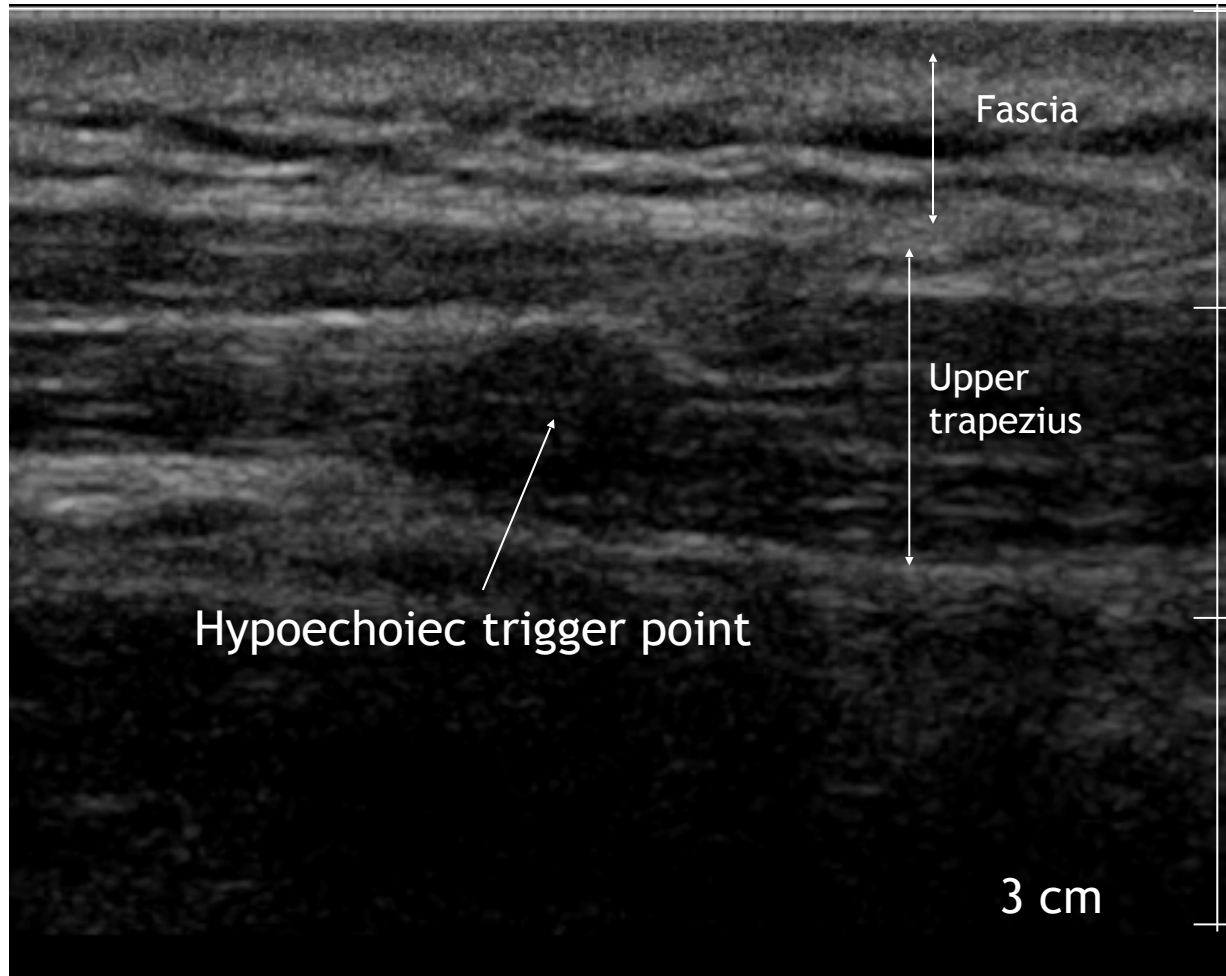
# Musculoskeletal Pain

Musculoskeletal conditions account for the greatest proportion of persistent pain across geographies and ages. Back and neck pain, osteoarthritis, rheumatoid arthritis and fractures are among the most disabling musculoskeletal conditions and pose major threats to healthy ageing by limiting physical and mental capacities and functional ability.

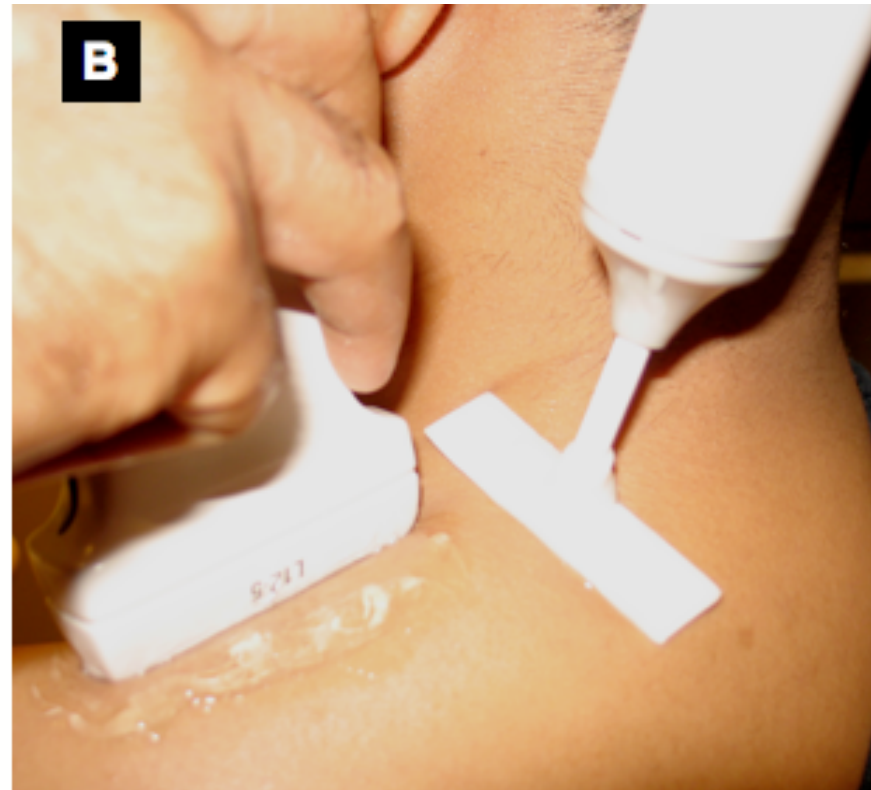
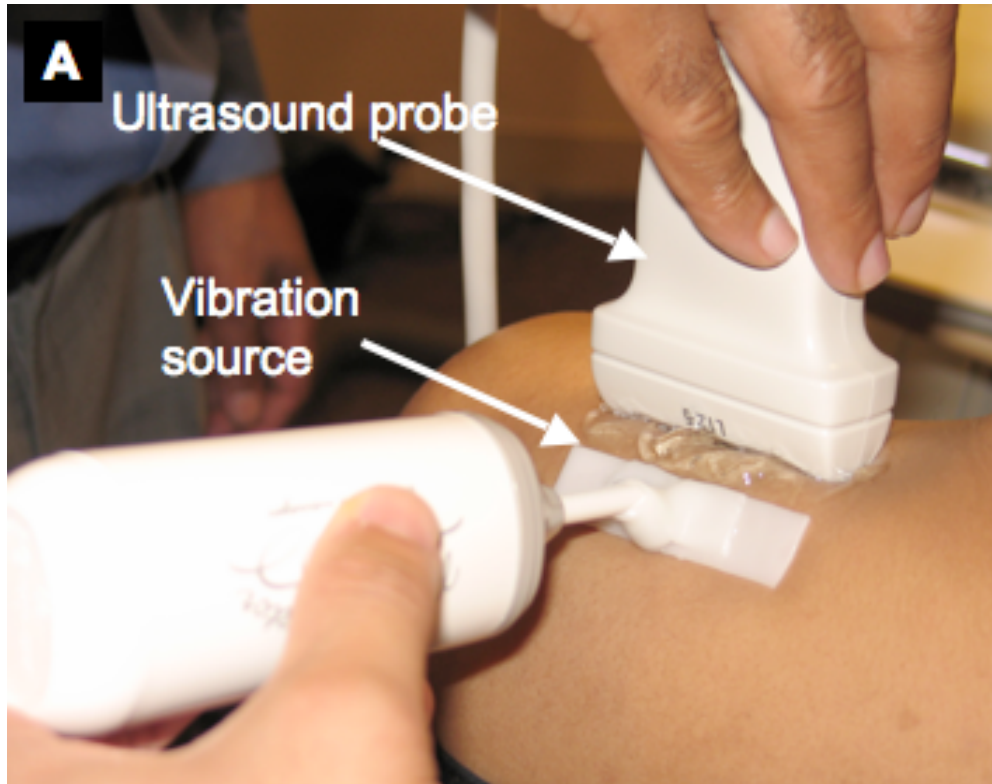
*Briggs A et al, Bull World Health Organ 2018;96:366-368 |*  
doi: <http://dx.doi.org/10.2471/BLT.17.204891>



# Upper Trapezius Muscle with Myofascial Trigger Point (MTrP)



# Vibration Applicator



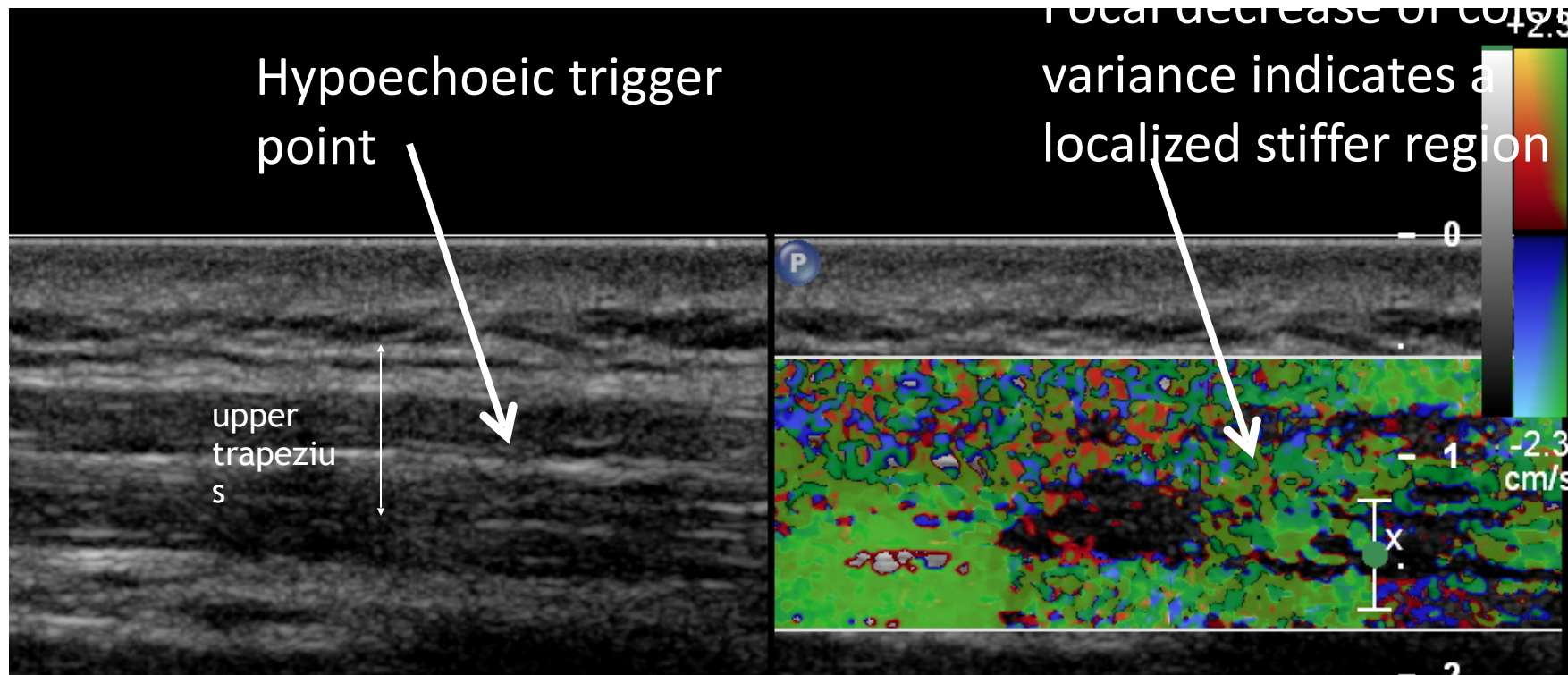
SikdarS, et al , *Arch Phys Med Rehabil.* 2009 November ; 90(11): 1829-1838.  
doi:10.1016/j.apmr.2009.04.015.



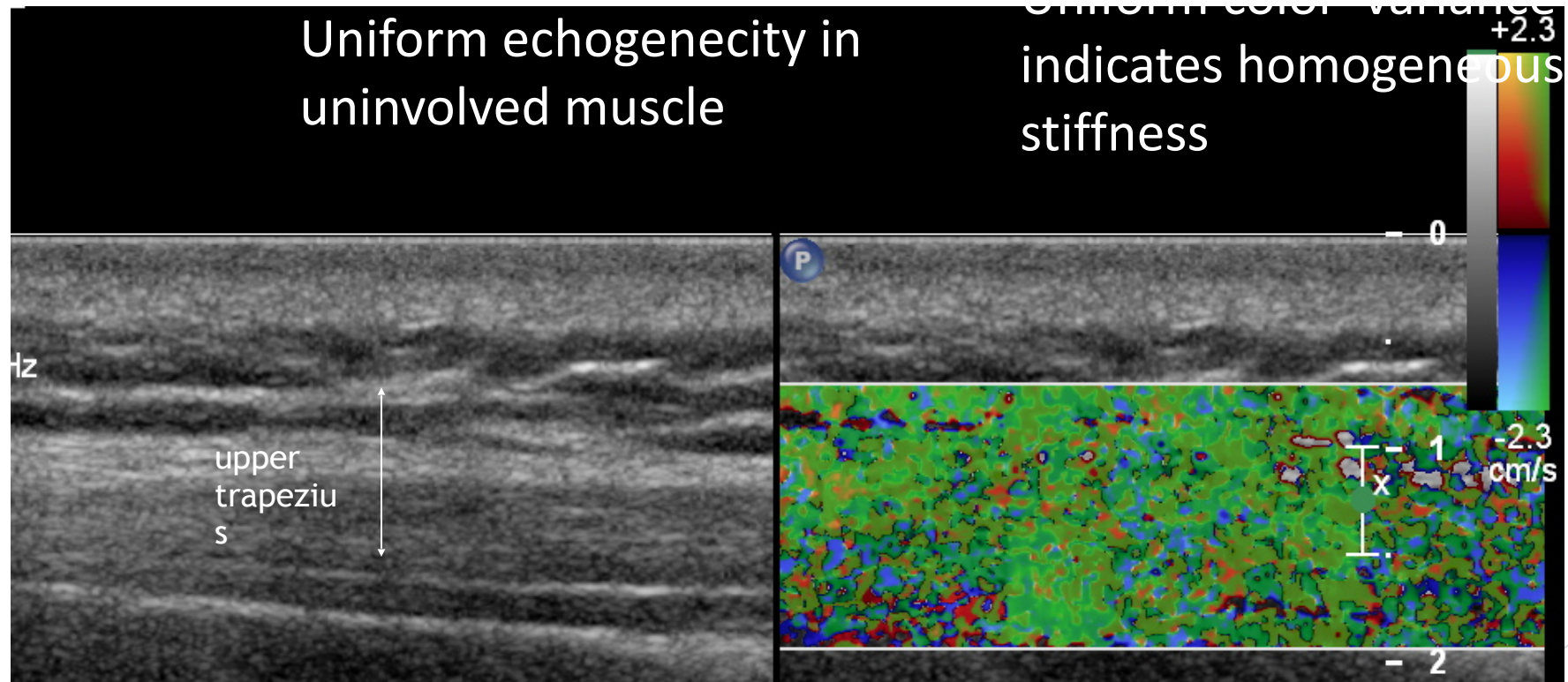
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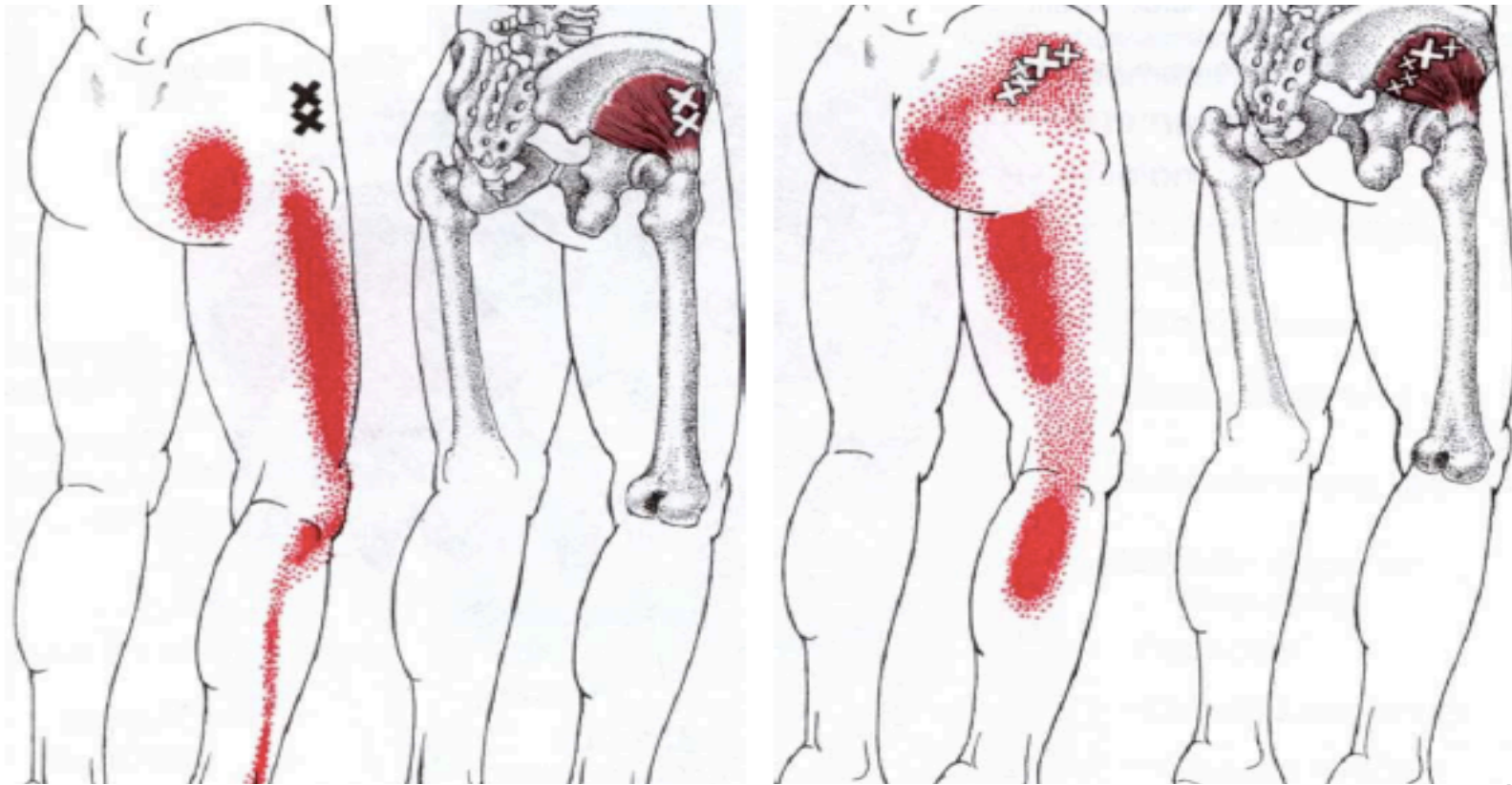
# Vibration Sonoelastography of Muscle with MTrP



# Vibration Sonoelastography of Uninvolved Muscle



# Gluteal Muscles

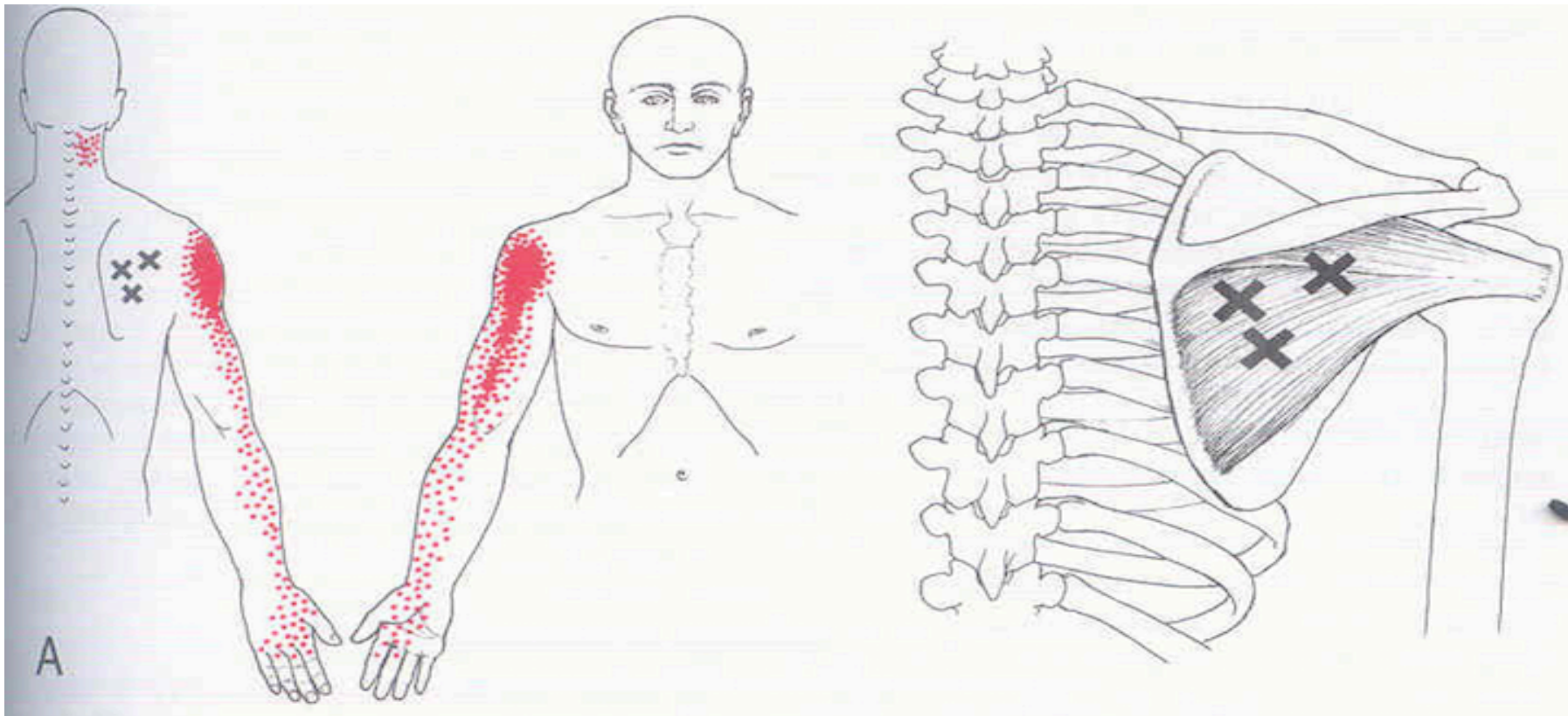


Simons and Travel



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# Infraspinatus



# Sympathetic hyperinnervation in myofascial trigger points

Lei Caoa, Yanping Gao et al, *Medical Hypothesis*, 139 (2020) 109633

<https://doi.org/10.1016/j.mehy.2020.109633>

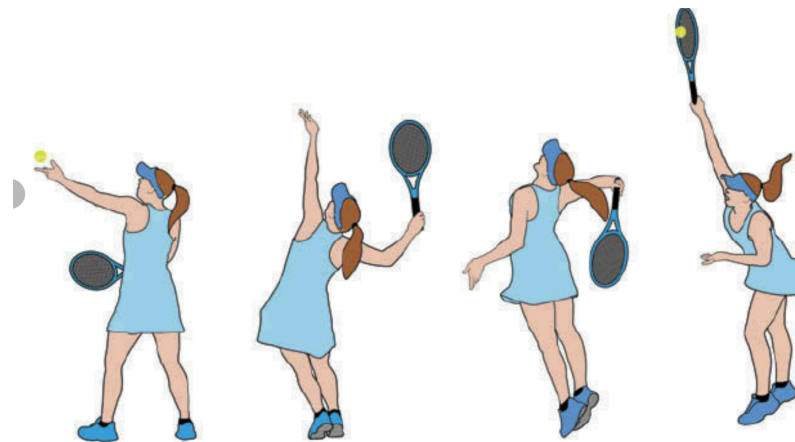
**Conclusion:** There was sympathetic hyperinnervation in MTrPs, which could partially explain the symptoms of MTrPs and is an interesting and useful new perspective regarding the diagnosis and treatment of MPS. **Perspective:** The sympathetic nerves in MTrPs are remodeled, leading to **sympathetic hyperinnervation**. Sympathetic hyperinnervation can partially explain the symptoms of MPS. The pathological mechanism of sympathetic hyperinnervation may be a new perspective for the diagnosis and treatment of MPS.



# Movement heals

Movement can either

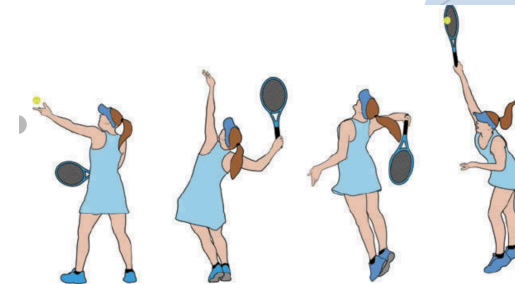
- ▶ reinforce the maladaptive patterns (Our brain gets better at anything we practice)
- ▶ or re-program the somatosensory cortex under certain circumstances



# Movement heals

## Movement training

- ▶ Recognition of muscle recruitment patterns, fatigue thresholds, and compensation patterns.
- ▶ Instruction and monitoring of micromovements to re-engage and then ensure recruitment of the proper muscles
- ▶ Monitoring proper muscle recruitment patterns for the movement (eg psoas and core engagement for hip flexion, not just rectus femorus acting as a lever) and stop when the movement pattern reverts to the maladaptive one.



# MOVEMENT AS PAIN RELIEF

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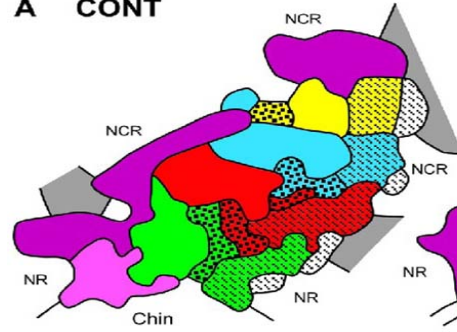
## Movement Disorders in Chronic pain

- ▶ Mary Barbe Temple University. (Peripheral and central changes combine to induce motor behavioral deficits in a moderate repetition task. *Experimental Neurology*. 2009;220(2):234-245. doi:10.1016/j.expneurol.2009.08.008.)
- ▶ Vitaly Napadow, Harvard (Somatosensory cortical plasticity in carpal tunnel syndrome treated by acupuncture. *Human Brain Mapping*. 2006;28(3):159-171. doi:10.1002/hbm.20261.)
- ▶ Sahrman, Washington University St Louis, The Human Movement System: Our Professional Identity, *PHYS THER*. March 13, 2014doi: 10.2522/ptj.20130319

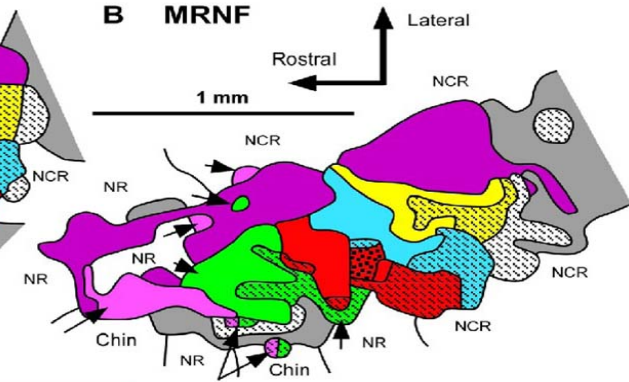




**A CONT**



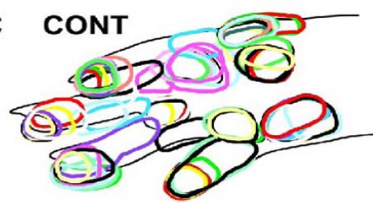
**B MRNF**



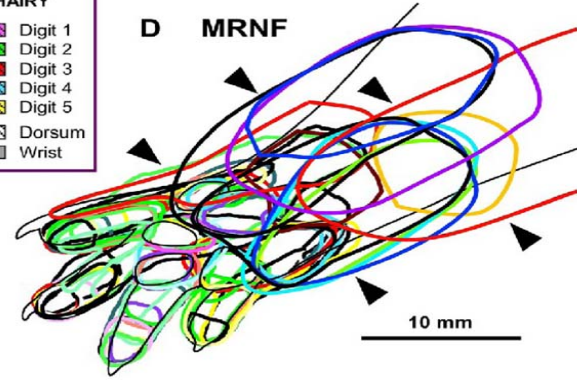
NR: No Response  
 NCR: NonCutaneous Response

GLABROUS	NAIL MOVEMENTS	HAIRY
Digit 1	Digit 1	Digit 1
Digit 2	Digit 2	Digit 2
Digit 3	Digit 3	Digit 3
Digit 4	Digit 4	Digit 4
Digit 5	Digit 5	Digit 5
Palm		
		Dorsum
		Wrist

**C CONT**

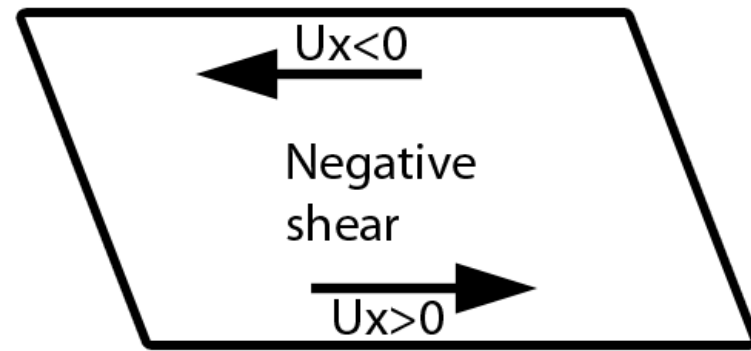
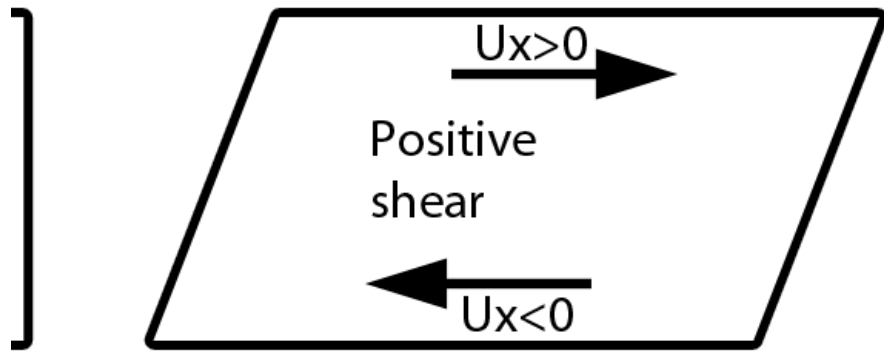
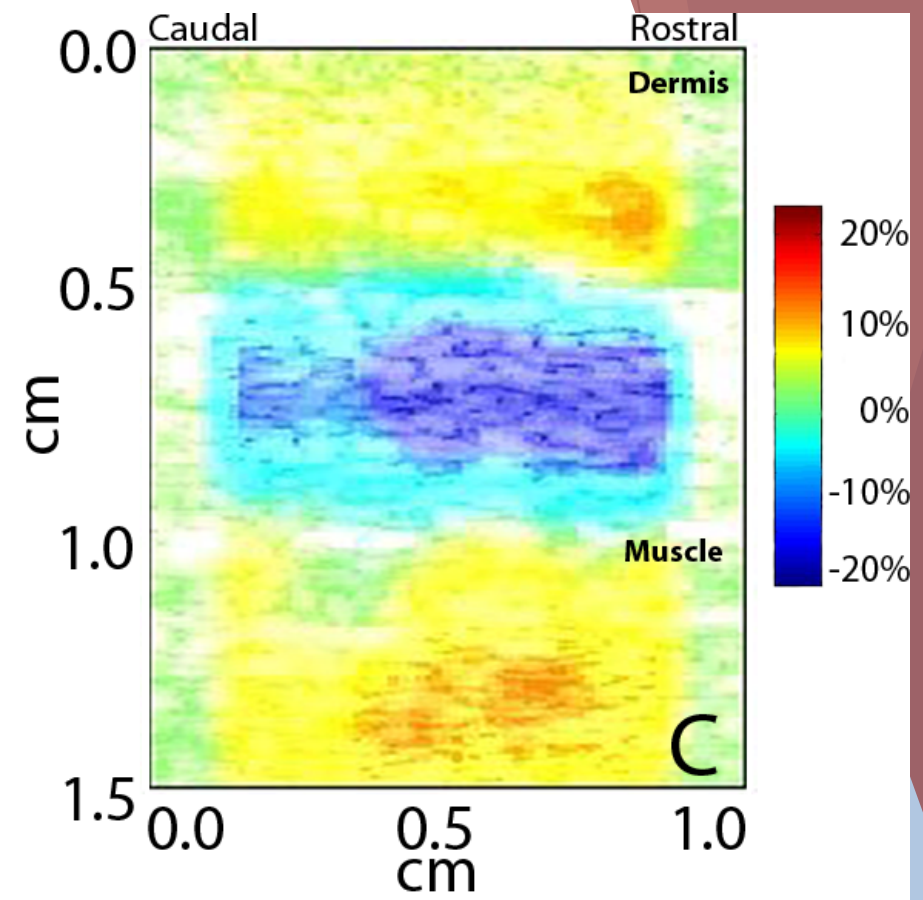
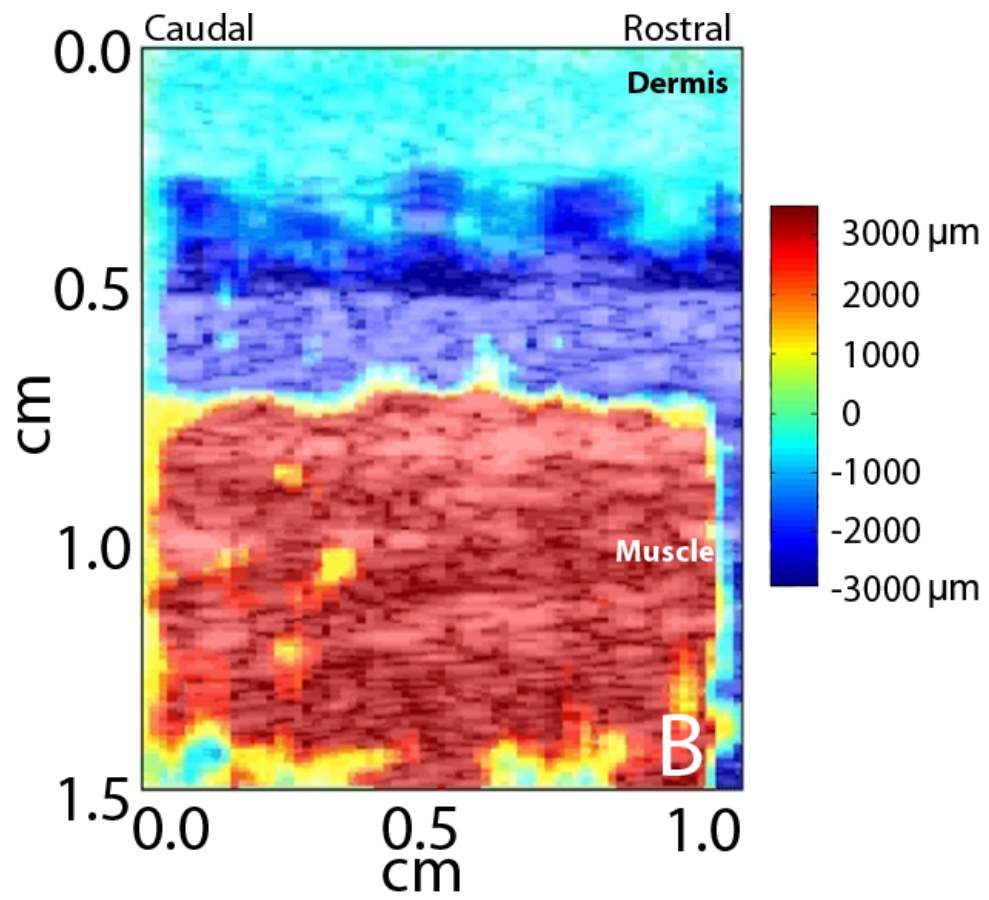


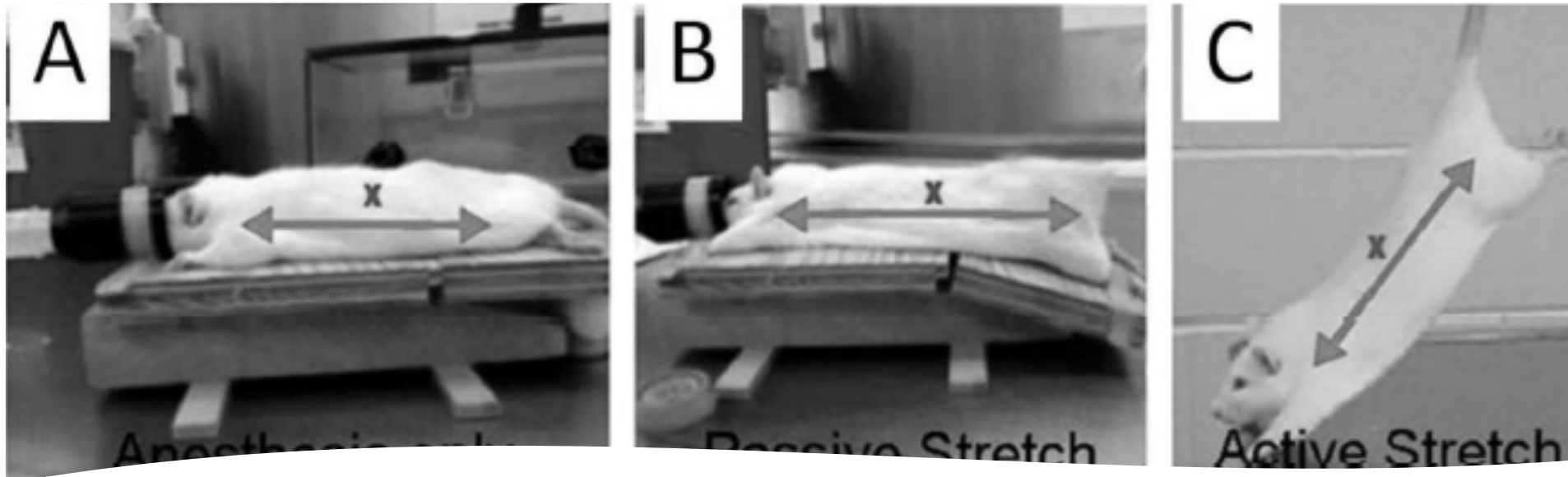
**D MRNF**



- ▶ Ultrasonographic elastography allowing us to image fascial thickening and decreased movement of the fascial planes in LBP patients vs controls which correlated with pain and functional limitations
- ▶ Langevin et al. BMC Musculoskeletal Disorders 2011, 12:203 <http://www.biomedcentral.com/1471-2474/12/203>







**STRETCHING IMPACTS INFLAMMATION  
RESOLUTION IN CONNECTIVE TISSUE**

- ▶ Berrueta L, Muskaj I, Olenich S, et al. Stretching Impacts Inflammation Resolution in Connective Tissue. *J Cell Physiol.* 2015;231(7):1621-1627. doi:10.1002/jcp.25263



# TBI Frequently missed connections

- ▶ Problems with driving and computer work: convergence disorder
  - ▶ MSK and/or neurological
- ▶ Interconnection of all physiological systems: not either/or
- ▶ Role of Vagus/SNS: \
  - ▶ Inflammation and delayed healing
  - ▶ Interoception
  - ▶ Sleep, digestion, HRV,



# Mind Body Cartesian Dichotomy

- Short cut: Triage either having a physical cause or being the result of a sensitized central nervous system
- Not either/or: there **are** physical stimuli, there are **physiologic misfires** for many reasons, there is **psychological distress**, there is sensitization in the peripheral and central NS; anatomy, physiology and psychology all play a role and exert mutual influence over each other.



# Breath

- ▶ Muscles are high consumers of O<sub>2</sub> and glucose
- ▶ O<sub>2</sub>/CO<sub>2</sub> exchange
- ▶ Neurotransmitters
- ▶ Stress reduction- Breathe with patients
- ▶ HR variability



# Exercise Balls

- ▶ Can be used as alternate seating at a desk
- ▶ Good for balance, coordination, position sense
- ▶ Base for stretching and strengthening
- ▶ Good for the elderly- half ball placed on a chair







# SILOS NO LONGER SERVE US WELL

**POLY**BIO 

Areas of Study

Inflammation  
Brain  
Immunity  
Metabolism  
Hormones  
Gut-brain  
Genes  
Microbiome  
pathogens

